



Source of Water

Before the Minneapolis Water Works can deliver water to your home, it must first be thoroughly tested in certified laboratories that can detect trace amounts of contaminants.

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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. U. S. Environmental Protection Agency regulates substances that are potentially harmful to human health and have at least a reasonable possibility of being found in either water sources or finished drinking water. Our water is monitored for these regulated contaminants at one time or another. Some substances are tested frequently: weekly, quarterly or annually. The levels of some things, however, change little over time, or the chances of detecting them is expected to be low. These contaminants are monitored less than annually. Substances that have been found in previous years' testing are also listed in the table, along with the year that they were found.

Minneapolis water is tested for more than 100 different contaminants. Only those detected are listed in the table. Tested substances fall into one of five different categories:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife

Inorganic contaminants such as salts and metals, which can be naturally occurring or 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems

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

Fun facts and ideas

How much water will the new facility produce?

Minneapolis' new water filtration system at Columbia Heights will produce 70 million gallons of quality drinking water per day. To look at it another way:

- In one minute, the system will fill 777,777 eight-ounce glasses of water.
- In an hour, it would fill more than three Olympic-sized swimming pools.
- A "tub" the size of the Minnesota Wild's hockey rink (ice surface) to a depth of almost 24 feet would be filled in one hour.
- The entire Metrodome would be completely filled in about six-and-a-half days.
- It's the same amount as about 1 percent of the Mississippi River's normal flow in the month of June.

What does it filter?

This new system will remove most viruses from the water supply. To understand how powerful this is, you must imagine how small a virus is. If you place *half a million* viruses, end to end, it would measure one inch. This system can remove a **single virus**! Cryptosporidium, the "bug" that caused water problems in Milwaukee, is about 100 times larger than viruses. Cryptosporidium can be removed by this new ultrafiltration system.

How much will this cost?

Construction, equipment and engineering for this state-of-the-art facility will cost about \$56 million.

Minneapolis' drinking water remains a great value. Customers get three-and-a-half gallons of quality drinking water for about a penny. Comparing that to bottled water ... buy a 12-ounce bottle of water at a convenience store and it may cost you about 79 cents. You can refill that bottle 2,850 times at that price with Minneapolis water.

The host of a nationally syndicated radio program (The Splendid Table, which airs on Minnesota Public Radio), conducted a water taste-test in 2000. They tasted and compared three bottled waters and Minneapolis tap water and proclaimed Minneapolis tap water the tastiest. Minneapolis tap water beat out Evian, Dasani and Chippewa bottled waters.



Pictured above: City of Minneapolis new Columbia Heights Water Treatment Plant

Membrane Filtration Plant at Columbia Heights

Minneapolis Water Works

The City of Minneapolis began providing drinking water to local residents with the installation of its first pump in 1867. By 1913, the City's Water Works system employed the best technology of the time. The City of Minneapolis Water Works is now constructing a state-of-the-art system that will ensure the highest quality drinking water for its more than 500,000 consumers in Minneapolis and surrounding communities.

How does the new treatment process work?

The new facility will use "ultrafiltration" technology, which utilizes membranes to effectively remove impurities even smaller than can be detected by a standard microscope. In fact, the new system will remove impurities more effectively than required by emerging and increasingly stringent federal drinking water standards. This ultrafiltration membrane system is the best technology available for removing waterborne pathogens and particulate contaminants. Such microorganisms (such as Cryptosporidium) have proven difficult for conventional technology to remove or kill. In addition, the new treatment facility will feature high-tech and redundant security measures to protect our water supply in this new, post-September 11th environment. This facility will process up to 70 million gallons of water per day.

Why is a new facility needed?

The filtration plant constructed in phases from 1913 through 1918 is still operational, but is nearing the end of its useful life. Plans for the new facility emerged after alternative water treatment processes were studied and evaluated to determine their ability to meet current and future water quality regulations. In addition, the City of Minneapolis conducted a feasibility study and engaged a team of experts (engineering, public health, and citizen-based), who all came to the same conclusion ... that a state-of-the-art ultrafiltration membrane filtration system was the best option.

Construction Timeline and Background

Construction for the new facility is under way; the new Columbia Heights facility is expected to be operational by spring 2005. The entire cost of the project is estimated at \$56 million.

Questions?

Contact the project manager at 612-661-4908 or 612-661-4999.



Understanding the Laboratory Results

The **Level Found** can be the highest amount found in the water or the average of all samples analyzed, depending on the regulation. If multiple samples were tested in 2003, the lowest and highest detected values are listed under **Range of Detections**.

The highest level of a substance allowed in drinking water is the Maximum Contaminant Level (MCL), which is set by USEPA. Some contaminants also have MCL goals (MCLGs). This is the level of a substance where there is no known or expected health risk. MCLGs allow for a margin of safety. MCLs are set as close to MCLGs as feasible using the best available water treatment processes.

Unregulated substances do not have MCLs. They are assessed by comparing the detected amount to state standards known as health risk limits. If an unacceptable amount of any substance is ever found in our water, the Minneapolis Water Works will notify residents immediately and take corrective action to eliminate the problem.

The MCL for lead and copper is known as the Action Level (AL). This is the concentration which, if exceeded, triggers treatment or other requirements a water system must follow. Ninety percent of all samples tested must be below this concentration.

The Maximum Residual Disinfectant Level (MRDL) is 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. The MRDL Goal (MRDLG) is the level of disinfectant where there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Turbidity is a measure of water clarity monitored at the Minneapolis Water Works Treatment Plant. Certain treatment techniques (TT) are required to reduce the level in the drinking water. Regulations require turbidity to be <0.3 NTU 95% of the time and <1.0 NTU 100% of the time.

The Minnesota Department of Health has determined that one or more sources of your drinking water is susceptible to contamination. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-215-0800 (press 5) or go online at www.health.state.mn.us/divs/eh/water/dwp/swp/swa. Call (612)-661-4999 if you have questions about the City of Minneapolis drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water.



What You Need to Know about Drinking Water Regulations

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 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 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 (1-800-426-4791).

If You Have Special Health Requirements

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 (1-800-426-4791).

Lead and Drinking Water

Test results show water in the Minneapolis system to be in compliance for lead. You should know that infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Flushing your tap for 30 seconds to two minutes before using the water can substantially reduce lead exposure. Additional information is available from the USEPA's Safe Drinking Water Hotline (800-426-4791).



2003 Laboratory Testing Results for Minneapolis Water

Detected Substance	Units of Measure	MCL	MCLG	Level Found in Mpls. Water	Range of Detections	Typical Source in Drinking Water
Nitrate/Nitrite (as Nitrogen)	ppm	10	10	0.77	—	Erosion of natural deposits; fertilizer runoff; leaching from septic tanks, sewage
Fluoride	ppm	4.0	4.0	1.1	0.96-1.2	Additive that promotes strong teeth; fertilizer and aluminum factory discharge
Haloacetic Acids	ppb	60	0	33.5	8.4-36.7	By-product of drinking water disinfection
Chlorine	ppm	4.0 (MRDL)	4.0 (MRDLG)	3.7	3.2-4.1	Water additive used to control microbes
Alpha Emitters (2002)	pCi/L	15.0	0	0.4	—	Erosion of natural deposits
Atrazine	ppb	3.0	3.0	0.15	nd 0.3	Runoff from herbicide used on row crops
TTHM (Total trihalomethanes)	ppb	80	0	43.6	9.0-48.7	By-product of drinking water disinfection
Thallium (7/2/99)	ppb	2.0	1.0	0.5	—	Leaching from ore processing sites; electronics, glass and drug factory discharge
Turbidity	NTU	TT; 1.0 and < 0.3 95% of the time	—	99% of samples less than 0.3	Highest reading 0.28	Soil runoff
Lead	ppb	90% of samples must be <15 ppb (AL)	—	90% of samples < 6.0	1 out of 50 samples > 15.0	Corrosion of home plumbing systems, erosion of natural deposits
Copper	ppm	90% of samples must be <1.3 ppm (AL)	—	90% of samples < 0.258	0 out 50 samples > 1.3	Corrosion of home plumbing systems, erosion of natural deposits
Sodium (7/2/99)	ppm	No USEPA limit set	—	8.3	—	Erosion of natural deposits
Sulfate (7/2/99)	ppm	No USEPA limit set	—	25.0	—	Erosion of natural deposits
Total Coliform Bacteria		present in 5% of monthly samples	0 present	2%	N/A	Naturally present in the environment

ppb: parts per billion, or micrograms per liter of water **ppm:** parts per million or milligrams per liter of water **pCi/L:** picocuries per liter, a measure of radioactivity **NTU:** Nephelometric Turbidity Units **ND:** Not Detected