

Monitoring Program for Chromium-6 (Cr-6) or Hexavalent Chromium
Updated 3/27/15

The Milwaukee Water Works (MWW) continues to monitor, or sample and analyze the water we treat and provide, for chromium-6 (Cr-6), also known as Hexavalent Chromium. As we gather this data, the U.S. Environmental Protection Agency (EPA) is assessing the health effects of Cr-6 based on available data, and is reviewing a proposal to set a regulation, or safe level, known as a Maximum Contaminant Level (MCL), for Cr-6. The EPA also is determining what monitoring of Cr-6 it will require of drinking water utilities.

Monitoring for Cr-6 helps us evaluate the degree to which other forms of chromium are transformed into Cr-6 in drinking water and to assess the degree to which existing treatment is affecting the levels of Cr-6. We can also better inform consumers about the levels of Cr-6 in their drinking water.

Milwaukee fully complied with the Unregulated Contaminant Monitoring Rule-3 (UCMR-3) mandatory monitoring effort in 2013, which required quarterly monitoring of water treatment plant finished water and water in the distribution system from one site per each of the two treatment plants.

EPA has not yet provided any risk context for the sampling or operational guidance, or directive, should we detect Cr-6. In other words, we may find Cr-6 in the water, but we have no advisory for our consumers.

The Milwaukee Water Works began monitoring for Cr-6 after the EPA in January 2011 issued a guidance in which utilities were encouraged to conduct Cr-6 sampling. The sampling was to be conducted each quarter at treatment plants for the incoming source water (Lake Michigan) and finished, or treated water, at the point it enters the distribution system. This recently began to be referred to as entry point water. We also were directed to sample water in the distribution system on a quarterly basis.

Notes about monitoring

- Results are presented as they become available.
- Results are presented in micrograms per liter ($\mu\text{g/L}$), or parts per billion.
- The EPA regulation, also known as allowable concentration, and referred to as Maximum Contaminant Level, for Total Chromium is $100 \mu\text{g/L}$. This was established by the Safe Drinking Water Act.
- There is no EPA regulation, or Maximum Contaminant Level, for Cr-6.

2015 Monitoring Program for Cr-6, or Hexavalent Chromium

- The monitoring method was EPA Method 218.7 and represent averages of all sites tested.

Sample Location	2015 Sampling Period	Cr-6 µg/L or parts per billion	Total Chromium µg/L or parts per billion
Treatment Plant Entry Point Water	First quarter	0.22	To be completed in the second quarter
Distribution System	First quarter	0.21	0.20 (different method)

2014 Monitoring Program for Cr-6, or Hexavalent Chromium

- The monitoring method was EPA Method 218.7 and represent averages of all sites tested.

Sample Location	2014 Sampling Period	Cr-6 µg/L or parts per billion
Source Water (Lake Michigan)	Second quarter	0.21
	Third quarter	0.20
Treatment Plant, or Entry Point Water	Second quarter	0.21
	Third quarter	0.19
Distribution Tap Water	Second quarter	0.21
	Third quarter	0.22

2013 Monitoring Program for Cr-6, or Hexavalent Chromium

Sample Location	2013 Sampling Period	Date Sampled	Cr-6 µg/L or parts per billion	EPA Monitoring Method Code	Total Chromium µg/L or parts per billion	EPA Monitoring Method Code
Treatment Plant Finished Water	First quarter	2/12/2013	0.25	EPA 218.7	0.30	EPA 200.8
	Second quarter	5/6/2013	0.20	EPA 218.7	0.30	EPA 200.8
	Third quarter	8/5/13	0.20	EPA 218.7	0.30	EPA 200.8
	Fourth quarter	11/4/13	0.21	EPA 218.7	0.20	EPA 200.8
Distribution Tap Water	First quarter	2/13/2013	0.25	EPA 218.7	0.30	EPA 200.8
	Second quarter	5/6/2013	0.21	EPA 218.7	0.30	EPA 200.8
	Third quarter	8/6/13	0.22	EPA 218.7	0.30	EPA 200.8
	Fourth quarter	11/4/13	0.24	EPA 218.7	0.20	EPA 200.8

2012 Monitoring Program for Cr-6, or Hexavalent Chromium

- The monitoring method was EPA Method 218.7.

Sample Location	2012 Quarterly Sampling Period	Average Cr-6 in $\mu\text{g/L}$ or parts per billion
Source water (Lake Michigan)	First	0.40
	Second	0.30
	Third	0.25
	Fourth	0.19
Treatment Plant Finished water	First	0.33
	Second	0.23
	Third	0.21
	Fourth	0.21
Distribution Tap Water	First	0.25
	Second	0.25
	Third	0.20
	Fourth	0.21

2011 Monitoring Program is on page 4

2011 Monitoring Program for Cr-6, or Hexavalent Chromium

- The first-quarter monitoring method was EPA Method 218.6. The second-, third- and fourth-quarter analyses method was inductively coupled plasma-mass spectrometry (ICP-MS).

Sample Location	2011 Quarterly Sampling Period	Average Cr-6 in $\mu\text{g/L}$ or parts per billion
Source water (Lake Michigan)	First	0.26
	Second	0.21
	Third	0.23
	Fourth	0.25
Finished water	First	0.27
	Second	0.22
	Third	0.23
	Fourth	0.24
Distribution Tap Water	First	0.27
	Second	0.21
	Third	0.21
	Fourth	0.24

3/27/15