ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2017

Presented By

EST 1808
CITY OF
DELAWARE
OHIO

PWS ID#: OH2100311

Our Dedication

Once again, the City of Delaware Water Treatment Plant is proud to present our annual water quality report. This report, mandated by the U.S. Environmental Protection Agency and funded by the City, covers all required testing results between January 1 and December 31, 2017.

Over the years, water plant staff have dedicated themselves to supplying drinking water that meets or exceeds all state and federal standards. The City has accomplished this by continually striving to adopt new and better methods for delivering the best-quality drinking water possible. As regulations and drinking water standards change, it is the City's commitment to our residents to incorporate these changes system-wide in an expeditious and cost-effective manner. As new drinking water challenges emerge, we will be vigilant in maintaining our objective of providing high-quality drinking water at an affordable price.

If you have any questions or would like to discuss the City's water system in more detail, I encourage you to e-mail me at bjordan@delawareohio.net.

Sincerely,

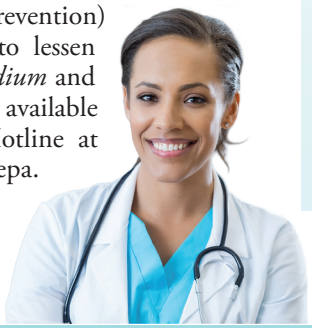
Blake Jordan, *Public Utilities Director*
City of Delaware, Ohio

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. Delaware City Council meets twice a month and the City's Public Works/Public Utilities Committee meets quarterly. Feel free to call (740) 203-1010 for a schedule of meeting times, or visit www.delawareohio.net.

Important Health Information

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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Lead in Home Plumbing

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. We are 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/lead.

Where Does My Water Come From?

The City of Delaware's primary source of water is the Olentangy River. The City has the capability to blend this river water with ground water wells drilled to more than 200 feet deep, located on the plant premises and a well field located on Penry Road, about two miles north of the water plant. Combined, the water treatment facility treated and provided more than 1.22 billion gallons of potable water to the City of Delaware during 2017. In 2017 we averaged 3.33 million gallons per day.

Source Water Assessment

Surface waters are by their nature susceptible to contamination, and numerous potential contaminant sources along their banks make them more so. The protection areas around the Olentangy River and the well fields include a moderate number of potential contaminant sources, including agricultural runoff, inadequete septic systems, leaking underground storage tanks, and road and rail bridge crossings. As a result, the drinking water supplied to the City of Delaware's public water system is considered to have a high susceptibility to contamination.

Historically, the Delaware public water system has effectively treated this source water to meet drinking water quality standards. The potential for water quality impacts can be further decreased by implementing measures to protect the Olentangy River and the local aquifer. More detailed information is provided in the City of Delaware's Drinking Water Assessment report, which can be obtained by calling the Public Utilities Department at (740) 203-1900.

Count on Us

Delivering high-quality drinking water to our customers involves far more than just pushing water through pipes. Water treatment is a complex, time-consuming process. Because tap water is highly regulated by state and federal laws, water treatment plant and system operators must be licensed and are required to commit to long-term, on-the-job training before becoming fully qualified. Our licensed water professionals have a basic understanding of a wide range of subjects, including mathematics, biology, chemistry, and physics. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water;
- Monitoring and inspecting machinery, meters, gauges, and operating conditions;
- Conducting tests and inspections on water and evaluating the results;
- Maintaining optimal water chemistry;
- Applying data to formulas that determine treatment requirements, flow levels, and concentration levels;
- Documenting and reporting test results and system operations to regulatory agencies; and
- Serving our community through customer support, education, and outreach.

So, the next time you turn on your faucet, think of the skilled professionals who stand behind each drop.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call the City of Delaware, Department of Public Utilities Office, at (740) 203-1900. For information concerning your water bill, please call (740) 203-1250.

How Long Can I Store Drinking Water?

The disinfectant in drinking water will eventually dissipate even in a closed container. If that container housed bacteria prior to filling up with the tap water, the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water could be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth.

Water Treatment Process

The treatment process consists of a series of steps. Since the City utilizes ground water and surface water for raw water, these two raw sources of water are treated separately. The raw surface water is drawn from Olentangy River and sent to a mixing tank, where aluminum chlorohydrate (ACH) is added, which cause small particles to adhere to one another (called floc) making them heavy enough to settle into a basin from which the sediment is removed. The surface water then travels through ultrafiltration (UF) membranes to remove smaller suspended particles followed by passing through nanofiltration (NF) membranes; very pristine water emerges after these treatment processes. The raw ground water is drawn from the City's 200-ft deep ground water wells and is sent through pressure filters where iron and manganese are removed. The ground water then travels through separate NF membranes where comparable pristine water emerges. These two separate treatment processes then combine prior to going into the finished water clear well where chlorine is then added as a precaution against any bacteria that may still be present. (We carefully monitor the amount of chlorine, adding the lowest quantity necessary to protect the safety of your water without compromising the taste.) Finally, fluoride (used to prevent tooth decay) and a corrosion inhibitor (used to protect distribution system pipes) are added before the water is pumped into the water distribution system, elevated water towers, and into your home or business.

Water Conservation

You can play a role in conserving water and saving yourself money in the process by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water-using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

Testing for *Cryptosporidium*

Cryptosporidium is a microbial parasite found in most surface water throughout the United States. If *Cryptosporidium* were present in the finished water, such symptoms would include nausea, diarrhea, and abdominal cramps. Most healthy individuals would be able to overcome these symptoms within a few weeks. However, immune-compromised people would be at great risk of developing a life-threatening illness.

The Delaware City Water Plant has tested the raw surface water for *Cryptosporidium* per US EPA and state EPA guidelines to determine the amount of water treatment that is required to protect consumers of potable water produced by public water systems nationwide. The City of Delaware is proud to let our customers know that the current water treatment system that is in operation effectively removes 100 percent of the amount of *Cryptosporidium* detected in the raw surface water. This type of treatment process was also approved and verified by the Ohio EPA.

Test Results

During the past year, we have taken hundreds of water samples to determine the presence of any radioactive, biological, inorganic, volatile, organic, or synthetic organic contaminants. The table below only shows the contaminants that were detected in the water during 2017. The State allows us to monitor for certain substances less often than once per year because the concentration of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year the sample was taken.

Please note that we have a current, unconditional license to operate our water system.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Atrazine (ppb)	2017	3	3	0.10	0.00–0.30	No	Runoff from herbicide used on row crops
Barium (ppm)	2017	2	2	0.013	0.013–0.013	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2017	[4]	[4]	1.9	1.3–2.3	No	Water additive used to control microbes
Haloacetic Acids [HAA] (ppb)	2017	60	NA	7.4	0.00–10.70	No	By-product of drinking water disinfection
Nitrate (ppm)	2017	10	10	0.89	0.00–2.20	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	16.48	8.90–24.80	No	By-product of drinking water disinfection
Total Organic Carbon [TOC][1] (ppm)	2017	TT	NA	0.4	0.00–1.0	No	Naturally present in the environment
TOC[1] (percentage removal)	2017	TT	NA	72.2%	72.2%–100%	No	Naturally present in the environment
Turbidity[2] (NTU)	2017	TT	NA	0.459	0.013–0.459	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2017	TT = 95% of samples meet the limit	NA	99.9	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	RANGE LOW-HIGH	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2017	1.3	1.3	0.0662	0.011–0.077	0/31	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead[3] (ppb)	2017	15	0	0.00	0.00–17.0	1/31	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Fluoride (ppm)	2017	2.0	NA	1.05	0.94–1.28	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
pH (Units)	2017	6.5-8.5	NA	8.0	7.5–8.2	No	Naturally occurring

OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
Total Alkalinity (ppm)	2017	82	62–105
Hardness (ppm)	2017	121	86–159

[1] The value reported under Amount Detected for TOC is the lowest ratio between percentage of TOC actually removed and the percentage of TOC required to be removed. A value of greater than one indicates that the water system is in compliance with TOC removal requirements. A value of less than one indicates a violation of the TOC removal requirements. Average monthly removal rate was 88.58%.

[2] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

[3] There was 1 sample that was detected above the AL at Site 1 (17ppb).

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

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.

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.

NA: Not applicable

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

removal ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

SMCL (Secondary Maximum Contaminant Level): SMCLs are established to regulate the aesthetics of drinking water like appearance, taste and odor.

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.