Your Water- Taste and Odor

What affects the taste and smell of drinking water?

You may occasionally notice a difference in the taste or smell of your drinking water. The City of Minneapolis takes its water from the Mississippi River. This water comes from the lakes, streams and ground water upriver from us. Because the sources of the water vary, the taste and smell of the water can change quite quickly.

How do we detect tastes and odors?

Our senses of taste and smell are responses by receptor cells, on the tongue and in the nose, to chemicals in the nearby environment. Chemicals are responsible for the characteristic tastes of foods or spices and the signature aromas of perfumes or flowers.

People differ in their abilities to sense tastes or odors and often describe identical sensations in different ways. Odors affect our taste perceptions. This causes us to frequently describe tastes in terms of an associated odor. The tongue is only capable of perceiving four flavors: salty, sweet, sour and bitter. Our mouths can also detect physical sensations such as chalky, gritty, metallic or astringent (dry). So without our sense of smell, our "taste buds" would be much less sensitive.

People complaining about odor in their tap water often detect the odor only in their hot water. Heat can intensify odor, just as cooking a soup makes the kitchen fill with the aroma. The source of an odor may be present in cold water, but the odor is not released until the water is heated.

One smell can be mistaken for another. A person may describe water from a sink tap as smelling "septic." This may actually be moist, partly clogged drain traps or garbage disposals rather than the tap water. Decaying waste in the drains can smell "septic," causing water drawn at that location to seem to have the same odor. A head cold or hay fever can cause temporary loss of the sense of smell or a change in the ability to distinguish between odors. Smoking, medications and alcohol often produce similar effects.

What are some common sources of waterborne tastes or odors?

Algae (small green plants) grow naturally in lakes and streams. Growing algae can make water taste and smell “fishy” and swampy. Some species produce chemicals that impart earthy, musty or moldy odors to water. Decaying organic material, such as dead leaves or aquatic plants and algae, often cause tastes or odors that are swampy, grassy, woody, fishy or septic. Since the human nose is so sensitive, you may taste or smell a difference even when the tiniest traces exist (perhaps as low as five parts per trillion). Heavy rains and snow melt wash these chemicals into the rivers and into the plant intakes.

The water treatment process itself uses and creates chemicals that can cause taste or odor in the water. Disinfected water may retain a faint bleach odor, for example. Water that sits in pipes for a long time through lack of use can develop a stale taste or odor. A stale water condition may occur in dead ends on the delivery system. Stale water conditions are more likely to occur in summer when higher temperatures cause the disinfectant (which remains in the water, at very low levels to comply with public health regulations) to dissipate more quickly.

How does water acquire tastes or odors?

Water is known as the "universal solvent" because it easily dissolves chemicals, which then give a taste and odor to the water. Water can pick up taste and odor from chemicals in the air. For example, water stored in a refrigerator will eventually absorb the odor of pungent foods such as onions or garlic.

What is the City of Minneapolis doing to improve the taste and odor?

We have two primary treatments for removing those odor causing materials. One is powdered activated carbon, which adsorbs the odors like a sponge, and the other is potassium permanganate, which oxidizes chemicals to destroy the odor-causing compounds. Unfortunately, substances produced by algae’s natural metabolism are sometimes very difficult to remove using current treatment methods. We are looking for new technology to improve our treatment.

How long will the taste and odor continue?

The event can last from a few days to several weeks. It depends on the amount of algae in the lakes draining into the Mississippi River and the amount of rainfall in the watershed. It also depends on the success of our treatment.

Are the chemicals that cause tastes or odors harmful to human health?

No. The naturally occurring chemicals that cause unpleasant tastes and odors in our drinking water are not associated with any known health risks to humans. Also, the disinfection chemicals and compounds formed from their use that cause taste and odor exist at levels well below federally mandated exposure limits.

City of Minneapolis

Water Quality Report 2007

English:
Attention. If you want help translating this information, call- 612-673-3737

Spanish:
Atención. Si desea recibir asistencia gratuita para traducir esta información, llame al 612-673-2700

Somali:
Ogow. Haddii aad dooneyso in lagaa kaalmeeyo tarjamadda maclu-umaadkani oo lacag la’ aan wac 612-673-3500

Hmong:
Ceeb toom. Yog koj xav tau kev pab txhais cov xov no rau koj dawb, hu 612-673-2800

Sign Language:
612-673-3220 TTY 612-673-2626

311 Minneapolis

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 presence of contaminants does not necessarily mean that water poses a health risk. The test results for last year are shown in the table on the next page. Substances that have been found in previous years' testing are also listed in the table, along with the year that they were found.

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 humans. The United States Environmental Protection Agency (EPA) regulates substances that can be harmful to human health and have at least a reasonable possibility of being found in water sources or finished drinking water. Our water is monitored for these regulated contaminants. We test for some substances frequently: weekly, quarterly or annually. The levels of some things, however, change little over time, or the chance of finding a detectable amount is expected to be low. These contaminants are monitored less than annually.

Any contaminants found in our water were within federal safe drinking water standards. The table to the right shows the contaminants that were detected last year. Some contaminants were detected more than a year ago; they are included in the table along with the date that they were detected.

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 occur naturally 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. They can also come from gas stations, urban stormwater runoff and septic systems

Radioactive contaminants, which can occur naturally or from oil and gas production and mining activities

Understanding the laboratory results and terms

The level found is either the highest amount found in the water or the average of all samples analyzed, depending on the regulation. If multiple samples were tested in 2006, 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)**. The EPA sets this level. Some contaminants also have a **maximum contaminant level goal (MCLG)**. This is an even more conservative level of the substance than the MCL, where it has no known or expected health risk. MCLGs add a margin of safety.

Unregulated substances do not have EPA maximum levels. We assess these 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)**. Exceeding this level triggers corrective action to get 90 percent of all samples 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 it is necessary to add a disinfectant to control microbial contaminants. The **MRDL goal (MRDLG)** is the level of disinfectant where it has no known or expected health risk. These goal amounts do not reflect the benefits of using disinfectants, only the level we should not exceed for safety.

"Turbidity" is a measure of water clarity. Certain **treatment techniques (TT)** are required to reduce turbidity (increase clarity) and eliminate microorganisms in the drinking water. Regulations require turbidity to be less than 0.3 **nephelometric turbidity units (NTU)** 95 percent of the time and always less than 1 NTU.

The Minnesota Department of Health has determined that one or more sources of your drinking water are susceptible to contamination. This does not mean that any of your drinking water is contaminated. If you wish to obtain the entire source water assessment regarding your drinking water, please call (651) 201-4670 or go online at www.health.state.mn.us/divs/eh/water/swp/swa/index.htm.

If you have questions about City of Minneapolis drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water, please call 311.

What You Need to Know about Drinking Water Regulations

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations limit 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 mean that water poses a health risk. You can find more information about contaminants and potential health effects by calling the EPA's Safe Drinking Water Hotline (800) 426-4791.

If You Have Special Health Requirements

Some people may be more vulnerable to contaminants in drinking water than the general population. People with weakened immune systems (such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders), some elderly people and infants can be particularly at risk from infections. These people should seek advice from their health care providers about drinking water. The Safe Drinking Water Hotline at (800) 426-4791 has guidelines from the EPA/Center for Disease Control to lessen the risk of infection by cryptosporidium and other microbial contaminants.

Lead and Drinking Water

Water in the Minneapolis system complies with all regulations concerning lead. You should know that infants and young children are typically more vulnerable than the general population to lead in drinking water. 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. More information is available from the EPA's Safe Drinking Water Hotline (800) 426-4791.

2006 Laboratory Testing Results for Minneapolis Water

Detected Substance	Units of Measure	MCL	MCLG	Level Found	Range of Detections	Typical Source in Drinking Water
Alpha emitters (4/17/02)	pCi/L	15.4	0	0.4	—	Erosion of natural deposits
Fluoride	ppm	4	4	1.07	0.91-1.07	Additive that promotes strong teeth, fertilizer and aluminum factory discharge. Erosion of natural deposits
Haloacetic acids (HAA5)	ppb	60	0	27.42	0.7-36	Byproduct of drinking water disinfection
Nitrate (as nitrogen)	ppm	10	10	0.84	—	Erosion of natural deposits; fertilizer runoff; leaching from septic tanks, sewage
Total trihalomethenes (TTHM)	ppb	80	0	34.53	8.4-34.9	By-product of drinking water disinfection
Total coliform bacteria	Positive Samples	present in >5% of monthly samples	0 present	1%	—	Naturally present in the environment
Turbidity	NTU	TT; < 1.0 and < 0.3	—	100% of samples less than 0.3	Highest reading 0.53	Soil runoff
Chlorine	ppm	(MRDL**) 4	(MRDLG**) 4	2.84	1.7-3	Water additive used to control microbes
Copper	ppm	90% of samples must be < 1.3 ppm (AL)	—	90% of samples < 0.12	0 out 50 samples > 1.3	Corrosion of home plumbing systems, erosion of natural deposits
Lead	ppb	90% of samples must be < 15 ppb (AL)	—	90% of samples < 5	3 out of 50 samples > 15	Corrosion of home plumbing systems, erosion of natural deposits
Sodium (12/01/04)	ppm	No USEPA limit set	—	15	—	Erosion of natural deposits
Sulfate (12/01/04)	ppm	No USEPA limit set	—	30.8	—	Erosion of natural deposits

AL: action level, the MCL for lead and copper **MCL:** maximum contaminant level **MCLG:** maximum goal (level for a substance where it has no expected health risks) ****MRDL:** maximum residual disinfectant level ****MRDLG:** maximum residual disinfectant level goal **pCi/L**: picocurie per liter, a measure of radioactivity **ppb**: parts per billion, or micrograms per liter of water **ppm**: parts per million or milligrams per liter of water **ND:** not detected **NTU**: nephelometric turbidity units **TT:** treatment techniques