Milwaukee Water Works

Safe, Abundant Drinking Water.

Water Quality Monitoring Program

The Milwaukee Water Works (MWW) is recognized as a national leader in providing safe, high-quality drinking water that meets or exceeds regulations, and for its water quality monitoring that goes above and beyond requirements. Crystal-clear Milwaukee water is available fresh and pure 24 hours each day.

Water Treatment Process

Milwaukee has a benefit in the relatively clean source that is Lake Michigan. The utility treats Lake Michigan water with ozone as the primary disinfectant. This highly reactive gas destroys illness-causing micro-organisms and harmful compounds, removes taste and odor compounds, and reduces the formation of disinfection byproducts. Particles are removed through coagulation, flocculation, settling, and biologically active filtration. Chlorine is added as a secondary disinfectant. Fluoride is added to reduce dental cavities. A phosphorous compound is added to control pipe corrosion to prevent lead and copper that may be present in pipes from leaching into the water. Finally, chloramine disinfection maintains a residual in the distribution system to protect against bacterial contamination. The Supervisory Control and Data Acquisition System (SCADA) at both treatment plants provides real-time data from chemical feed systems, including ozone, and all water quality monitoring as well as control of water pumping stations and the distribution system. Pure, fresh water arrives at your taps.

Investments for Water Quality Assurance

Since 1993, the Milwaukee Water Works has invested $459 million in its infrastructure to ensure a reliable supply of high-quality drinking water (investment as reported to the Public Service Commission of Wisconsin, or PSC). A Water Quality Section, directed by a Water Quality Manager, was created in 1995. Staff implements applied research projects to optimize treatment processes and solve water quality concerns in the distribution system. The Section developed comprehensive sampling and analysis plans to improve reliance on, and quality control of, continuous monitoring instrumentation.

Monitoring Above and Beyond Requirements

- Milwaukee's drinking water quality meets or exceeds all U.S. Environmental (EPA) and Wisconsin Department of Natural Resources (DNR) standards, or regulations.
- MWW combines electronic continuous monitoring of treatment process control indicators with grab samples to validate those and provide historical validation.
- We continuously conduct water quality monitoring, or sampling, from the lake source water to the distribution system of nearly 2,000 miles of water mains that carry over 100 million gallons of treated water every day.
- MWW monitors entry point water leaving treatment plants for 91 U.S. Environmental Protection Agency regulated contaminants.
- Source water is tested for up to six required (mandatory) Safe Drinking Water Act parameters including *Cryptosporidium*, bacteria, Turbidity, Total Organic Carbon and alkalinity; virus monitoring is conducted voluntarily.
- MWW water quality monitoring and screening activities include organisms and contaminants that are not yet regulated but considered of emerging concern and may be under study for their effects on public health.
- MWW tests source, entry point, and distribution system water for over 500 contaminants, most of which are not regulated.

Though not required, MWW and the Milwaukee Health Department (MHD) have been testing and analyzing, respectively, source water for *Cryptosporidium*, Giardia, and viruses for 20 years. The EPA regulation LT2, effective 2015, will require tests of source water for *Cryptosporidium*. MWW has 20 years of data available for analysis.

Voluntary monitoring is conducted:

- As a precaution to ensure safe water
- To collect baseline data for study
- To help increase the understanding of how contaminants may affect public health

The expense of testing for unregulated compounds provides customers with added assurance and confidence in Milwaukee water quality and service. Customers receive the EPA-required annual Consumer Confidence Report each spring in the mail and it available online and at city health centers and libraries.

It is impractical for utilities to test for thousands of substances in the environment, many of which occur naturally, that are now being detected by new scientific methods at extremely low levels in drinking water. Science has not demonstrated any impact on human health at the trace levels these compounds are being discovered. The Milwaukee Water Works supports drinking water research by the EPA, the Water Research Foundation, and other government and scientific organizations.

Public Health Protectors

The collaboration of MWW with the Milwaukee Health Department led to the formation of the Interagency Clean Water Advisory Council (IACWAC). The IACWAC was recognized by the EPA for its work to promote sharing of technical information about water quality and public health-related science, public health surveillance, and situational awareness, analysis, and response. IACWAC tracks and can respond to public health issues that may be related to water. Groundbreaking in the 1990s, the ongoing partnership is now recognized nationally for its effectiveness in protecting public health. The utility relays critical information about emerging contaminants, water treatment, and water quality monitoring via communications with news media and customer service representatives, and at www.milwaukee.gov/water.

Milwaukee's recognition as a national leader in water quality

- MWW was one of the first utilities in the U.S. to begin testing source and treated drinking water for endocrine-disrupting compounds (EDCs) in 2004, and for pharmaceuticals and personal care products (PPCPs), in 2005. None have been found in Milwaukee drinking water. Neither testing nor disclosure of the results from voluntary testing is required under the Safe Drinking Water Act.

- In 2008, the Associated Press (AP) cited Milwaukee as one of only 28 major utilities in the U.S. to test source and treated water for emerging contaminants such as EDCs and PPCPs.

- The Milwaukee Water Works was the first U.S. utility to post the test results for emerging contaminants on the Internet. The utility's policy of full disclosure was lauded by *Public Works* magazine Editor-in-Chief Stephanie Johnstone.

- Milwaukee's water quality monitoring system was in full compliance five years ahead of time with EPA regulations to control disinfection byproducts, the result of rigorous water quality monitoring and investment in water treatment and distribution systems.

- The Milwaukee Water Works began testing source and finished water for chromium-6 (Cr-VI) in January 2011. The monitoring takes place as federal regulators and the drinking water industry research how much, if any, chromium-6, or hexavalent chromium , might pose a health risk in drinking water. Currently, there are no regulations or requirements to test for Cr-VI in drinking water. The City of Milwaukee Health Department (MHD) determined there is no evidence of an imminent public health risk or threat of acute illness as a result of the MWW monitoring results.

- In its November 2012 report, "Keeping Great Lakes Water Safe: Priorities for Protecting against Emerging Chemical Pollutants," the Alliance for the Great Lakes commended Milwaukee Water Works for its water quality monitoring. "The city takes its water supply seriously. … The effort put forth by MWW is commendable as it is

leading the way among public water utilities. More frequent monitoring for priority chemicals could help to establish temporal trends — if any exist — in the occurrence of emerging contaminants."

About the Milwaukee Water Works

The Milwaukee Water Works is the publicly owned utility of the City of Milwaukee; policy is set by the Mayor and Common Council. The utility is regulated by the EPA and the Wisconsin Department of Natural Resources (DNR) for facilities, operations, and water quality; and the Public Service Commission of Wisconsin (PSC), for rates and accounting.

The utility provides water to over 860,000 people in 16 communities in Milwaukee, Ozaukee, and Waukesha Counties: Milwaukee, Brown Deer, Butler, Franklin, Greendale, Greenfield, Hales Corners, Shorewood, St. Francis, Wauwatosa, West Allis, and West Milwaukee. We also provide water to the Milwaukee County Grounds facilities and portions of Menomonee Falls, Mequon, New Berlin, and Thiensville.

The Milwaukee Water Cycle

The treated water enters homes and businesses through a service line pipe and a water meter. After you use water, it leaves your property through the sanitary sewer pipe and flows to the Milwaukee Metropolitan Sewerage District (MMSD) treatment facility where it is treated and returned to Lake Michigan. The Milwaukee Water Works is owned by the City of Milwaukee while the waste water treatment facilities are owned and governed by the MMSD and its member municipalities.

Established in 1871, the Milwaukee Water Works is proud to be the largest and oldest continuously operating water utility in Wisconsin.

Rev. 6/15