

# City of Waukegan

## 2018 Annual Water Quality Report

Welcome to your Annual Water Quality Report covering the period from January 1 through December 31, 2017. 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. Traduscalo o hable con alguien 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 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. Our onsite, certified lab together with EPA approved NELAP accredited outside laboratories test for over 100 contaminants in the finished water. We test 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 2017 please go to



[http://water.epa.state.il.us/dww/JSP/WaterSystemDetail.jsp?tinwsys\\_is\\_number=716978&tinwsys\\_st\\_code=IL&wsnumber=IL0971900](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*, our water supply's 6200 ft intake has 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, 2018

Table 1 lists regulated contaminants that were found in our finished water for the year 2017. If the contaminant does not appear on the list below it means that it was not detected in our water. We monitor for over 80 regulated contaminants.

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
<b>Biological Contaminants</b>						
Total Coliform Bacteria <i>naturally present in environment, used as an indicator for other bacteria</i>	1.11% (1 sample total coliform positive, E.coli negative)	N/A	5% of monthly samples	0	No	monthly
Total Organic Carbon (footnote 17) <i>naturally present</i>	1.4	1.1 - 1.7	TT (footnote 4)	N/A (footnote 9)	No	monthly
Turbidity (NTU) <i>soil runoff (footnote 5, 6)</i>	0.22 (Highest single measurement)	0.03 - 0.22	TT = 1.0	N/A	No	every 2 hours
Turbidity (lowest monthly % limit)	100%	100%	TT = 0.3	N/A	No	
<b>Inorganic Contaminants</b>						
Barium <i>discharges of drilling wastes and metal refineries; erosion of natural deposits</i>	0.019	single sample	2	2	No	1/13/2017
Zinc (State regulated – footnote 7) <i>Naturally occurring; discharge from metal factories</i>	0.011	Single sample	5	5	No	1/13/2017
Fluoride <i>water additive to reduce tooth decay</i>	0.66	0.56 – 0.74	4	4	No	monthly
Nitrate (State regulated – footnote 7) <i>fertilizer, sewage runoff; natural erosion</i>	0.57	single sample	10	10	No	4/10/2017
Sodium (State regulated - footnote 7) <i>natural erosion, used in water softener regeneration</i>	7.8	single sample	N/A	N/A	No	1/13/2017
Chlorine <i>disinfectant</i>	1.52	1.16 – 1.72	4 (MRDL) (footnote 10)	4 (MRDLG) (footnote 11)	No	continuously
Lead (distribution system – footnote 14) <i>corrosion of household plumbing and/or service lines</i>	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) <i>corrosion of household plumbing and/or service lines</i>	0.0958 (90th %)	0 samples exceeding AL (0 - 0.230)	AL = 1.3	1.3	No	every 3 years July - September 2017
<b>Disinfection By-Products</b>						
Haloacetic Acids (HAA) – footnote 16 <i>by-product of water disinfection</i>	0.0169	0.0021 – 0.0241	0.06	N/A	No	quarterly
Total Trihalomethanes (TTHM) <i>by-product of water disinfection</i>	0.0332	0.0147 – 0.0447	0.08	N/A	No	quarterly

\*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 contains contaminants that are not regulated by USEPA or State agencies. A maximum contaminant level (MCL) for these contaminants has not been established by either state or federal regulations, nor has mandatory health effects language been set. The purpose of unregulated contaminant monitoring rule (UCMR) is to assist the USEPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

<b>Unregulated Contaminants (footnote 13)</b>			
<b>Contaminant and Source of Contamination</b>	<b>Highest Level Detected (mg/L)</b>	<b>Range of Levels (mg/L)</b>	<b>Collection Date</b>
Chromium <i>discharge from steel and pulp mills; erosion of natural deposits</i>	0.00014	0 - 00028	quarterly 2014
Hexavalent Chromium <i>discharge from steel and pulp mills; erosion of natural deposits</i>	0.00019	0.00016 – 0.00021	quarterly 2014
Molybdenum <i>naturally present</i>	0.00055	0 - 0011	quarterly 2014
Strontium <i>naturally present</i>	0.123	0.117 – 0.131	quarterly 2014
Vanadium <i>naturally present, industry discharge</i>	0.00025	0.00022 – 0.00027	quarterly 2014

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.

**IESWTR Violation**

The Interim Enhanced Surface Water Treatment Rule improves control of microbial contaminants, particularly Cryptosporidium in systems using surface water or ground water under the direct influence of surface water. The rule builds upon the treatment technique requirements of the Surface Water Treatment Rule.

Violation Type	Violation Begin - End Date	Violation Explanation
Monitoring, Routine (ILESWTR/LT1), Minor	9/1/2017 - 9/30/2017	We failed to complete all the required tests of our drinking water for individual filter turbidity due to a malfunctioning continuous turbidity unit. We have since implemented increased communication amongst staff to have repairs completed in a timely manner.

## 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 <sub>3</sub> )	140
pH	7.3 – 7.6

### Get Involved

If you have any questions or comments about this report please contact the laboratory supervisor, Julia Adamiak 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.