

# Northbrook Water Consumer Confidence Report

## General Introduction to Water Supplies

This information is provided as required by U. S. Environmental Protection Agency & Illinois Environmental Protection Agency. The many terms and acronyms used in the following paragraphs are defined below. If you have any questions or want to know where to find additional information about our water supply, contact Ken Gardner, Utilities Superintendent, at [ken.gardner@northbrook.il.us](mailto:ken.gardner@northbrook.il.us) or 847/664-4113.

### Sources of Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater 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. It also can pick up substances resulting from the presence of animals or from human activity.

Our water comes from Lake Michigan. Northbrook had no water quality violations during the past year. Please share this information with other people who drink this water, especially those whom may not have received this notice directly (for instance, people in apartments, nursing homes, schools or businesses). You can do so by posting this notice in a public place or distributing copies by hand or via US mail.

### Contaminants that may be present in source water include:

- Disinfection By-Products (DBPs), including total trihalomethanes (TTHMs) and haloacetic acids (HAA5s), are by-products of chlorine and certain organic compounds present in raw water. The maximum contaminant levels for TTHM and HAA5 are 80 µg/l and 60 µg/l respectively. Some people who drink water containing DBPs in excess of the Maximum Contaminant Levels (MCL) over many years experience problems

with their livers, kidneys or central nervous system, and may have increased risk of developing cancer;

- Lead, if present in elevated levels, 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. Northbrook 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](http://www.epa.gov/safewater/lead). Northbrook remains in compliance with the lead and copper regulations;
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities;

- 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;
- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;
- 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;
- Sodium which is not regulated by US Environmental Protection Agency (USEPA) or Illinois Environmental Protection Agency (IEPA), but monitoring is required to provide information about sodium uptake due to dietary precautions. If the level is greater than 20 mg/l and you are on a sodium restricted diet, you should consult a physician;
- Turbidity is a measure of the 'cloudiness' of water. It is good indicator of water quality and the effectiveness of our filtration system and disinfection practices. Our water leaves the plant at 0.04 NTUs.

### Other Facts about Drinking Water

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 at 800/426-4791. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the

amount of certain contaminants in water provided by public water systems. Food and Drug (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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, and 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 Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA Safe Drinking Water Hotline at 800/426-4791. No evidence of *Cryptosporidium* has ever been found in Northbrook's water.



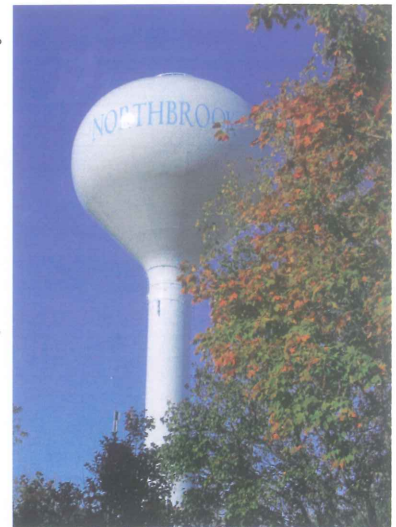
## Some Facts About Northbrook's Water System

**Northbrook is the only off-shore community in the Chicago area to draw water directly from Lake Michigan and process it at an inland water filtration plant.**

Since 1963, Northbrook has increased rated production capacity from 6 million gallons per day (MGD) to approximately 20 MGD.

Our water supply begins in Lake Michigan in Glencoe. Raw water flows through two intake lines. The older (1963) 30" intake extends 2,550' from shore, ending in an intake structure with 3 cone-shaped "funnels" located 23+ feet under the surface of Lake Michigan. The newer (1993) primary intake, is 48-inches in diameter, 6,400 feet in length and 36+ feet under the surface with one large flared riser surrounded by a 35-foot square by 8-foot high wooden timber crib. Water flows by gravity into a 28-foot deep, 26,000 gallon "suction well" in the pump station at the shoreline. Seven various sized vertical turbine "low lift" pumps, controlled by Water Plant Operators at the Filtration Plant, pump the raw water through 2.9 miles of 24 and 30-inch mains to the Plant for processing. Water is filtered through anthracite/sand media filters, chlorinated for disinfection, and fluoridated for prevention of tooth decay. The newest (1994) 8 MGD plant addition uses multi-media filters with additional anthracite and two gradations of crushed garnet.

After treatment at the Plant, eight various sized "high lift" pumps send the processed water through a network of about 170 miles of water mains. Three additional system pumps are located at the West Side Reservoir. The Water Plant is staffed around-the-clock. Operators are required to obtain the highest competency (Class A) certificates from the Illinois EPA which requires passing a rigorous series of exams. Tap water is typically delivered in the 40 - 60 PSI pressure range throughout Northbrook. Higher elevation areas experience lower pressures.



Periodically, water issues are addressed by the Village Board of Trustees. The Village Board normally meets on the second and fourth Tuesdays of each month at 7:30pm at the Village Hall, 1225 Cedar Lane. Exact times and dates can be verified by calling the Village Hall at 847/272-5050 or visit [www.northbrook.il.us](http://www.northbrook.il.us)

## Source Water Assessment

**The Illinois EPA considers all surface water sources to be susceptible to potential pollution. By nature surface water allows contaminants to migrate into the intakes with no protection except dilution.**

Thus IEPA mandates treatment for all Illinois surface water supplies. A workgroup from the Great Lakes States organized to develop a protocol for assessing the Great Lakes. The mission of the Great Lakes Protocol workgroup was to develop a consistent procedure with the flexibility to properly conduct source water assessments of our Great Lakes drinking water sources. According to the IEPA, this flexibility takes into account source variability and site specific concerns for determination of source sensitivity and susceptibility. Sensitivity is the intrinsic ability of surface water to be isolated from contaminants by the hydrologic or geologic attributes. According to the sensitivity analysis, Northbrook's two intakes are located far enough offshore that shoreline point

sources are not a water quality factor. However, at certain times of the year, the potential for contamination exists due to storm water runoff and wet weather flows from the North Shore Channel. If currents are flowing in a northerly direction, contaminants from these flows could migrate to Northbrook's intakes and compromise water quality. A correlation between Northbrook's rainfall data and coliform data, combined with North Shore Channel discharge dates, show the potential effect of these flows on Northbrook's water quality. The best way to ensure a safe source of drinking water for a water supply is to develop a program designed to protect the source water against potential contamination on the local level. Since land use within the Illinois Lake Michigan watershed is mostly urban, most watershed protection activities in this document are aimed at this purpose. Citizens must be aware that activities around the house may have a negative impact on their source water.

The main efforts of the immediate community should be to promote an awareness of storm water drains and their direct link to Lake Michigan. A proven best management practice (BMP) for this purpose is the stenciling of a notice indicating the connection between storm water drains and the lake. Stenciling, along with education about proper storage, disposal and use of potential contaminants, is necessary to continue to keep Lake Michigan a safe reliable source of drinking water.

Water supply officials from Northbrook are active members of the West Shore Water Producers Association. Coordination regarding water quality situations (i.e., spills, tanker leaks, exotic species, etc.) and watershed protection are frequent topics discussed at quarterly meetings of this organization. Lake Michigan, as well as all the Great Lakes, has a variety of organizations and associations that are currently working to either maintain or improve water quality.



## Water Test Results

Substance	Type	Units	MCLG	MCL	Range of Levels	HDL	Comments
Barium	Inorganic	mg/l	2	2	0.0216 – 0.0216	0.0216	Drilling waste & metal refinery discharge, natural element
Chlorine	Inorganic	mg/l	MRGLG/MRDL = 4		0.9 – 1.3	1.3	Water Additive for disinfection.
Coliform (non-fecal)	Microbial	% present	<5% monthly	positive	0 - 2.3	2.3	Naturally present in environment
Copper	Inorganic	mg/l	1.3	AL = 1.3	0-0.269 (No site>AL)	0.269	Plumbing, erosion, wood preservative
Fluoride	Inorganic	mg/l	4	4	0.964 – 0.964	0.964	Fertilizer & aluminum factory discharge; decay preventative additive
Haloacetic Acids (HAA5)	DBP	µg/l	n/a	60	6.75 – 22.8	22.8	Chlorination by-product
Lead	Inorganic	µg/l	0	AL = 15	0-11.3 (No site > AL)	11.3	Plumbing system & natural erosion
Nitrate (as N)	Inorganic	mg/l	10	10	0.316 - 0.316	0.316	Fertilizer & septic run-off, sewage
Radium Combined	Radioactive	pCi/l	0	5	1.24 - 1.24	1.24	Erosion of natural deposits
Sodium	Inorganic	mg/l	n/a	n/a	8.54 – 8.54	8.54	Natural erosion, water softener
Total Trihalomethanes	DBP	µg/l	n/a	80	18.8 – 51.5	51.5	Chlorination by-product
Turbidity	Microbial	% < 0.3 NTU	lowest % meeting limit		100%		Soil runoff
Turbidity	Microbial	NTU	Limit TT = 1 NTU		0.04 HSM		Soil runoff

Note: "Range of Levels" is the range of sample data collected annually. In some cases only one sample was collected.

Note: Test results completed in 2014, except Radium, which was 2011. Not all results are used for calculating HDL because some may be used to evaluate what sampling compliance should occur in future.

Note: The percentage of total organic carbon (TOC) was measured each month. Northbrook meets all IEPA requirements.

AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.	MRDL	Maximum Residual Disinfectant Level: The highest level of disinfectant allowed in drinking water.
Avg	Regulatory compliance with some MCLs is based on running annual average of monthly samples.	MRDLG	Maximum Residual Disinfectant Level Goal: The level of disinfectant in drinking water below which there is no known or expected risk to health. MRDLGs allow for a margin of safety.
DBP	Disinfection By-Products	N/A	Not Applicable
HDL	Highest Level Detected	ng/l	Nanograms per liter: equivalent to parts per trillion or ounces per 7,350,000,000 gallons of water
HSM	Highest Single Measurement	NTU	Nephelometric Turbidity Units
MCL	Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the Maximum Contaminant Level Goal as feasible using the best available treatment technology.	pCi/L	picocuries per liter (a measure of radioactivity)
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.	%<NTU	Percent of samples less than 0.5 NTU
mg/l	Milligrams per liter: equivalent to parts per million (ppm) or ounces per 7,350 gallons of water	ppb	parts per billion or micrograms per liter (ug/L): or one ounce in 7,350,000 gallons of water.
µg/l	Micrograms per liter: equivalent to parts per billion (ppb) or ounces per 7,350,000 gallons of water	ppm	parts per million or milligrams per liter (mg/L): or one ounce in 7,350 gallons of water.
		TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

### Recent Concerns

Hexavalent Chromium (also known as Chromium 6, Cr6 or CrVI) has received a lot of attention recently. Northbrook's water testing for Cr6 detected levels from 0 to 0.26. This is similar to results from other Lake Michigan users. There are essentially three types (ions) of Chromium – Cr<sup>0</sup>, Cr<sup>3</sup> and Cr<sup>6</sup>. Total Chromium is the combination of all three. Cr3 (which is a vital nutrient for human health) and Cr6 transform one to the other depending on other physical and chemical characteristics of the water. The current USEPA/IEPA maximum contaminant level (MCL) for total chromium is 100 µg/l. Recent articles cite more sensitive tests performed by relatively few laboratories that can measure hexavalent chromium levels down to 0.02 µg/l. A proposed California public health goal for Cr6 is 0.02 µg/l. It is thought that this is the level at which a lifetime of drinking two quarts per day would entail a 1 in 1,000,000 chance of serious illness. This

concept is a widely used definition for "negligible risk". There is still a great deal of research being done on this subject, including health effects and treatment options. The EPA has information about this substance available on its web site at [www.epa.state.il.us/water/compliance/drinking-water/chromium.html](http://www.epa.state.il.us/water/compliance/drinking-water/chromium.html).

**Pharmaceuticals and Personal Care Products** (PPCPs) in water have also been widely discussed lately. The USEPA and IEPA do not regulate the amount of PPCPs in waters supplies, and have not established that very low levels of these substances pose any health threats. IEPA and the American Water Works Association (AWWA) have more information available at [www.epa.state.il.us/medication-disposal/sampling.html](http://www.epa.state.il.us/medication-disposal/sampling.html) or [www.drinktap.org/consumerdrnn/home/waterinformation/water-quality/pharmaceuticals-ppcps.aspx](http://www.drinktap.org/consumerdrnn/home/waterinformation/water-quality/pharmaceuticals-ppcps.aspx)

Testing of Northbrook's water for 27 chemical compounds included in the category of PPCPs showed detectable levels for two substances, Cotinine and DEET. Cotinine, which is a by-product of nicotine, was found at the level of 2.1 ng/l. DEET, which is the chemical used in many insect repellents, was found at a level of 6.5 ng/l.

Hardness (which consists primarily of magnesium and calcium) levels can affect swimming pool care. Lake Michigan water is an ideal source of drinking water, but it can offer challenges for those maintaining swimming pools. One of the key concerns is the effect of calcium hardness on the condition of pool walls. Northbrook's hardness level, has been measured at about 130 mg/l. Experts state that pool water should have calcium hardness levels between 200 – 400 mg/l, but each situation is different so please make sure you consult a pool expert when treating your pool water.