



Menomonee Falls Water Utility
W156N8480 Pilgrim Road
Menomonee Falls, WI 53051
262-532-4800

CONSUMER CONFIDENCE REPORT 2016 SURFACE WATER

INTRODUCTION

The Village of Menomonee Falls Water Utility is pleased to present the annual Drinking Water Quality Report to you. This report informs the public about the source from which quality water is provided to our customers in 2016. In this report, we provide you with details of the Village's water source, any compounds or contaminants that have been detected in the water distribution system, and how the levels of these substances compare to the standards set by governmental regulatory agencies.

The Utility is dedicated to providing our customers with accurate information pertaining to the quality of the water supply. The Village of Menomonee Falls Water Utility and its employees are committed to protecting the public health and bringing water that is safe to drink for our customers. We are pleased to report that the water quality test results met all federal and state requirements for the year 2016.

WATER SYSTEM INFORMATION

If you have any questions relating to this report, or any other concerns that you would like addressed, please call the Menomonee Falls Utilities office at (262) 532-4800, Monday through Friday between 8:00 a.m. and 4:30 p.m.

Participate in discussions on water quality by attending the Village of Menomonee Falls Utilities & Public Works Committee meetings which are normally held on the first & third Monday of each month at 5:30 p.m. in Conference Room 3338 at Village Hall, W156N8480 Pilgrim Road. Please contact the Utility Department for a schedule at (262) 532-4800 or visit our website at www.menomoneefalls.org.

SOURCE OF YOUR MENOMONEE FALLS WATER

The Village of Menomonee Falls Utility purchases water from the City of Milwaukee. The source of the drinking water is Lake Michigan, a surface water source.

In addition to the Menomonee Falls Consumer Confidence Report (CCR), you will find the Milwaukee Water Works CCR included with this report.

ADDITIONAL INFORMATION

All drinking water may reasonably be expected to contain at least small amounts of some contaminants. However, the presence of these contaminants does not necessarily indicate that the water poses a health risk.

Some people may be more vulnerable to contaminants in drinking water than others in the general population. Persons with compromised or weakened immune systems, such as those with cancer undergoing chemotherapy, organ transplant patients, people with HIV/AIDS, some elderly individuals, 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 reduce the risk of infection caused by cryptosporidium and other microbiological contaminants can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at **1-800-426-4791**.

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:

(1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural

livestock operations and wildlife; (2) inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming; (3) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses; (4) 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 storm water runoff and septic systems; and (5) 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. Ninety-five percent of Wisconsin communities take their water from underground water supplies (groundwater) through wells.

WHAT'S IN YOUR WATER?

Your water may contain extremely small amounts of inorganic, mineral-type compounds such as copper, fluoride, lead, nitrate, and nitrite; volatile organic compounds such as trihalomethanes; compounds that emit radiation such as beta emitters; and particles which create turbidity (water cloudiness). The compliance levels of each of these substances detected in the year 2016 are shown on the following page.

MONITORING AND REPORTING VIOLATIONS

Monitoring and reporting violations result when a water system fails to collect and/or report results for State required drinking water sampling. "Sample location" refers to the distribution system, or an entry point or well number from which a sample is required to be taken. If a water system tests annually, or more frequently, the results from the most recent year are shown on the CCR.

More than 99 percent of Wisconsin's public water supplies meet those standards for regulated chemicals. The state also monitors for chemicals not regulated by the federal government and issues health advisories if needed.

LEAD AND COPPER

The Menomonee Falls Water Utility is required to test the drinking water in a number of homes for lead and copper. These minerals are able to enter the drinking water by way of corrosion of home plumbing systems. The Menomonee Falls Water Utility has been optimizing the control of corrosion by adding phosphate to drinking water treatments. The levels of lead and copper in the drinking water increase as corrosion levels increase and as the length of time the water remains in contact with the plumbing increase. If corrosive water remains motionless in the plumbing system for six hours or more, lead and copper levels may exceed the maximum level. The action levels set for lead and copper are shown on the reverse side.

The Utility would like to take this opportunity to express its thanks again to the residents that participated in the collection of these samples.

Additional information is available from the US EPA's safe drinking water hotline at **1-800-426-4791**.

Sincerely,

Jeffrey S. Nettlesheim, P.E.
(262) 532-4848
Director of Utilities

Randal L. Hager
(262) 532-4807
Utilities Superintendent

Menomonee Falls Water Utility

Village of Menomonee Falls
W156N8480 Pilgrim Road
Menomonee Falls, WI 53051-3140
(262) 532-4800



During the course of the year 2016, the Menomonee Falls Water Utility purchased 1.1 billion surface water gallons from the City of Milwaukee. There was no blending of surface and groundwater during 2016. The municipal wells that are located in the surface water service area are exercised and maintained on a routine basis. Listed below are the test results for Menomonee Falls Municipal purchased water during the year 2016.

Disinfection Byproducts

Contaminant (Units)	Site	MCL	MCLG	Level Found	Range	Sample Date (if prior to 2016)	Violation	Typical Source of Contaminant
HAA5 (ppb)	D-22	60	60	2	0-1		No	By-product of drinking water chlorination
TTHM (ppb)	D-22	80	0	9.3	3.2-11.7		No	By-product of drinking water chlorination
HAA5 (ppb)	D-81	60	60	4	0-3		No	By-product of drinking water chlorination
TTHM (ppb)	D-81	80	0	9.6	5.2-14.5		No	By-product of drinking water chlorination

Inorganic Contaminants

Contaminant (Units)	Action Level	MCLG	90 th Percentile Level Found	# of Results	Sample Date (If prior to 2016)	Violation	Typical Source of Contaminant
Copper (ppm)	AL=1.3	1.3	0.0866	0 of 31 results were above the action level.	8/14/2014	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	AL=15	0	4.60	1 of 31 results were above the action level.	8/1/2014	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 this monitoring.

Contaminant (units)	Median Value	Range	Sample Date (if prior to 2016)
Chloromethane (Methylchloride) (ppb)	0.44	0.44	6/12/2012
Bromochloromethane (ppb)	0.62	0.62	9/8/2010
Chlorate (mg/l)	71	27-110	
Chromium (mg/l)	.24	.20-.29	
Chromium Hexavalent (mg/l)	0.20	.17-.22	
Strontium (ug/l)	115	110-120	
Vanadium (ug/l)	.26	.23-.28	
Molybdenum (ug/l)	1.0	1.0	

Information on Monitoring for Cryptosporidium and Radon

Our water system did not monitor our water for cryptosporidium or radon during 2016. We are not required by State or Federal drinking water regulations to do so.

Important Information about Your Drinking Water

Menomonee Falls failed to report on time about an assessment of the facility and distribution system

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. We found that coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found.

We collected a sample on October 24, 2016 and a sample on October 25, 2016 in a part of our system. These two samples were total coliform positive. We were required to conduct a Level One Assessment within 30 days of learning of the additional total coliform positive (TC+) sample. A Level One 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. We failed to send the required assessment report within 30 days to the DNR, which is a violation of State and Federal Safe Drinking Water Standards. The assessment report was due on November 26, 2016 and was received by the DNR on December 1, 2016.

What precautions should be taken at this time? There are no special precautions you need to take at this time. The Water Utility immediately isolated the problem area and the public was not at risk. If it had been, you would have been notified immediately. Failure to conduct an assessment to identify the sanitary defect that triggered the assessment has the potential to cause distribution system contamination.

What was done to correct the problem? The Water Utility immediately informed the DNR about the sample results. The area was immediately isolated, Pump Station 5 was taken out of service and watermains were flushed out. The assessment investigation revealed a faulty seal on a watermain entering the reservoir. The repair was made on December 2, 2016. After consecutive safe samples were tested, the reservoir and pump station were put back in service thereafter.

If you have any questions about your drinking water or its safety, please contact:

Menomonee Falls Water Utility:

Jeffrey Nettesheim, P.E. or
Director of Utilities

Randal Hager
Utility Superintendent

Menomonee Falls Water Utility
W156N8480 Pilgrim Road
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(262)-532-4800

2016 Consumer Confidence Report

The U.S. Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR) require drinking water utilities including the Milwaukee Water Works (MWW) to provide an annual Consumer Confidence Report to inform you of the source and quality of your drinking water, compliance and detected contaminants, and results from treating and monitoring water from January 1 through December 31, 2016.

Important Information

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

Informacion Importante para nuestros clientes que hablan español

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 nyeeb
tsi tau cov lug nuav, thov lwm tug
txhais rua mej.

The Milwaukee Water Works is recognized as a national leader in providing safe, high-quality drinking water

- Milwaukee water complies with all state and federal drinking water standards. The Milwaukee Water Works is known for its extensive water quality monitoring program that reaches beyond basic requirements. The program includes organisms and contaminants, or substances, that are not yet regulated but considered of emerging concern and/or are under study for possible effects on public health.
- **The Water Research Foundation (WRF) awarded its 2016 Outstanding Subscriber Award for Applied Research to the Milwaukee Water Works.** Milwaukee was honored for successfully applying its own and WRF research to make notable improvements to the water treatment, delivery and management processes.
- **The Milwaukee Water Works was featured as WRF observed its 50th anniversary** as seen in a video here. (<http://www.waterrf.org/the-foundation/Pages/celebrating50years.aspx>) Read the Milwaukee Water Works and Ozone story. (<http://www.waterrf.org/the-foundation/Documents/Milwaukee-Water-Works-and-Ozone.pdf>)
- **The Wisconsin Section of the American Water Works Association (AWWA) presented its 2016 Utility Special Achievement Award to the Milwaukee Water Works** for working effectively with health and regulatory agencies to shape field and water quality monitoring activities and customer outreach to reduce lead at customers' taps. Read about the Lead Service Line award. (<http://city.milwaukee.gov/ImageLibrary/Groups/WaterWorks/files/WIAWWAUtilityAwardMilwaukeeWaterWorksSept2016.pdf>)
- **The Milwaukee Water Works Water Quality Section was published nationally** in the January 2017 issue of the *Journal AWWA* in a report of Milwaukee's 2014-2016 research findings about lead and drinking water sampling. Collaborative review of the sampling was provided by the City of Milwaukee Health Department, Wisconsin Department of Health Services, Department of Natural Resources, and the EPA. Access is available to members of the AWWA: "Lead Water Service Lines: Extensive Sampling and Field Protocol Protects Public Health." (<https://www.awwa.org/publications/journal-awwa/abstract/articleid/63106515.aspx>)

Item 1: Water System Information

If you have questions about this report, please call one of our Water Quality professionals, (414) 286-2585.

Participate in decisions that affect drinking water quality

Attend meetings of the City of Milwaukee Common Council Public Works Committee, which meets at 9:00 a.m. on the first Wednesday of each month in the Milwaukee City Hall, Room 301B, 200 East Wells Street, Milwaukee, WI 53202. You may also attend meetings of the City of Milwaukee Common Council, which meets 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 a schedule, (414) 286-2221, or visit <http://city.milwaukee.gov/cityclerk/PublicRecords/Agendas.htm>

Item 2: Source of Water

Milwaukee's water source is surface water from Lake Michigan.

Item 3: Definitions

<	"less than" or not detected
AL	Action Level: 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 90 th percentile for homes at greatest risk.
Haloacetic Acids	HAA5: Monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, dibromoacetic acid, tribromoacetic acid, bromochloroacetic acid, dibromochloroacetic acid, and bromodichloroacetic acid.
HA	Health Advisory: 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.
Median	The middle value of the entire data set for the parameter (range from high to low)
µg/L	Microgram per liter or parts per billion
MCL	Maximum Contaminant Level: 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.
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.
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.
mg/L	Milligram per liter or parts per million
NA	Not Applicable
ng/L	Nanogram per liter
NR	Not Regulated
NTU	Nephelometric Turbidity Unit: A unit to measure turbidity.
pCi/L	Picocuries per Liter: A measure of radioactivity. A picocurie is 10 ⁻¹² curies.
RAA	Running Annual Average: The average of four quarterly samples collected in one 12-month period.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water
Trihalomethanes	TTHMs: Chloroform, bromodichloromethane, dibromochloromethane, and bromoform
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 include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. For 2015, the highest combined filter effluent value detected or Maximum Value was 0.21 NTU and < 0.3 NTU 100% of the time.

Item 4: Detected Contaminants – Primary The tables on the following pages show the regulated contaminants, or substances, detected in Milwaukee's drinking water during 2016. It also includes all contaminants tested for in the most recent (2013) Unregulated Contaminant Monitoring Rule – Phase 3 (UCMR-3) mandatory monitoring program. **All contaminant levels are within applicable state and federal laws.** The tables contain the name of each contaminant, the highest level regulated (Maximum Contaminant Level, or MCL), the ideal goals for public health (Maximum Contaminant Level Goal, or MCLG), the median value detected, the usual sources of such contamination, possible health effects, and footnotes explaining the findings and units of measurement. 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 to good health, but excessive quantities can be hazardous.

Primary Contaminants							
Substance	Ideal Goals (MCLG)	Highest Level Allowed (MCL)	Median Value	Highest Level Detected	Source(s) of Contaminant	Meets Standard	Health Effects
Antimony	6 ug/L	6 ug/L	0.15 ug/L	0.16 ug/L	Natural deposits	Yes	Increase in blood cholesterol; decrease in blood sugar
Arsenic	10 ug/L	10 ug/L	0.5 ug/L	0.5 ug/L	Natural deposits	Yes	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer
Atrazine		3 ug/L	0.02 ug/L	0.02 ug/L	Herbicide	Yes	Cardiovascular system or reproductive problems
Barium	2 mg/L	2 mg/L	0.019 mg/L	0.019 mg/L	Natural deposits	Yes	Increase in blood pressure
Bromate	10 ug/L	10 ug/L	3.2 ug/L	7.6 ug/L	Byproduct of drinking water disinfection	Yes	Increased risk of cancer
		RAA					
Chlorate	NA	NR	82 ug/L	210 ug/L	Byproduct of drinking water disinfection	NR	Affects red blood cells oxygen carrying capacity, affects on thyroid function.
Chlorine, total	4 mg/L	4 mg/L	1.57 mg/L	2.00 mg/L	Residual of drinking water disinfection	Yes	Eye/nose irritation; stomach discomfort
Chlorite	0.8 mg/L	1.0 mg/L	0.003 mg/L	0.004 mg/L	Byproduct of drinking water disinfection	Yes	Anemia; infants and young children: nervous system effects
Chromium, hexavalent	NA	NR	0.19 ug/L	0.23 ug/L	Natural deposits and manufacturing	NR	Effects on the liver, kidney, gastrointestinal and immune systems.
Chromium, total	NA	100 ug/L	0.5 ug/L	0.5 ug/L	Natural deposits and manufacturing	Yes	Chromium (III) is an essential element in humans, with a daily intake of 50 to 200 ug/d recommended for adults.
Copper	1.3 mg/L	1.3 mg/L (AL)	<0.002 mg/L	0.016 mg/L	Corrosion of household plumbing systems	Yes	Gastrointestinal distress, long term exposure liver or kidney damage
Fluoride	4 mg/L	4 mg/L	0.57 mg/L	0.69 mg/L	Water treatment additive Natural deposits	Yes	Bone disease (pain and tenderness of the bones); Children may get mottled teeth
Haloacetic Acids (9), Total		60 ug/L	2.6 ug/L	6.4 ug/L	Byproduct of drinking water disinfection	Yes	Increased risk of cancer
Individual Haloacetic Acids					Individual Haloacetic Acids		
Bromochloroacetic Acid			<1.0 ug/L	1.3 ug/L			
Bromodichloroacetic Acid			<1.0 ug/L	1.5 ug/L			
Dichloroacetic Acid			<1.0 ug/L	2.0 ug/L			
Trichloroacetic acid			<1.0 ug/L	1.3 ug/L			
Heterotrophic Plate Count	NA	TT	Met	Met	Naturally present in the environment	Yes	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water.
			Requirement	Requirement			
Nitrate, as N		10 mg/L	0.41 mg/L	0.70 mg/L		Yes	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Nitrite, as N		1 mg/L	0.003 mg/L	0.024 mg/L		Yes	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Perchlorate	NA	Regulation pending	0.13 ug/L	0.14 ug/L	Byproduct of drinking water disinfection	NR	Inhibits the absorption of iodine by the thyroid glands, leading to developmental and learning disabilities in children.
Strontium		NR	110 ug/L	110 ug/L	Natural deposits	Yes	Effects on bone growth in children
Radionuclides					Natural deposits	Yes	
Individual Radionuclides					Individual Radionuclides		
Gross Alpha Particles, excluding Ra + U		15 pCi/L	1.86 ± 2.00	3.42 ± 1.99			Increased risk of cancer
Gross Alpha Particles	NR		2.03 ± 2.0	3.6 ± 2.0			Increased risk of cancer
Gross Beta Particles		50 pCi/L	3.9 ± 1.9	4.0 ± 1.9			Increased risk of cancer
Radium 226		5 pCi/L	0.16 ± 0.16	0.20 ± 0.18			Increased risk of cancer
Radium 228		5 pCi/L	1.05 ± 0.58	1.4 ± 0.7			Increased risk of cancer
Radium, combined (226 + 228)		5 pCi/L	1.20 ± 0.60	1.51 ± 0.71			Increased risk of cancer
Uranium		30 mg/L	<0.0010	<0.0010			Increased risk of cancer, kidney toxicity
Trihalomethanes, total	NA	80 ug/L	3.6 ug/L	9.1 ug/L	Byproduct of drinking water disinfection	Yes	Liver, kidney or central nervous system problems; increased risk of cancer
Individual Trihalomethanes					Individual Trihalomethanes		
Bromodichloromethane			0.5 ug/L	3.5 ug/L			
Bromoform			<0.5 ug/L	0.5 ug/L			
Chloroform			1.8 ug/L	3.4 ug/L			
Dibromochloromethane			1.4 ug/L	2.8 ug/L			
Turbidity	NA	<0.3 NTU	0.05 NTU	0.33	Natural deposits	Yes	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness.
		95% of the time		1-day maximum			

Item 4: Detected Contaminants – Secondary

Secondary Contaminants							
Substance	Ideal Goals (MCLG)	Highest Level Allowed (MCL)	Median Value	Highest Level Detected	Source(s) of Contaminant	Meets Standard	Health Effects
Aluminum	0.2 mg/L	0.05-0.20 mg/L	0.051 mg/L	0.159 mg/L	Water treatment additive Natural deposits	NR	None in drinking water, aesthetic quality of water.
Chloride	250 mg/L	250 mg/L	14.5 mg/L	23.5 mg/L	Natural deposits and road salt	NR	None in drinking water, aesthetic quality of water.
Iron	300 ug/L	300 ug/L (S)	4 ug/L	25 ug/L	Natural deposits	NR	None in drinking water, aesthetic quality of water.
Manganese		50 ug/L (S)	<0.5 ug/L	1.0 ug/L	Natural deposits	NR	None in drinking water, aesthetic quality of water.
pH	NA	6.5 - 8.5 (S)	7.62	7.89	Naturally present in the environment	Yes	NA
Sulfate		500 mg/L (S)	28.0 mg/L	32.4 mg/L	Natural deposits	Yes	None in drinking water, aesthetic quality of water.
Total Dissolved Solids	500 mg/L	500 mg/L (S)	180 mg/L	207 mg/L	Aggregate of dissolved minerals	NR	None in drinking water, aesthetic quality of water.
Zinc		5 mg/L (S)	<0.01 mg/L	0.06 mg/L	Natural deposits Metal plating	Yes	None in drinking water, aesthetic quality of water.

Lead and Copper Compliance Monitoring Results 2014

Lead and Copper	Action Level	90th percentile	Highest level detected
Copper (2014)	1200 ug/L	38 ug/L	130 ug/L
Lead (2014)	15 ug/L	8.2 ug/L	21 ug/L

UCMR-3 Assessment Monitoring (2013)

UCMR-3 Assessment Monitoring (2013)		Median Value	Highest Level Detected	Source of Contaminants	Health Effects
Chromium	0.3 ug/L	0.3 ug/L	Natural deposits, manufacturing		Chromium (III) is an essential element in humans, with a daily intake of 50 to 200 ug/d recommended for adults.
Cobalt	<1.0 ug/L	<1.0 ug/L	Natural deposits.		possible fetal development, possible human carcinogen
Molybdenum	1.0 ug/L	1.1 ug/L	Natural deposits.		Toxic to animals at very high concentrations.
Strontium	0.12 mg/L	0.12 mg/L	Natural deposits.		Effects on bone growth in children
Vanadium	0.3 ug/L	0.3 ug/L	Natural deposits, manufacturing		Gastrointestinal symptoms
Chromium, Hexavalent	0.20 ug/L	0.25 ug/L	Natural deposits, manufacturing		Effects on the liver, kidney, gastrointestinal and immune systems.
Chlorate	0.06 ug/L	0.10 ug/L	Byproduct of drinking water disinfection		Affects red blood cells oxygen carrying capacity, affects on thyroid function.
1,4-Dioxane	<0.07 ug/L	<0.07 ug/L	Manufacturing of paints and solvents		Likely to be carcinogenic
Bromochloromethane	<0.06 ug/L	<0.06 ug/L	Byproduct of drinking water disinfection, Fire extinguishing agent		Maybe toxic to kidneys, lungs, liver, respiratory tract, skin, eyes and central nervous system.
Bromomethane	<0.2 ug/L	<0.2 ug/L	Fumigant		Increased cancer risk
1,3-Butadiene	<0.1 ug/L	<0.1 ug/L	Plastic manufacturing		Increased cancer risk
Chlorodifluoromethane	<0.08 ug/L	<0.08 ug/L	Refrigerant		Cardiac effects
Chloromethane	<0.2 ug/L	<0.2 ug/L	Byproduct of drinking water disinfection, manufacturing		Central nervous system effects
1,1-Dichloroethane	<0.03 ug/L	<0.03 ug/L	Plastic manufacturing		Increased cancer risk
1,2,3-Trichloropropane	<0.03 ug/L	<0.03 ug/L	Solvents, pesticide manufacturing		Increased cancer risk
Perfluorobutanesulfone acid (PFBS)	<0.09 ug/L	<0.09 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
Perfluoroheptanoic acid (PFHpA)	<0.01 ug/L	<0.01 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
Perfluorohexanesulfonic acid (PFHxS)	<0.03 ug/L	<0.03 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
Perfluorononanoic acid (PFNA)	<0.02 ug/L	<0.02 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
Perfluorooctane sulfonate (PFOS)	<0.04 ug/L	<0.04 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
Perfluorocatanoic acid (PFOA)	<0.02 ug/L	<0.02 ug/L	Waterproofing, textile manufacturing		Effects on blood, liver and kidneys
UCMR-3 Screening Survey (2013)					
4-Androstene-3, 17-dione	<0.3 ng/L	<0.3 ng/L	Hormone	Endocrine disruptor	
Equilin	<4 ng/L	<4 ng/L	Hormone	Endocrine disruptor	
17 beta Estradiol	<0.4 ng/L	<0.4 ng/L	Hormone	Endocrine disruptor	
Estriol	<0.8 ng/L	<0.8 ng/L	Hormone	Endocrine disruptor	
Estrone	<2 ng/L	<2 ng/L	Hormone	Endocrine disruptor	
17 alpha-Ethyln Estradiol	<0.9 ng/L	<0.9 ng/L	Hormone	Endocrine disruptor	
Testosterone	<0.1 ng/L	<0.1 ng/L	Hormone	Endocrine disruptor	

Item 5: Information on monitoring for *Cryptosporidium*, Radon, and Other Contaminants (if detected)

Cryptosporidium was not detected in any of 24 source water samples during 2016. There were no detections of *Cryptosporidium* in the finished water in 2016.

The table below shows the unregulated substances detected in Milwaukee's drinking water during 2016. Any known possible health effects for these substances are listed in the table. A complete list of over 500 substances tested for can be found at <http://city.milwaukee.gov/ImageLibrary/Groups/WaterWorks/files/UndetectedChemicalContaminants-TreatedWater.pdf>

Substance	Range of values detected	Source of Substance	Health Effects
Acesulfame-K	30 ng	Artificial sweetner	None proposed for human
Ammonia, ¹ as N	0.02 - 0.66 mg/L	Disinfection with chloramines; wastes; fertilizers and natural processes	None proposed for human but toxic for aquatic life
Boron ²	18 ug/L	Naturally occurring; borax mining and refining; boric acid manufacturing	Stomach, liver, kidney or central nervous system problems
Bromide	25 ug/L - 62 ug/L	Naturally occurring	None from drinking water
Bromochloroacetonitrile	0.6 - 1.3 ug/L	Byproduct of drinking water disinfection	Increased risk of cancer
Calcium	34 mg/L	Naturally occurring	None from drinking water
Chloropicrin	<0.5 - 1.5 ng/L	Fungicide, herbicide, insecticide and nematicide	Eye/nose irritation; stomach discomfort
DEET	15 ng/L	Insect repellant	None proposed for human, slightly toxic to birds, fish, aquatic invertebrates
Desethylatrazine	<0.1 - 0.1 ng/L	Herbicide	Endocrine disruptor
Dibromoacetonitrile	<0.5 - 1.7 ng/L	Byproduct of drinking water disinfection	Eye/nose irritation
Dichloroacetonitrile	<0.5 - 3.3 ng/L	Byproduct of drinking water disinfection	Increased risk of cancer
1,1-Dichloropropane	<0.5 - 0.8 ng/L	Byproduct of drinking water disinfection	Increased risk of cancer
Erucylamide	3.3 ug/L	Manufacturing of paints, surfactants and lubricants.	Gastrointestinal symptoms
Gallium	<1.0 - 1.0 ug/L	Electronics manufacturing	Damage to liver and kidneys, may affect nervous system and lungs.
Lithium	2 ug/L	Naturally occurring	Affects to thyroid function
Magnesium	12 mg/L	Naturally occurring	None from drinking water
Nickel	<1.0-3.2 ug/L	Naturally occurring	None from drinking water
N-Nitrosodiethylamine (NDEA)	<2.0 - 2.3 ng/L	Rubber, leather, pesticide and dye manufacturing	None in drinking water.
Silica	1.8 - 2.0 mg/L	Naturally occurring	Effects on liver, increased cancer risk
Sucralose	32-36 mg/L	Artificial sweetner	None from drinking water
Total Organic Carbon	1.1 - 1.7 mg/L	Naturally present in the environment	None proposed for human
Total Solids	150 - 260 mg/L	Measure of solid materials in water	Total organic carbon has no health effects.
1,1,1-Trichloropropane	<0.5 - 2.0 ug/l	Byproduct of drinking water disinfection	None from drinking water
			Increased risk of cancer

Definitions

< "less than" or not detected

HA Health Advisory: 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.

µg/L microgram per liter or parts per billion

mg/L milligram per liter or parts per million

ng/L Nanogram per liter

¹Ammonia has a lifetime HA of 30 mg/L

²Boron has a lifetime HA of 6 mg/L

³Isophorone has a lifetime HA of 100 µg/L

Item 6: Compliance with Other Drinking Water Regulations

The Milwaukee Water Works had one monitoring violation, or Notice of Non-Compliance, of the Safe Drinking Water Act in 2016. The Notice of Non-Compliance was issued by the Wisconsin Department of Natural Resources. Although MWW properly collected the 2016 third quarter disinfection by-product (DBP) compliance samples, the temperature of one of the six samples exceeded the acceptable temperature for analysis when the sample arrived at the analytical laboratory. The laboratory failed to notify MWW about this, so we were unable to collect a replacement sample within the designated sampling interval. Even though the results of the other five samples were just fine, the DNR considers that the samples were never collected. We were therefore in violation of monitoring regulations. The results of the samples that were

analyzed were much lower than the acceptable concentration limits for DBPs, as they always are for our water system. (DBPs are very low in MWW's treated water due to a combination of the high quality of Lake Michigan source water and to the use of ozone as the primary disinfectant in our water treatment processes.) MWW remains committed to providing the cleanest and safest tap water that we can to all our customers.

Item 7: Variances and Exemptions (not applicable)

Item 8: Required Educational Information

As water flows through rivers and lakes and over land surfaces, naturally occurring substances may be dissolved in the water that reaches Lake Michigan. These substances are referred to as contaminants. Surface water sources may be highly susceptible to contaminants. Surface water is also affected by animal and human activities. Read the [DNR Source Water Assessment for Milwaukee](#). Contaminants that may be present in source water include microbial contaminants such as viruses, protozoa and bacteria; inorganic contaminants such as salts and metals, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

To ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. 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 the 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. The table of contaminants detected by the Milwaukee Water Works is on pages 3-4 of this report.

Health Precautions

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 tap water from their health care providers. EPA/ Centers for Disease Control (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 at (800) 426-4791, and the CDC at [cdc.gov/parasites/crypto](#).

Cryptosporidium

Cryptosporidium is a microscopic protozoan that when ingested, can result in diarrhea, fever, and other gastrointestinal symptoms. In collaboration with the Milwaukee Health Department, we consider *Cryptosporidium* detection a priority, and since 1993, we have continued to test source 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 our Customer Service Center, (414) 286-2830, or at [milwaukee.gov/water](#), click on Water Quality at the top, and scroll down to Resources, choose "[Information for Persons with weakened immune systems](#)."

Lead and Copper

When lead is found in drinking water it is usually because lead can dissolve from lead service lines and plumbing fixtures, especially when water sits unused for several hours. To prevent lead from dissolving into the water, we add phosphate that forms a protective coating inside pipes. We have provided this corrosion control since 1996 to meet EPA standards. The most common source of lead is from paint in older homes built before 1978. Lead can cause health problems if it enters

your body. Children under the age of six, and women who may become pregnant, are pregnant, or are breastfeeding are at special risk. Find more information at Milwaukee.gov/lead and LeadSafeMke.com

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. Per Common Council File No. 120187 adopted on July 24, 2012, we are required to include the following advisory regarding fluoride and young infants in our annual water quality reports and on our website.

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. Go to <http://pediatrics.aappublications.org/content/129/3/e827> for more information.

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. Go to http://www.cdc.gov/fluoridation/safety/infant_formula.htm for more information on dental fluorosis and the use of fluoridated drinking water in infant formula.

3/31/17