City of Waukegan
2020 Annual Water Quality Report

Welcome to your Annual Water Quality Report covering the period from January 1 through December 31, 2019. Your tap water met all USEPA and state drinking water health standards. We are pleased to report that our system had no violation of a contaminant level. This report summarizes important information about where your tap water comes from, how it is treated and what it contains. ***Este informe contiene informacion muy importante sobre el agua que usted bebe. Traduzcalo o hable con alquien que lo entienda bien.***

How is the water purified?

Waukegan draws water from Lake Michigan via an intake that extends into the Lake. The water undergoes various treatment processes before being delivered as finished tap water. Aluminum sulfate and polymer are added to the water to destabilize and increase the density of substances that cause turbidity (cloudiness). The water flows to the settling basins, where it undergoes gentle mixing and where turbidity causing substances are allowed to settle out. The water then flows through the filters that consist of natural media layers (gravel, sand and anthracite) to remove the remaining particles and bacteria. The water is disinfected with chlorine three times during this process and monitored for turbidity to provide the maximum barrier against bacteria, viruses and other microorganisms. Fluoride is added (as mandated by State law) to reduce tooth decay followed by phosphate to protect the integrity of water mains and house plumbing against corrosion.

What does the water contain?

Our water is tested and monitored onsite at the treatment plant every day, 24/7, 365 days a year. In addition to manual testing, we have continuous online monitoring instruments that monitor turbidity and chlorine residuals. Our turbidity instruments monitor the water every 3 seconds. That is over 94 million readings a year for just one water quality parameter. Turbidity is a measurement of cloudiness of water due to suspended particles. It is a good indicator of water quality and the effectiveness of our filtration and disinfection. Chlorine levels are monitored every 2.5 minutes. The drinking water is analyzed onsite and also by EPA approved NELAP accredited laboratories to test for over 100 contaminants in the finished water. The water is tested for bacteria, radioactive compounds, fertilizers, herbicides, insecticides as well as contaminants from plastics, petroleum, metals, textile-finishing, pharmaceutical and chemicals factories just to name a few.

Despite the concern of PCB's along Waukegan's Harbor, there are no PCB's in our drinking water. If you would like to see all the contaminants that Waukegan tested for during 2019 please go to http://water.epa.state.il.us/dww/JSP/WaterSystemDetail.jsp?tinwsys_is_number=716978&tinwsys_st_code=IL&wsnumber=IL0971900

Lead and Copper

Lead in drinking water is primarily indicative of household plumbing and/or service line corrosion. We cannot control the variety of materials used in plumbing components. However, we add blended phosphate to the water to minimize the leaching of lead containing plumbing material. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 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 at http://www.epa.gov/safewater/lead

Want to know more about Lake Michigan water?

The overall quality of Lake Michigan water has improved substantially since the late 1960's. This is primarily due to IL EPA enforcing stricter regulations regarding direct discharge of municipal and industrial wastes into the Lake. According to the *Source Water Assessment Report,* since the water supply's intake is 6,200 ft into the lake there is low susceptibility to shoreline contaminants due to mixing and dilution. The full summary of this report can be found at http://dataservices.epa.illinois.gov/swap/factsheet.aspx

Lake Michigan Harbor, 2019

Table 1 lists regulated contaminants that were found in the finished water for the year 2019. If the contaminant does not appear on the list below, it means that it was not detected in the water. Over 80 regulated contaminants are monitored.

Regulated Contaminants						
Contaminant and Source of Contamination	**Highest Level Detected (mg/L)** ***(footnote 1, 12)***	**Range of Levels (mg/L)** ***(footnote 8)***	**MCL (mg/L)** ***(footnote 2)***	**MCLG (mg/L)** ***(footnote 3)***	**Violation**	**Collection Date**
Biological Contaminants						
Total Coliform Bacteria *naturally present in environment, used as an indicator for other bacteria*	5.0% (0 sample total coliform positive, E.coli negative)	N/A	5% of monthly samples	0	No	monthly
Turbidity (NTU) *soil runoff (footnote 5, 6)*	0.1 (Highest single measurement)	0.1	TT = 1.0	N/A	No	every 2 hours
Turbidity (lowest monthly % limit)	100%	100%	T T = 0.3	N/A	No	
Inorganic Contaminants						
Barium *discharges of drilling wastes and metal refineries; erosion of natural deposits*	0.02	0.02 - 0.02	2	2	No	2019
Zinc (State regulated – *footnote 7*) *Naturally occurring; discharge from metal factories*	0.021	0.021—0.021	5	5	No	2019
Fluoride *water additive to reduce tooth decay*	0.7	0.709 – 0.709	4	4	No	2019
Nitrate (State regulated – *footnote 7*) *fertilizer, sewage runoff; natural erosion*	0.38	0.38 -- 0.38	10	10	No	2019
Sodium (State regulated - *footnote 7*) *natural erosion, used in water softener regeneration*	11.0	11.0 – 11.0	N/A	N/A	No	2019
Chlorine *disinfectant*	1.2	1.1 – 1.2	4 (MRDL) *(footnote 10)*	4 (MRDLG) *(footnote 11)*	No	Continuously
Lead (distribution system – *footnote 14) corrosion of household plumbing and/or service lines*	0.0077 (90th %)	1 sample exceeding AL (0 – 0.021)	AL = 0.015 *(footnote 15)*	0	No	*every 3 years July - September 2017
Copper (distribution system) *corrosion of household plumbing and/or service lines*	0.096 (90th %)	0 samples exceeding AL (0 - 0.230)	AL = 1.3	1.3	No	every 3 years July - September 2017
Disinfection By-Products						
Haloacetic Acids (HAA) – *footnote 16* b*y-product of water disinfection*	22	10.46 – 31.2	60	N/A	No	2019
Total Trihalomethanes (TTHM) b*y-product of water disinfection*	43	17.7 – 59	80	N/A	No	2019

*Some contaminants are monitored less frequently than once a year. Lead and copper testing occurs every 3 years.

ppb – parts per billion or micrograms per liter

Table 2. Additional Contaminants – UCMR4

Every five years, in accordance with the Safe Drinking Water Act, the EPA identifies a new list of contaminants that are suspected to occur in public water systems. This list is referred to as the **Unregulated Contaminant Monitoring Rule (UCMR)**. A maximum contaminant level (MCL) for these contaminants have not been established by either state or federal regulations, nor has mandatory health effects language been set. The purpose of unregulated contaminant monitoring is to assist USEPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. In 2019, thirty chemical contaminants were monitored. Below are the contaminants that yielded detectable results, the remaining contaminants returned with non-detects

Unregulated Contaminants					
Contaminant and Source of Contamination	Highest Level Detected (ug/L)	Range of Levels (ug/L)	MCL (ug/L or PPB)	MCLG (ug/L)	Collection Date
Bromochloroacetic Acid	4.48	1.74 – 4.48	NA	NA	2019
Bromodichloroacetic Acid	4.91	0.788 – 4.91	NA	NA	2019
Chlorodibromoacetic Acid	0.964	0.882 – 0.964	NA	NA	2019
Dibromoacetic Acid	0.978	0.491 - 0.978	NA	NA	2019
Dichloroacetic Acid	16.1	6.1 – 16.1	NA	NA	2019
Monobromoacetic Acid	3.23	1.65 – 3.23	NA	NA	2019
Trichloroacetic Acid	9.9	2.27 – 9.9	NA	NA	2019
Unregulated Contaminants					
Contaminant and Source of Contamination	Highest Level Detected (mg/L)	Range of Levels (mg/L)	MCL (mg/L)	MCLG (mg/L)	Collection Date
Sulfate *naturally present*	27	SINGLE SAMPLE	NA	NA	1/13/2017
Chloride	14	SINGLE SAMPLE	NA	NA	1/13/2017
Total Dissolved Solids (TDS)	140	SINGLE SAMPLE	NA	NA	1/13/2017
Calcium	34	SINGLE SAMPLE	NA	NA	1/13/2017
Magnesium	12	SINGLE SAMPLE	NA	NA	1/13/2017
Total Hardness (as $CaCO_3$)	140	SINGLE SAMPLE	NA	NA	1/13/2017

Definitions and Abbreviations for Table 1 and Table 2 (Footnote reference)

1. Highest Level Detected – in most cases, this the annual average of all samples collected during the CCR calendar year.

2. Maximum Contaminant Level (MCL) - The highest contaminant level that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

3. Maximum Contaminant Level Goal (MCLG) - Level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

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

5. Turbidity - Turbidity is a measurement of cloudiness of water due to suspended particles. It is a good indicator of water quality and the effectiveness of our filtration system and disinfectants.

6. NTU – Nephelometric Turbidity Units

7. State regulated - this contaminant is regulated by the State. Currently, no federal standard exists for this contaminant.

8. Range of levels - the lowest to the highest measurement of a contaminant that was detected throughout the year.

9. N/A - not applicable

10. Maximum residual disinfectant level (MRDL) - The highest disinfectant level allowed in drinking water. There is adequate evidence that addition of disinfectant is necessary for control of microbial contaminants.

11. Maximum residual disinfectant level goal (MRDLG) – Drinking water disinfectant level below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

12. mg/L – milligrams per liter (also known as parts per million or ppm)

14. Distribution system applies to contaminant levels found at consumers' tap.

15. Action Level (AL) – The concentration of a contaminant that triggers treatment by the water supply

16. Disinfection By-Products level detected is based on locational running annual average (LRAA), which is calculated by adding the current quarter plus three previous quarters and dividing by four. Location with the highest result is used.

17. The percentage of **Total Organic Carbon (TOC)** removal was measured each month and the system met all TOC requirements.

Is the water safe?

In order to ensure that tap water is safe to drink, USEPA 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 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 at (800) 426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it can dissolve naturally occurring minerals and pick up substances resulting from the presence of animals or from human activity. Possible contaminants consist of:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from storm water runoff, industrial, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from storm water 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 and storm water runoff
- Radioactive contaminants can be naturally-occurring or be the result of oil and gas production and mining activities.

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 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/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Cryptosporidium Testing

Cryptosporidium and Giardia testing on Lake Michigan influent was conducted between October 2015 and September 2017. Cryptosporidium is a single-celled protozoan parasite commonly found in surface water. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immune-compromised are at greater risk of developing life-threatening illness and are encouraged to consult their doctor regarding appropriate precautions to avoid infection.

One test result yielded cryptosporidium of 0.2 oocysts/L in February 2016. The mean Cryptosporidium concentration was at 0.017 oocysts/L, well below the treatment technique trigger of 0.075 oocysts/L. Current test methods do not enable us to determine if the organisms are dead or if they are capable of causing disease. Our treatment process of filtration and disinfection has been optimized to provide effective barriers against these organisms.

Table 3 lists results for some of the parameters of water testing, which are primarily used for treatment process control.

Contaminant	Level Detected (mg/L)
Sulfate	27
Chloride	14
Total Dissolved Solids (TDS)	140
Conductivity (µS/cm)	281
Calcium	34
Magnesium	12
Total Hardness (as $CaCO_3$)	140
pH	7.3 – 7.6

Get Involved

If you have any questions or comments about this report please contact the Water Plant Superintendent, Antonio Dominguez at 847-599-2687. You may also attend any of our regularly scheduled meetings that convene on the first and third Monday each month at the Council Chambers of City Hall located at 100 Martin Luther King Jr. Ave. Please call 847-599-2500 for meeting times.