



City of
Evanston™

2002 Water Quality Report

We are pleased to bring you Evanston's annual water quality report, an information service for our water customers. The Evanston water utility is committed to providing you with the highest quality drinking water. In 2002, as in past years, your tap water has met all USEPA and State drinking water health standards and has had no violations to report. Of the hundreds of substances that are monitored, only a handful were actually detected in our drinking water and all were well below federal standards!



Your Water Source

Lake Michigan, Evanston's source of water, is not just a major commerce artery and a recreational resource with miles of scenic shoreline. It's also a great source of drinking water! Almost half of the world's fresh water comes from Lake Michigan and the other Great Lakes. According to the United States EPA, the quality of Lake Michigan water has improved dramatically over the past 20 years. The regulations in place restrict the industrial and sewage treatment plant effluents from entering Lake Michigan, thereby lowering the risk of having these contaminants in the water. All 63 miles of shoreline within Illinois are now considered to be in good condition. The Illinois EPA is in the process of completing a source water assessment. As this assessment becomes available, our supply will summarize the results and incorporate the information in this report. Further information on source water assessments is available on the USGS website at <http://il.water.usgs.gov>.

View the City's website at

www.cityofevanston.org

*for more information
on our water treatment process.*

Capital Improvement Program

In order to ensure that the water we provide to you is safe and reliable, the Evanston Water Utility continually plans improvements to renew and replace our existing infrastructure and improve services. Examples of major projects this year have been:

- ◆ The completion of a vulnerability assessment of the Evanston Water Utility to determine our vulnerability to possible terrorist attack, as well as the installation of several new security measures to minimize risk of terrorism.
- ◆ The installation of the third and final phase of a three-year program to install new water meter reading devices with radio transmission for accurate and timely billing.

Today, the Water Department's 42 employees continue Evanston's tradition of excellence by working around the clock for your health and safety. We're proud of our water and pledge to continue to provide you with the highest quality water that is humanly and technologically possible.

Thank you for the opportunity to serve you.

Where do contaminants come from?



In general, people obtain drinking water (both tap and bottled water) from rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of land or through the ground, it dissolves naturally occurring minerals and 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 from a variety of sources, 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 runoff, industrial or domestic water discharges, oil and gas production, mining or farming;
- 3) pesticides and herbicides which come from agricultural, stormwater runoff and residential uses;
- 4) organic chemical contaminants, including synthetic and volatile organics which are by-products of industrial processes and petroleum production and can also come from gas stations, urban storm runoff and septic tanks;
- 5) radioactive contaminants which can be naturally occurring or be the results of oil and gas production and mining activities.

The primary sources of pollution threatening Lake Michigan include air deposition (pollution from the air, rain and snow), runoff and industrial discharge.

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. In order to ensure that tap water is safe to drink, the USEPA 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 must provide the same protection for public health.

During 1997 and 1998, the Evanston Water Department sampled untreated lake water on a monthly basis for the presence of cryptosporidium, a microbial parasite. Of 18 samples analyzed, only one empty cryptosporidium cell was detected prior to the filtration process. Cryptosporidium is generally removed through filtration - which removes solid particles - and disinfection.

Some people may be more vulnerable to contaminants in tap or bottled 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 for infections. These people should seek advice about drinking water from their health care providers. The EPA and Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium are available from the Safe Drinking Water Hotline. (800) 426-4791 or visit, www.epa.gov/OW.

For specific information about the Water Department, your water's quality, a complete water quality report of all tested contaminants or any other water-related question, please contact the Evanston Water Department at (847) 866-2942. The public is welcome to attend our Council meetings where decisions related to your water treatment facility are made.

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.

Questions & Answers

City of Evanston

2002 Water
Quality Report

Q.A. Is it true that tap water quality is getting worse?

No. It might seem that way from what you read and hear, but actually the opposite is true. Water suppliers must meet many more rules today than we did a few years ago, and standards for many of the regulated chemicals and microbes are stricter. Twenty-five years ago, we did not have the technology to know what was in our drinking water. Today, we have sophisticated testing instruments that enable us to know more about our water than ever before. The drinking water community is continually improving treatment processes as it learns more each year.

Q.A. Is bottled water safer than tap water?

Not necessarily. Studies have shown that microbes may grow in the bottles while on the grocers' shelves. You don't need to buy bottled water for safety reasons if your tap water meets all federal and state drinking water standards (Evanston's does!). If you want water with a different taste, you can buy bottled water, but it costs up to 1,000 times more than tap water. Of course, in emergencies, bottled water can be a vital source of drinking water for people without water. One important difference between tap and bottled water is that the U.S. Food and Drug Administration (FDA) regulates bottled water and the U.S. Environmental Protection Agency regulates tap water. Both sources are required to meet the same water quality standards; however, the EPA requires public water utilities to continually monitor water quality whereas the bottled water industry must test their source water and finished product once per year.

Q.A. Is it okay to use hot water from the tap for cooking?

No. Use cold water. Hot water is more likely to contain rust, copper, and lead from your household plumbing and water heater because these contaminants generally dissolve into hot water from the plumbing faster than into cold water.

Q.A. What is "hard" water?

The answer may surprise you. Hardness in drinking water is caused by two nontoxic chemicals, usually called minerals: calcium and magnesium. If either of these minerals is present in your water in substantial amounts, the water is said to be "hard," because making a lather or suds for washing is "hard" (difficult) to do. Thus cleaning with hard water is difficult. Water containing little calcium or magnesium is called "soft" water. (Maybe it should be called easy!). Evanston's water is considered to be moderately hard. It ranges from 123 parts per million of hardness to 168 and averages 136 parts per million or approximately 7.5 grains. This level of hardness does not require the use of a water softener.

Q.A. Water often looks cloudy when first taken from a faucet and then it clears up. Why is that?

The cloudy water is caused by tiny air bubbles in the water similar to the gas bubbles in beer and carbonated soft drinks. After a while, the bubbles rise to the top and are gone.

Q.A. How can I locate my home's master valve?

It is important to know where the master valve is in case you have a major leak and need to shut the water off in a hurry. The most common locations in our house or apartment are:

- * Where the water supply enters your home
- * Near your clothes-washer hook-up
- * Near your hot water heater

To determine if the valve you have found is the correct one, try turning it off and see if it shuts off all water faucets in your home. If not, repeat this process with each valve you find until you identify the correct one. If you are unable to locate it, contact your plumber for assistance. Once you have found the valve it is a good idea to mark it with something distinctive like bright paint, a tag, or ribbon. This will help you locate it quickly in case of an emergency.

EVANSTON 2002 WATER QUALITY DATA

Detected Substances

Substance	Goal (MCLG)	Highest Allowed (MCL)	Evanston Result	Evanston Minimum	Evanston Maximum	Source of Contamination
Turbidity (Cloudiness)	NA	TT=Monitored by % Exceeding 0.3 NTU and max allowed is 1 NTU	0% of samples exceeded 0.3 NTU	0.01	0.01	Soil runoff and lake turnover.
Beta/Photon Emitters (pCi/l)*	0	50	2	2	2	Decay of natural and man-made deposits.
Barium (ppm)	2	2	0.019	0.019	0.019	Erosion of natural deposits.
Nitrate & Nitrite (ppm)	10	10	0.4	0.4	0.4	Runoff and natural erosion.
Fluoride (ppm)	4	4	1.03	1.03	1.03	Fluoride is added to promote dental health.
Lead (ppb)	NA	Action Level = 15	10	0	14	Corrosion
Copper (ppm)	NA	Action Level = 1.3	.02	0	.03	of household plumbing.
DISINFECTION BY-PRODUCTS	Goal (MCLG)	Highest Allowed (MCL)	Evanston Result	Evanston Minimum	Evanston Maximum	Source of Contamination
Total Trihalomethanes (ppb)	NA	80	19.1	11.0	27.2	By-product of drinking water chlorination.
Bromodichloromethane (ppb)	NA	NA	6.3	4.0	8.6	"
Chloroform (ppb)	NA	NA	9.0	4.0	13.3	"
Dibromochloromethane (ppb)	NA	NA	3.8	3.0	5.3	"
Total Haloacetic Acids (ppb)	NA	60	8.5	6.4	11.9	"
Dicloroacetic Acid (ppb)	NA	NA	4.3	3.0	6.6	"
Trichloroacetic Acid (ppb)	NA	NA	4.1	3.0	5.3	"
Unregulated Parameters	Goal (MCLG)	Highest Allowed (MCL)	Evanston Result	Evanston Minimum	Evanston Maximum	Source of Contamination
Sulfate (ppm)	NA	NA	15.4	15.4	15.4	Runoff and natural erosion.
Boron (ppm)	NA	NA	0.028	0.028	0.028	Erosion of natural occurring deposits.
Sodium (ppm)	NA	NA	6.5	6.5	6.5	Runoff and natural erosion.

ppm = parts per million or milligrams per liter

pCi/l = picocuries per liter, a measure of radioactivity

TT = Treatment Technique, a required process to reduce the level of a contaminant.

Disinfection by-products = Total Trihalomethanes and Haloacetic Acids are used to regulate the amount of allowable by-products of chlorination. Total Trihalomethanes represent the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane which are not individually regulated. Total Haloacetic Acids represent the sum of dicloroacetic Acid, trichloroacetic Acid, monochloroacetic acid and monobromoacetic acid which are not individually regulated.

Fluoride = The Illinois Department of Public Health recommends an optimal fluoride range of 0.9 ppm to 1.2 ppm.

Sodium = There is not a state or federal MCL for sodium. Sodium levels below 20 mg/l (ppm) are not considered to be a health issue.

MCLG = Maximum Contaminant Level Goal, the level of a contaminant in drinking water below which there is no known or expected risk to health.

MCL = Maximum Contaminant Level, the highest level of a contaminant that is allowed in drinking water. A MCL is set as close to a MCLG as feasible based on what a water utility can achieve using the best available technology.

Action Level = The concentration of a contaminant which, if exceeded, triggers treatment or other requirements the water system must follow.

Lead = There is no detectable lead in the water provided to the Evanston community. Lead enters the water from lead solder, lead pipes or plumbing fixtures in the home. To minimize contamination resulting from corrosion, the EPA established a lead action level of 15 ppb in 1992. The 90th percentile result of samples analyzed for lead content in homes with lead pipes must be less than the action level of 15 ppb. In 2002, Evanston took water samples from 30 homes with lead service lines and analyzed them for lead content. None of the results exceeded the action level of 15 ppb and the 90th percentile level of 10 ppb.

* last tested in 1997 due to historically low levels

ppb = parts per billion or micrograms per liter

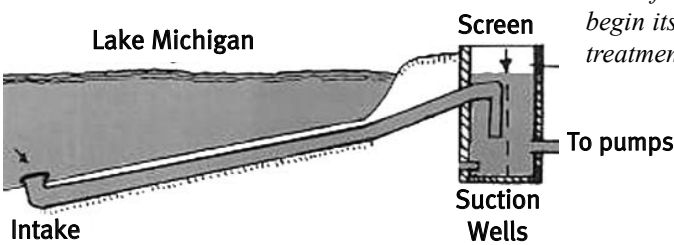
NTU = nephelometric turbidity units (measures water clarity)

About your water

The Evanston Water Treatment Plant has the capacity to pump up to 108 million gallons a day of pure drinking water to Evanston and the other communities we serve: Skokie, and the Northwest Water Commission comprised of Arlington Heights, Buffalo Grove, Palatine and Wheeling. Evanston's vast water system includes 155 miles of water mains, two multimillion gallon storage facilities and almost 1,300 hydrants.

From the raw water pumps that bring water in from Lake Michigan, to the finished water pumps that send the treated water to your home, system redundancies such as auxiliary natural gas engines are in place so you'll never go without safe drinking water.

Here's how it's done:



Six centrifugal pumps lift the water from suction wells to begin its journey through the treatment plant.



Chemical Feeders

Water flows through filters which contain a layer of anthracite coal and filter sand, removing the tiniest of particles.



Flash Mix

Chlorine to disinfect, fluoride for dental health and aluminum sulphate and polymers to coagulate suspended solids and form a floc, are added to the water at flash mix. Carbon is added as necessary to mitigate taste and odor.

Slow Mix Basins

The floc, resulting from coagulation, contains algae, bacteria and other impurities which sink to the bottom of the settlement basins in four to eight hours.



Filters



After post chlorination, water goes to reservoirs where a blended phosphate is added for corrosion control. Water is continuously sampled and analyzed for quality assurance before being pumped into the distribution system.

Fun Water Facts

City of Evanston
2002 Water
Quality Report



- ◆ Ancient Egyptians treated water by siphoning water out of the top of huge jars after allowing the muddy water from the Nile River to settle.
- ◆ Hippocrates, known as the father of medicine, directed people in Greece to boil and strain water before drinking it.
- ◆ One gallon of water is equal to 3.785 liters of water.
- ◆ One cubic foot of water is equal to 7.48 gallons of water.
- ◆ Water boils at 212 degrees Fahrenheit or 100 degrees Celsius
- ◆ Water freezes at 32 degrees Fahrenheit or 0 degrees Celsius
- ◆ 75% of the human brain is water and 75% of a living tree is water.

- ◆ 95% of Earth's water is in the oceans. Only 3% of the Earth's water can be used as drinking water and only 1% of the world's fresh water is suitable for drinking water (75% of the fresh water is frozen and therefore unusable).
- ◆ One gallon of water weighs 8.34 pounds
- ◆ A person can live without food for approximately one month. A person can live without water for approximately one week, depending on conditions.

How much water does it take process the following:

- ◆ One chicken - 11.6 gallons
- ◆ One barrel of beer - 1,500 gallons
- ◆ One can of fruit or vegetables - 5.4 gallons
- ◆ One ton of steel - 62,600 gallons
- ◆ Four new tires - 2,072 gallons
- ◆ ¼ pound hamburger - 1 gallon

How much water do we use to:

1. Take a five minute shower?
2. Brush teeth?
3. Automatic Dishwasher?
4. Handwash dishes?
5. Flush the toilet?

Word Search

E B Y X L F E W Q A L U M N J
V U W D M N F T Y Z L K I G H
A G L A K L L E O F L O C G N
N X V N T M U S K G S U R O N
S S F Y E E O R O S M J O N O
T A Y K W D R V E T U K B B I
O Q U J I A I N D N O G I V T
N U O U D A D S P E D K A C A
R E M H H R E T L I F J L X N
E L P B A H U W E T P O W E I
I C E H I G E H A V B B G T R
J Q G T U R B I D I T Y J R O
K W H M T K C K Y E R S G P L
L A K E M I C H I G A N D Y H
E S L B V L E F L O P U F T C

EVANSTON
WATER
FLUORIDE
FILTER
FLOC
CHLORINATION
TURBIDITY
LAKE MICHIGAN
MICROBIAL
HARDNESS
LEAD
ALUM
ICE

Answers:
1. 2.5-50 gallons 2. 2 gallons 3. 9-12 gallons
4. 20 gallons 5. 2-7 gallons

