



2019 WATER QUALITY REPORT

Introduction

The West Allis Water Utility purchases water from the City Of Milwaukee WaterWorks. Our water is supplied to us from Milwaukee's Howard Avenue Water Treatment Plant, from two (2) metered supply points in West Allis.

During 2017, the West Allis Water Utility pumped an average of 5 million gallons of water per day for residential, commercial and industrial use. Also, the Utility maintains 215 miles of water main, 2,600 fire hydrants, 6,000 distribution valves and over 19,000 water meters in accordance with regulatory standards established by the United States Environmental Protection Agency, Wisconsin Department of Natural Resources, and the Public Service Commission of Wisconsin.

We are pleased to present this information to our consumers. It will explain the source of our water, what has been detected in our water, and how it compares to the standards set by the USEPA and the Wisconsin DNR. The West Allis Water Utility is totally committed to protecting the health of the public served by our system.

Water System Information

If you have any questions about this report or the West Allis Water Utility, please call Michael Brofka, Water Superintendent at 414-302-8830.

Time and place of regularly scheduled public meeting or other opportunities for public input on decisions affecting the water quality: The Common Council's regularly scheduled meeting dates are the first and third Tuesday of each month except July and August, when meetings are held on the first Tuesday of the month only. The Common Council meets in the Council Chambers at City Hall, 7525 W. Greenfield Ave.

Health Information

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's safe drinking water hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Environmental Protection Agency's safe drinking water hotline (800-426-4791).

Water Source

The City of West Allis Water Utility purchases water from the City of Milwaukee. The source of the drinking water is Lake Michigan. Read the DNR Source Water Assessment for Milwaukee at <http://city.milwaukee.gov/water/WaterQuality>

Educational Information

The sources of drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally- occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which shall provide the same protection for public health. Also, more information at: <https://www.epa.gov/dwstandardsregulations>

Definitions

Term	Definition
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Level 1 Assessment	A Level 1 assessment is a study of the water system to identify potential problems and determine, if possible, why total coliform bacteria have been found in our water system.
Level 2 Assessment	A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine, if possible, why an E. coli MCL violation has occurred or why total coliform bacteria have been found in our water system, or both, on multiple occasions.
MCL	Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
MCLG	Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MFL	million fibers per liter
MRDL	Maximum residual disinfectant level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG	Maximum residual disinfectant level goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
mrem/year	millirems per year (a measure of radiation absorbed by the body)
NTU	Nephelometric Turbidity Units
pCi/l	picocuries per liter (a measure of radioactivity)
ppm	parts per million, or milligrams per liter (mg/l)
ppb	parts per billion, or micrograms per liter (ug/l)
ppt	parts per trillion, or nanograms per liter
ppq	parts per quadrillion, or picograms per liter
TCR	Total Coliform Rule
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Detected Contaminants

Your water was tested for many contaminants last year. We are allowed to monitor for some contaminants less frequently than once a year. The following tables list only those contaminants which were detected in your water. If a contaminant was detected last year, it will appear in the following tables without a sample date. If the contaminant was not monitored last year, but was detected within the last 5 years, it will appear in the tables below along with the sample date.

Disinfection Byproducts

Contaminant (units)	Site	MCL	MCLG	Level Found	Range	Violation	Typical Source of Contaminant
HAA5 (ppb)	D-30	60	60	4	2-4	No	By-product of drinking water Chlorination
TTHM (ppb)	D-30	80	0	8.9	1.9-11.5	No	By-product of drinking water Chlorination
HAA5 (ppb)	D-38	60	60	3	1-4	No	By-product of drinking water Chlorination
TTHM (ppb)	D-38	80	0	10	3-16.1	No	By-product of drinking water Chlorination
HAA5 (ppb)	D-6	60	60	4	2-4	No	By-product of drinking water Chlorination
TTHM (ppb)	D-6	80	0	9.8	2.8-15.3	No	By-product of drinking water Chlorination
HAA5 (ppb)	EPDS -1	60	60	4	2-3	No	By-product of drinking water Chlorination
TTHM (ppb)	EPDS -1	80	0	7.7	1.5-10.4	No	By-product of drinking water Chlorination

Inorganic Contaminants

Contaminant (units)	Action Level	MCLG	90 th Percentile Level Found	# of Results	Sample Date	Violation	Typical Source of Contaminant
Copper	AL=1.3	1.3	0.0800	0 of 30 results were above the action level.	6/27/2017	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead	AL=15	0	5.10	2 of 30 results were above the action level.	6/27/2017	No	Corrosion of household plumbing systems; Erosion of natural deposits;

Unregulated Contaminants

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. EPA required us to participate in UCMR 4 monitoring in 2018-19.

Distribution System

Contaminant (µg/l)	Average	Range	Date Tested	Typical Source of Contaminant
HAA5 (ppb)	3.6	1.6-4.6	2018-19	By-product of drinking water Chlorination
HAA6Br (ppb)	3.5	1.9-4.2	2018-19	By-product of drinking water Chlorination
HAA9 (ppb)	6.5	3.5-7.8	2018-19	By-product of drinking water Chlorination

Entry Points

Contaminant (µg/l)	Average	Range	Date Tested	Typical Source of Contaminant
Alpha-Hexachlorocyclohexane (ppb)	<0.01	<0.01	2018-19	Pesticide
Anatoxin-a (ppb)	<0.03	<0.03	2018-19	Source water
1-butanol (ppb)	<2.00	<2.00	2018-19	Solvent, food additive
Butylated hydroxyanisole (ppb)	<0.03	<0.03	2018-19	Food additive (antioxidant)
Chlorpyrifos (ppb)	<0.03	<0.03	2018-19	Organophosphate, insecticide, acaricide, miticide
Cylindrospermopsin (ppb)	<0.09	<0.09	2018-19	Source water
Dimethipin (ppb)	<0.20	<0.20	2018-19	Herbicide and plant growth regulator
Ethoprop (ppb)	<0.03	<0.03	2018-19	Insecticide
Germanium (ppb)	<0.30	<0.30	2018-19	Naturally occurring element
Manganese (ppb)	<0.01	ND-1.175	2018-19	Naturally occurring element
2-methoxyethanol (ppb)	<0.40	<0.40	2018-19	Synthetic cosmetics, perfumes, fragrances, hair preparations, skin lotions
o-toluidine (ppb)	<0.007	<0.007	2018-19	Dyes, rubber, pharmaceuticals, pesticide
Oxyfluorfen (ppb)	<0.05	<0.05	2018-19	Herbicide
Microxystin total (ppb)	<0.30	<0.30	2018-19	Source water
Permethrin total (ppb)	<0.04	<0.04	2018-19	Insecticide
Profenofos (ppb)	<0.30	<0.30	2018-19	Insecticide and acaricide
2-Prpen-1-ol (ppb)	<0.50	<0.50	2018-19	Flavorings, perfumes
Quinoline (ppb)	<0.02	<0.02	2018-19	Anti-malarial pharmaceutical, flavoring agent
Tebuconazole (ppb)	<0.20	0.20	2018-19	Fungicide
Tribufos (ppb)	<0.07	<0.07	2018-19	Insecticide, cotton defoliant
HAA5 (ppb)	3.6	1.6-4.6	2018-19	By-product of drinking water Chlorination
HAA6Br (ppb)	3.8	3.5-4.3	2018-19	By-product of drinking water Chlorination
HAA9 (ppb)	6.8	6.4-7.8	2018-19	By-product of drinking water Chlorination

Water Quality Parameter (2017)

	Minimum	Mean	Maximum
Alkalinity, Total (mg/l)	98	98.9	100
Hardness, Total (mg/l)	130	130	130
Conductivity (µmhos/cm)	323	328.1	331
Chloride (mg/l)	14	14.7	15
Sulfate (mg/l)	27	27.4	28
Phosphorus (mg p/l)	0.61	0.63	0.68
Calcium (mg/l)	33	33.1	34
Iron (mg/l)	0.02	0.01	0.06
Aluminum (mg/l)	.061	0.08	0.12
Manganese (µg/l)	1	0.41	1.7

Lead and Copper

The City of West Allis Water Utility is required to test the drinking water in a number of homes for copper and lead. The utility last tested in 2017 and will test again in 2020. Of the 30 homes tested for lead in 2017, two had test results above the action level of 15 ppm. Of the 30 homes tested for copper in 2017, none had test results above the action level of 1.3 ppm. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. West Allis water Utility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Cryptosporidium

Cryptosporidium is a microscopic protozoan that when ingested, can result in diarrhea, fever, and other gastrointestinal symptoms. The Milwaukee Water Works and the Milwaukee Health Department consider *Cryptosporidium* detection a priority, and since 1993, have continued to test untreated and treated water for *Cryptosporidium*. The organism is found in many surface water sources (lakes, rivers, streams) and comes from human and animal wastes in the watershed. The risk of *Cryptosporidium* from drinking water in Milwaukee has been reduced to extremely low levels by an effective treatment combination including ozone disinfection, coagulation, sedimentation, biologically active filtration, and chloramine disinfection.

The Milwaukee Water Works provides a brochure based on EPA and CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*. Obtain a copy from their Customer Service Center, (414) 286-2830, or at <http://city.milwaukee.gov/water/WaterQuality> and scroll down to Resources Links, choose "Information for persons with weakened immune systems."

Purchased Water

Our water system purchases water from Milwaukee Water Works. In addition to the detected contaminants listed above, the results from Milwaukee Water Works are listed below in their 2019 Consumer Confidence Report or at: <http://city.milwaukee.gov/WaterConsumerConfidenceReport>

Milwaukee Water Works

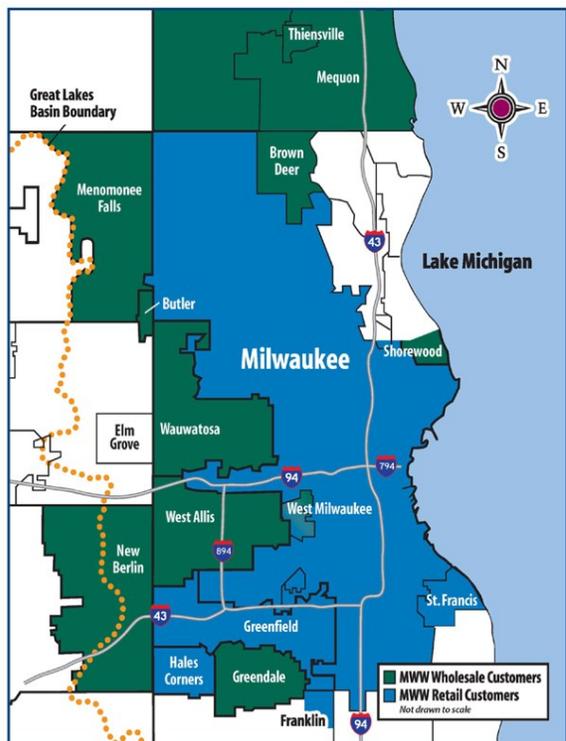
2019 Consumer Confidence Report

2019 Reporte de Confianza del Consumidor

The U.S. Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR) require drinking water utilities to provide an annual Consumer Confidence Report to help consumers understand where their drinking water comes from, so they can make informed decisions about their health and protection of the environment. In this report, you will find:

- Information about the source of your drinking water
- The treatment process that ensures the highest quality water
- Results of 2019 water quality testing and compliance with water quality laws and standards
- Additional educational information and public health announcements

Visit <https://Milwaukee.gov/water> for more information.



Milwaukee Water Works

The City of Milwaukee-owned public utility provides pure, safe water to approximately 867,000 people in Milwaukee and across 16 communities:

Wholesale Customers: Brown Deer, Butler, Greendale, Menomonee Falls, Mequon, Milwaukee County Grounds, New Berlin, Shorewood, Thiensville, Wauwatosa, and West Allis.

Retail Customers: Greenfield, Hales Corners, a portion of Franklin, St. Francis, and West Milwaukee.

Participate in decisions regarding your water

Attend City of Milwaukee Common Council Public Works Committee meetings, which occur regularly each month in Milwaukee City Hall, Room 301B, 200 East Wells Street, Milwaukee, WI 53202. You may also attend City of Milwaukee Common Council meetings, which meet in the Milwaukee City Hall, 3rd Floor Common Council Chambers, 200 East Wells Street, Milwaukee, WI 53202. Common Council meeting dates vary. Please contact the City Clerk for the schedule at (414)286-2221, or visit <https://Milwaukee.gov/cityclerk/PublicRecords/Agendas.htm>.

Important Information

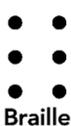
This report contains important information about your drinking water. Translate it, or speak with someone who understands it.

Información Importante

Este informe contiene información muy importante sobre su agua de beber. Tradúzcalo o hable con alguien que lo entienda bien.

Lug tseem ceeb rua cov siv dlej kws has lug Moob

Ntawm nuav yog cov lug tseem ceeb qha txug kev haus dlej nyob nroog Milwaukee. Yog mej nyem tsi tau cov lug nuav, thov lwm tug txhais rua mej.



This material is available in alternative formats for individuals with disabilities upon request. Please contact the City of Milwaukee ADA Coordinator via phone at (414) 286-3475 or email ADACoordinator@milwaukee.gov. Please provide a 72-hour advance notice for large print and seven days for Braille documents.

Large Print

Milwaukee's Source Water Comes from Lake Michigan

Milwaukee's drinking water comes from Lake Michigan, a surface water source. The most recent DNR Source Water Assessment for Milwaukee is available online under "Resources" at <https://Milwaukee.gov/water/WaterQuality>. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants, or substances, that may be present in source water include:

- **Microbial contaminants**, such as viruses, protozoa, and bacteria, may come from leaky sewer pipes, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also

come from gas stations, urban stormwater runoff, and septic systems.

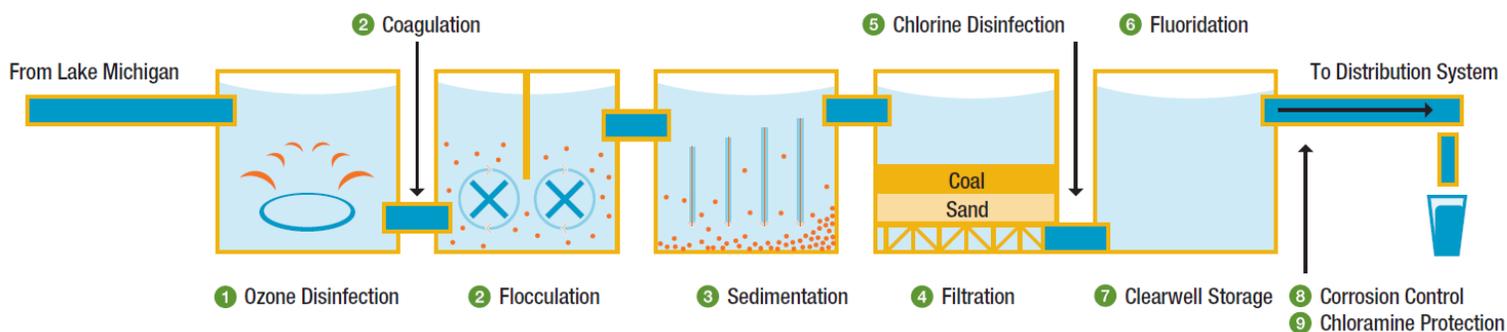
- **Radioactive contaminants**, which can be naturally occurring or the result of oil and gas production and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's safe drinking water hotline (800-426-4791) or at:

<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

In order to ensure that tap water is safe, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The Milwaukee Water Works maintains a nationally recognized water monitoring program to assure all treated water meets or exceeds local, state, and federal regulations.

Milwaukee Water Works Drinking Water Treatment Process



(1) **Ozone disinfection:** Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces the formation of chlorinated disinfection byproducts.

(2) **Coagulation and Flocculation:** Aluminum sulfate is added to the water to neutralize the charge on microscopic particles. The water is then gently mixed to encourage suspended particles to stick together to form "floc."

(3) **Sedimentation:** Sedimentation is the process in which floc settles out and is removed from the water.

(4) **Biologically Active Filtration:** The water is slowly filtered through 24" of anthracite coal and 12" of crushed sand to remove very small particles.

(5) **Chlorine Disinfection:** After filtration, chlorine is added as a secondary disinfectant to provide extra protection from potentially harmful microorganisms.

(6) **Fluoridation:** Fluoride, when administered at low levels, is proven to help prevent tooth decay.

(7) **Clearwell Storage:** Treated water is stored in deep underground tanks and pumped as needed through the distribution.

(8) **Corrosion Control:** A phosphorus compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into water.

(9) **Chloramine Protection:** Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

Reading the Water Quality Tables

The following tables show regulated and unregulated contaminants, or substances, detected in Milwaukee’s drinking water in 2019. It also includes all substances tested for in the mandatory EPA monitoring program, most recently the Fourth Unregulated Contaminant Monitoring Rule (UCMR-4). **All contaminants detected continue to meet or exceed local, state, and federal drinking water standards for health and safety.** The tables contain the name of each substance, the highest level allowed by regulation (maximum contaminant level, MCL), the ideal goals for public health (MCLG), the amount detected, and the usual sources of such contamination. The presence of a substance in drinking water does not necessarily indicate the water poses a health risk. Certain quantities of some substances are essential for good health, but excessive quantities can be hazardous.

Definitions	
Action Level (AL)	The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow. Action levels are reported at the 90th percentile for homes at greatest risk.
Health Advisory (HA)	An estimate of acceptable drinking water levels for a chemical substance based on health effects information; a health advisory is not a legally enforceable federal standard, but serves as technical guidance to assist federal, state, and local officials.
Maximum contaminant level (MCL)	The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum contaminant level goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Maximum residual disinfectant level (MRDL)	The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for the control of microbial contaminants.
Maximum residual disinfectant level goal (MRDLG)	The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
Treatment technique (TT)	A required process intended to reduce the level of a contaminant in drinking water.
Turbidity	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms may include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Unit abbreviations	
<	“less than” or not detected
-log[H ⁺]	pH measurements are expressed as the negative base 10 logarithm of the hydrogen ion concentration
NA	not applicable
NR	not regulated
NTU	nephelometric turbidity unit (a unit to measure turbidity)
ppb	parts per billion (microgram per liter)
ppm	parts per million (milligram per liter)
ppq	parts per quadrillion (picograms per liter)
ppt	parts per trillion (nanogram per liter)
pCi/L	picocuries per liter: a measure of radioactivity
RAA	running annual average: the average of four quarterly samples collected in one year

Primary and Secondary Drinking Water Standards

The EPA has National Primary Drinking Water Regulations that set water quality standards for contaminants, or substances, in public drinking water. These standards are referred to as maximum contaminant levels (MCLs), which are established to protect public health, and are legally enforceable above the allowed MCL. The EPA has also established National Secondary Drinking Water Regulations that set non-mandatory standards for potential water-quality substances. These secondary substances are not currently considered a risk to human health, but instead, act as guidelines for drinking water aesthetics such as taste, odor, and color.

Primary Substances Detected	Ideal Goal (MCLG)	Highest Level Allowed (MCL)	Median Value	Range	Meets Standard	Typical Source of Substance
Barium (ppm)	2	2	0.02	0.02	Yes	Drilling waste discharge; metal refineries discharge; erosion of natural deposits
Chlorine, Total (ppm)	4 (MRDLG)	4 (MRDL)	1.52	1.07 - 1.86	Yes	Water additive used to control microbes
Copper (ppm)	1.3 (AL)	1.3 (AL)	0.0014	< 0.001 - 0.0014	Yes	Corrosion of household plumbing systems; erosion of natural deposits
Disinfection By-Products						
Bromate (ppb)	0	10 RAA	3.1	1.1 - 6.0	Yes	By-product of drinking water disinfection
Chlorite (ppm)	0.8	1	< 0.002	< 0.002 - 0.068	Yes	By-product of drinking water disinfection
Haloacetic Acids [HAA9] (ppb)	NA	60	2.5	< 0.5 - 6.0	Yes	Byproduct of drinking water disinfection
Total Trihalomethanes [TTHM] (ppb)	NA	80	4.1	2.1 - 9.9	Yes	Byproduct of drinking water disinfection
Fluoride (ppm)	4.0	4.0	0.55	0.03 - 0.66	Yes	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Heterotrophic plate count	NA	TT	Met standard	Met standard	Yes	Naturally present in the environment; runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Nitrate, as N (ppm)	10	10	0.33	0.29 - 0.41	Yes	Runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Nitrite, as N (ppm)	NA	1	0.002	0.001 - 0.007	Yes	Runoff from fertilizer use; leeching from septic tanks sewage; erosion of natural deposits
Radionuclides						
Gross alpha (pCi/L) [excluding Ra and U]	NA	15	1.86	0.30 - 3.42	Yes	Erosion of natural deposits
Gross alpha (pCi/L) [including Ra and U]	NA	15	2.03	0.46 - 3.60	Yes	Erosion of natural deposits
Gross beta (pCi/L)	NA	50	3.90	3.70 - 4.00	Yes	Decay of natural and manmade deposits
Radium (pCi/L) [Ra 226 + Ra 228]	NA	5	1.20	0.89 - 1.51	Yes	Erosion of natural deposits
Turbidity (NTU)	NA	< 0.300 95% of time	0.020	0 - 0.940 (1 day max)	Yes	Soil runoff

Secondary Substances Detected	Highest Level Allowed (MCL)	Median Value	Highest Level Detected	Meets Standard	Typical Source of Substance
Aluminum (ppm)	0.05-0.20	0.082	0.073 - 0.091	Yes	Water treatment additive, natural deposits
Chloride (ppm)	250	14.9	13.6 - 25.6	Yes	Natural deposits and road salts
Odor	3	1	1	Yes	Naturally present in the environment
pH (-log [H ⁺])	6.5 - 8.5	7.64	7.27 - 8.01	Yes	Naturally present in the environment
Sulfate (ppm)	250	26	26	Yes	Natural deposits
Total Dissolved Solids (ppm)	500	181	170 - 213	Yes	Aggregate of dissolved minerals

Monitoring for *Cryptosporidium* and Other Contaminants

Milwaukee Water Works maintains an extensive, nationally recognized water quality monitoring program. The utility tests for approximately 500 substances to ensure safe water, increase understanding of how substances affect public health, and meet future regulations. Below are unregulated substances that were detected in treated water in 2019. A full list of undetected substances can be found under “Resources” at <https://Milwaukee.gov/water/WaterQuality>.

Cryptosporidium was not detected in any of the source water or finished drinking water samples collected in 2019. Additionally, no *Giardia*, Reovirus, or Enterovirus were detected in MWW drinking water in 2019.

Substance Detected	Range of Results	Typical Source of Substance
Acesulfame-K (ppb)	0.05 - 0.06	Artificial sweetener
Acetaldehyde (ppb)	< 5 - 15	Byproduct of drinking water disinfection
Acetone (ppb)	< 2.0 - 2.3	Manufacturing; solvent
Aldehydes, Total (ppb)	< 5 - 15	Byproduct of drinking water disinfection
Ammonia, as N (ppm)	0.12 - 0.23	Disinfection with chloramines; wastes; fertilizers and natural processes
Boron (ppb)	22	Naturally occurring; borax mining and refining; boric acid manufacturing
Bromide (ppb)	12 - 28	Naturally occurring
Bromochloroacetonitrile (ppb)	< 0.4 - 0.8	Byproduct of drinking water disinfection
Calcium (ppm)	33	Naturally occurring
Chlorate (ppb)	31 - 272	Byproduct of drinking water disinfection
Chromium, hexavalent (ppb)	0.17 - 0.21	Natural deposits and manufacturing
Cotinine (ppt)	< 1 - 1	Metabolic byproduct of tobacco smoking
Dibromoacetonitrile (ppb)	< 0.4 - 0.8	Byproduct of drinking water disinfection
Dichloroacetonitrile (ppb)	< 0.5 - 0.5	Byproduct of drinking water disinfection
1,1-Dichloropropanone (ppb)	< 0.5 - 1.2	Byproduct of drinking water disinfection
Lithium (ppb)	2.2	Naturally occurring
Magnesium (ppm)	11	Naturally occurring
N-Nitrosodimethylamine (NDMA)(ppb)	< 2.0 - 2.3	Disinfection with chloramines; rocket fuel; pesticides
Perchlorate (ppb)	0.12 - 0.14	Naturally occurring; manufacturing of rocket fuels, fireworks, munitions
Perfluorohexanoic acid [PFHxA] (ppt)	< 2.0 - 2.2	Waterproofing; textile manufacturing
Perfluorooctane sulfonate [PFOS] (ppt)	< 2.0 - 2.6	Waterproofing; textile manufacturing; used in fire fighting foams
Perfluorocatanoic acid [PFOA] (ppt)	< 2.0 - 2.3	Waterproofing; textile manufacturing; used in fire fighting foams
o-Phosphate as PO ₄ (ppm)	0.31 - 4.65	Byproduct of drinking water treatment
Phosphorus as P (ppm)	0.59 - 0.74	Naturally occurring
Potassium (ppm)	1.4	Naturally occurring
Rubidium (ppb)	1.1	Naturally occurring
Silica (ppm)	1.7 - 1.9	Naturally occurring
Sodium (ppm)	9.1 - 10.0	Natural deposits and road salt
Strontium (ppb)	120	Natural deposits
Sucralose (ppt)	34 - 36	Artificial sweetener
Total Organic Carbon (ppm)	1.27 - 1.75	Naturally present in the environment
Total Solids (ppm)	160	Measure of solid materials in water
Trichloroacetonitrile (ppb)	< 0.5 - 0.5	Byproduct of drinking water disinfection
1,1,1-Trichloropropanone (ppb)	0.5 - 1.6	Byproduct of drinking water disinfection
Tris(chloropropyl) phosphate (ppb)	0.01	Flame retardant

Fourth Unregulated Contaminants Monitoring Rule (UCMR-4)(2018)

The Unregulated Contaminant Monitoring Rule (UCMR) was established by the EPA as part of the Safe Drinking Water Act Amendments of 1996. Every five years, in compliance with the EPA, Milwaukee Water Works collects data on potential contaminants that are not yet regulated but are known, or anticipated, to occur in public water systems. These data help the EPA determine if future regulations are needed for contaminants of concern.

UCMR-4 Assessment Monitoring (2018)	Median Value	Highest Detected	Typical source of substance
alpha-Hexachlorocyclohexane (ppt)	< 0.0100	< 0.0100	Pesticide
1-Butanol (ppb)	< 2.00	< 2.00	Solvent, food additive
Butylated hydroxyanisole (ppt)	< 0.300	< 0.300	Food additive (antioxidant)
Chlorpyrifos (ppt)	< 0.0300	< 0.0300	Organophosphate, insecticide, acaricide, miticide
Dimethipin (ppt)	< 0.200	< 0.200	Herbicide and plant growth regulator
Ethoprop (ppt)	< 0.030	< 0.030	Insecticide
Germanium (ppt)	< 0.300	< 0.300	Naturally occurring element
Manganese (ppt)	< 0.400	0.520	Naturally occurring element
2-Methoxyethanol (ppt)	< 0.400	< 0.400	Synthetic cosmetics, perfumes, fragrances, hair preparations, skin lotions
o-Toluidine (ppq)	< 7.00	< 7.00	Dyes, rubber, pharmaceuticals, pesticide
Oxyfluorfen (ppt)	< 0.500	< 0.500	Herbicide
Permethrin cis & trans (ppt)	< 0.040	< 0.040	Insecticide
Profenofos (ppt)	< 0.300	< 0.300	Insecticide and acaricide
2-Propen-1-ol (ppt)	< 0.500	< 0.500	Flavorings, perfumes
Quinoline (ppt)	< 0.020	< 0.020	Anti-malarial pharmaceutical, flavoring agent
Tebuconazole (ppt)	< 0.200	< 0.200	Fungicide
Tribufos (ppt)	< 0.070	< 0.070	Insecticide, cotton defoliant

UCMR-4 Assessment Monitoring of Cyanotoxins (2018)	Median Value	Highest Detected	Typical source of substance
Anatoxin-a (ppt)	< 30	< 30	Source water
Cylindrospermopsin (ppt)	< 90	< 90	Source water
Total Microcystins & Nodularins (ppb)	< 0.300	< 0.300	Source water

UCMR-4 Assessment Monitoring of Surface Water Indicators (2018)	Median Value	Highest Detected	Typical source of substance
Bromide (ppb)	33.1	35.3	Source water
Total Organic Carbon [TOC] (ppm)	1.825	2.010	Source water

UCMR-4 Assessment Monitoring of Distribution Water (2018)	Median	Highest Detected	Typical source of substance
Bromochloroacetic acid [BCAA] (ppb)	0.862	1.180	Byproduct of drinking water disinfection
Bromodichloroacetic acid [BDCAA] (ppb)	0.762	1.090	Byproduct of drinking water disinfection
Chlorodibromoacetic acid [CDBAA] (ppb)	0.421	0.524	Byproduct of drinking water disinfection
Dibromoacetic acid [DBAA] (ppb)	0.389	0.504	Byproduct of drinking water disinfection
Dichloroacetic acid [DCAA] (ppb)	1.505	2.020	Byproduct of drinking water disinfection
Monobromoacetic acid [MBAA] (ppb)	< 0.300	< 0.300	Byproduct of drinking water disinfection
Monochloroacetic acid [MCAA] (ppb)	< 2.00	< 2.00	Byproduct of drinking water disinfection
Tribromoacetic acid [TBAA] (ppb)	< 2.00	< 2.00	Byproduct of drinking water disinfection
Trichloroacetic acid [TCAA] (ppb)	0.779	1.260	Byproduct of drinking water disinfection
HAA5 Total (ppb)	2.575	3.398	Byproduct of drinking water disinfection
HAA6 Br Total (ppb)	2.325	3.075	Byproduct of drinking water disinfection
HAA9 Total (ppb)	4.523	5.951	Byproduct of drinking water disinfection

Lead and Copper Rule (2017)

In 2017, in compliance with the US EPA and Wisconsin DNR, Milwaukee Water Works completed Lead and Copper Rule (LCR) testing. In order to remain in compliance with EPA regulations, 90th percentile levels must be below 15 ppb for lead and 1300 ppb for copper. Milwaukee Water Works is conducting LCR testing again in 2020.

Lead and Copper (2017)	Action Level	90th percentile	Highest Detected	Number of Sites at Action Level	Number of Sites Exceeding Action Level
Copper (ppb)	1300	46.0	110	0	0
Lead (ppb)	15.0	7.2	130	1	2

Optimal Water Quality Parameters (2017)	Minimum	Mean	Median	Maximum
Alkalinity, Total (ppm)	102	104	103	112
Hardness, Total (ppm)	130	135	140	140
Conductivity ($\mu\text{mhos cm}^{-1}$)	310	318	320	320
Chloride (ppm)	14.0	14.9	15.0	16.0
Sulfate (ppm)	25.0	27.7	28.0	30.0
Phosphorus (ppm)	0.53	0.60	0.60	0.71
Calcium (ppm)	34.0	34.8	35.0	37.0
Iron (ppm)	0.02	0.05	0.04	0.10
Magnesium (ppm)	11.0	12.0	12.0	12.0
Aluminum (ppb)	36.0	94.8	82.0	240
Manganese (ppb)	0.14	1.03	0.79	3.30

Lead and Copper Public Safety

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Milwaukee Water Works is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for three minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Additional information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the EPA at <https://EPA.gov/safewater/lead>.

Guidelines regarding lead

- Occupants of buildings where lead service lines are present should adequately flush water lines after prolonged periods of stagnation to reduce potential lead hazards, but the use of NSF/ANSI Standard 53 certified lead filters is the most thorough means of lead-water safety.
- At-risk populations of women and children living in buildings where lead service lines are present, including women who are pregnant, may become pregnant (woman ages 15-45) or are breastfeeding, and children up to the age of 6, should drink and cook only with water that has been filtered with an NSF/ANSI Standard 53 lead certified filter.
- If using water directly from the faucet (without a filter), only cold water that has been well-flushed for a minimum of three minutes should be used. Not running your water for the recommended length of time may increase your risk of lead exposure.
- To learn more, visit MWW Lead and Water at <https://Milwaukee.gov/WaterQuality/LeadAndWater>.



Other Compliance

Deficiency description: Milwaukee Water Works was notified of the following deficiency on August 6, 2019, "System is not implementing a comprehensive Cross-Connection Control Program," with a scheduled correction date of March 31, 2020.

Actions taken: The Milwaukee Water Works developed a Cross-Connection Control Plan to meet the March 31, 2020 deadline. A cross-connection is any actual or potential physical connection between a drinking water system and a source or system of non-drinkable water or substances. An example is a hose connected to a laundry tub faucet that is submerged in a sink below filled with soapy water. This plan is the result of a two-year redesign of the utility's Cross-Connection Control Program. The program will bring MWW into compliance with NR 810.15 by December 31, 2021 per WDNR order.

Other Educational Information

Cryptosporidium

Cryptosporidium is a microscopic protozoan that, when ingested, can result in diarrhea, fever, and other gastrointestinal symptoms. The Milwaukee Water Works and Milwaukee Health Department consider *Cryptosporidium* detection a priority, and since 1993, have continued to test Lake Michigan source water and treated water for *Cryptosporidium*. *Cryptosporidium* is found in many surface water sources (lakes, rivers, streams) and comes from human and animal wastes in the watershed. The risk of *Cryptosporidium* infection from drinking water has been reduced to extremely low levels by an effective treatment combination (see page 2), which places Milwaukee Water

Works in the Bin 1 classification (lowest risk) for *Cryptosporidium* treatment requirements set by the DNR.

The Milwaukee Water Works provides a brochure based on EPA and CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*. Obtain a copy from our Customer Service Center, (414) 286-2830, or at <https://Milwaukee.gov/water/WaterQuality> and scroll down to Resource Links, choose "Information for persons with weakened immune systems."

Information for Those with Compromised Immune Systems and/or Vulnerable Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available at <https://CDC.gov/parasites/crypto/audience-immune-compromised.html> and at <https://CDC.gov/parasites/water.html> and from the EPA's safe drinking water hotline at 1-800-426-4791.

Notice to Parents of Infants Six Months of Age or Younger

According to the CDC, the proper amount of fluoride, from infancy and at all ages throughout life, helps prevent and control tooth decay (cavities). Therefore, the Milwaukee Water Works, following public health recommendations, maintains a level of fluoride in our drinking water that is both safe and effective. The following is an advisory regarding fluoride and young infants:

The American Academy of Pediatrics recommends exclusive breastfeeding for the first six months of a child's life, followed by continued breastfeeding as complementary foods are introduced, for optimal short- and long-term health advantages. For more information, visit:

<https://pediatrics.aappublications.org/content/129/3/e827>.

As of August 31, 2012, Milwaukee water is fluoridated at a

level not to exceed 0.7 mg/L. According to the CDC, for infants up to six months of age, if tap water is fluoridated or has substantial natural fluoride (0.7 mg/L or higher) and is being used to dilute infant formula, a parent may consider using a low-fluoride alternative water source. Bottled water known to be low in fluoride is labeled as purified, deionized, demineralized, distilled, or prepared by reverse osmosis. Ready-to-feed (no-mix) infant formula typically has little fluoride and may be preferable at least some of the time. If breastfeeding is not possible, parents should consult a pediatrician about an appropriate infant formula option. Parents should be aware that there may be an increased chance of mild dental fluorosis if the child is exclusively consuming infant formula reconstituted with fluoridated water. Dental fluorosis is a term that covers a range of visible changes to the enamel surface of the tooth. For more information on dental fluorosis and the use of fluoridated drinking water in infant formula, go to <https://CDC.gov/fluoridation>.

Contact Us

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Open M-F, 7:30 a.m. to 5:00 p.m.

Phone: (414) 286-2830
TDD: (414) 286-8801
Fax: (414) 286-5452

24-hour Water Control Center:
(414) 286-3710

For non-emergency contact:
watwebs@milwaukee.gov
<https://Milwaukee.gov/water>

Para una explicación en Español,
por favor llame al:
(414) 286-2830.