

Regulated Substances

| Parameter | Units | MCLG | MCL | Range | Avg./Results* | Typical Source of Contaminant |
|------------------------------|-------|------|------|-----------|---------------|--|
| Alpha Emitters (9/22/2010) | pCi/l | 0 | 15.4 | N/A | 6.4 | Erosion of natural deposits. |
| Barium (12/29/2010) | ppm | 2 | 2 | N/A | 0.02 | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits. |
| Chlorine ** | ppm | 4 | 4 | 0.7 – 1.0 | 0.85 | Water additive used to control microbes. |
| Combined Radium (9/22/2010) | pCi/l | 0 | 5.4 | N/A | 2 | Erosion of natural deposits. |
| Haloacetic Acids (HAA5) | ppb | 0 | 60 | N/A | 4.3 | By-product of drinking water disinfection. |
| Nitrate (as Nitrogen) | ppm | 10.4 | 10.4 | ND-0.75 | 0.75 | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits. |
| TTHM (Total trihalomethanes) | ppb | 0 | 80 | N/A | 10.8 | By-product of drinking water disinfection. |
| Tetrachloroethylene | ppb | 0 | 5 | ND – 0.63 | 1.23 | Leaching from PVC pipes; discharge from factories and dry cleaners. |
| Trichloroethylene | ppb | 0 | 5 | ND – 0.15 | 0.15 | Discharge from metal degreasing sites and other factories. |

Unregulated Substances

Some contaminants do not have Maximum Contaminant Levels established for them. These unregulated contaminants are assessed using state standards known as health risk limits to determine if they pose a threat to human health. If unacceptable levels of an unregulated contaminant are found, the response is the same as if an MCL has been exceeded; the water system must inform its customers and take other corrective actions. In the table that follows are the unregulated contaminants that were detected:

| Parameter | Units | SMCL | Avg./Results* | Effects - Source |
|------------------------|-------|-------------|---------------|--|
| Alkalinity | ppm | N/A | 260 | Carbonate rocks (limestone) |
| Aluminum | ppm | 0.05 to 0.2 | 0.005 | Colored water |
| Calcium | ppm | N/A | 72 | Mineral deposits from rock. |
| Chloride | ppm | 250 | 4.67 | Salty taste |
| Hardness, Total | ppm | N/A | 283 | Mineral deposits |
| Hardness, Total | gpg | N/A | 17 | Mineral deposits |
| Iron | ppm | 0.3 | 0.28 | Rusty color, staining, metallic taste |
| Manganese | ppm | 0.05 | 0.04 | Black-to-brown color, staining, metallic taste |
| Magnesium | ppm | N/A | 24.5 | Mineral deposits from rock. |
| pH | pH | 6.5 to 8.5 | 7.5 | Corrosion, metallic taste if below 6.5; deposits, slippery feel, soda taste if above 8.5 |
| Sodium | ppm | 20 | 10 | Salty taste – Erosion of natural deposits. (range 1.25 to 10) |
| Sulfate | ppm | 250 | 45.9 | Laxative effect – Erosion of natural deposits. (range 10.6 to 45.9) |
| Total Dissolved Solids | ppm | 500 | 330 | Hardness, deposits, colored water, staining, salty taste |
| Turbidity | Ntu | N/A | <1 | Refers to how clear the water is. |

Regulated Substances Controlled in the Distribution System

| Substance | MCLG | AL | 90% Level | # of sites over AL | Meets Regulations | Typical Source |
|--------------------------|------|-----|-----------|--------------------|-------------------|---|
| Lead (ppb) (7/16/2010) | 0 | 15 | 5.3 | 1 out of 50 | Yes | Corrosion of household plumbing systems; Erosion of natural deposits. |
| Copper (ppm) (7/16/2010) | 1.3 | 1.3 | 0.81 | 0 out of 50 | Yes | Corrosion of household plumbing systems; Erosion of natural deposits. |

* This is the value used to determine compliance with federal standards. It sometimes is the highest value detected and sometimes is an average of all the detected values. If it is an average, it may contain sampling results from the previous year.

** Highest and Lowest Monthly Average.

- ▶ **Maximum Contaminant Level (MCL)** - Highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- ▶ **Maximum Contaminant Level Goal (MCLG)** - 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.
- ▶ **N/A** - Not Applicable.
- ▶ **ND** - Not Detected.
- ▶ **NT** - Not Tested.
- ▶ **ppm** - Parts per million.
- ▶ **ppb** - Parts per billion.
- ▶ **gpg** - Grains per gallon.
- ▶ **pCi/L** - Pico curies per liter (a measure of radioactivity).
- ▶ **Range** - This is the lowest to the highest a contaminant was detected in 2008.
- ▶ **AL** - Action Level is the concentration of a contaminant which triggers treatment or another requirement which a water system must follow.
- ▶ **90% Level** - 90% of samples must be below the AL.
- ▶ **SMCL** - Secondary Maximum Contaminant Level.
- ▶ **Ntu** - Nephelometric units.
- ▶ **MDH** - MN Dept. of Health.

Lead in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from material and components associated with service lines and home plumbing. RPU is responsible for providing high quality drinking water, but cannot control the variety of material 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 our 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 <http://www.epa.gov/safewater/lead>.



Rochester Public Utilities

Water Quality Report 2011

www.rpu.org

Spanish: Informacion importante. Si no la entiende, haga que alguien se la traduzca ahora.

Hmong: Nov yog ntaub ntawv tseem ceeb. Yog koy tsi to taub, nrhiav neeg pab txhais rau koh kom sai sai.

In our 14th annual **Drinking Water Quality Report**, we are pleased to announce that water provided by Rochester Public Utilities (RPU) meets all State and Federal drinking water standards. RPU is dedicated to one clear goal - Quality First. With a focus on customer service and efficiency in operations, we continue to strive for excellence through effective water quality programs that will ensure a safe and reliable drinking water supply for years to come. This report contains the results of monitoring done on your drinking water for the period from January 1 to December 31, 2011. The purpose of this report is to advance consumers' understanding of drinking water and heighten awareness of the need to protect our precious water resources.

Source of Water

Water is pumped from 31 deep groundwater wells located throughout the city. Most wells are 24 inches in diameter and extend 400-1,000 feet in depth. Water in the Rochester municipal system is drawn from water-bearing rock layers called aquifers. An aquifer is any type of geologic material, such as sand or sandstone, which can supply water to wells or springs. Most of Rochester's water is drawn from the Jordan Aquifer, a deep sedimentary unit that underlies much of southeastern Minnesota. Water is also drawn from several multi-formation wells including: Prairie du Chien-Jordan, Prairie du Chien-Galesville, Jordan-Galesville, and Prairie du Chien-Mt. Simon aquifers.

Even though water provided to RPU customers meets all State and Federal drinking water standards, the Minnesota Department of Health has also made a determination as to how vulnerable the source of water may be to future contamination incidents. If you wish to obtain the entire source water assessment regarding your drinking water, please call 651-201-4700 or 800-818-9318 (and press 5) during normal business hours. Also, you can view it online at www.health.state.mn.us/divs/eh/water/swp/swa.

Call 507-280-1500 or visit www.rpu.org if you have any questions about Rochester's drinking water or would like information about opportunities for public participation in decisions that may affect the quality of the water.

Water Treatment

Rochester's water quality is especially high due to the depth of the wells and the quality of the source; therefore there is little need for treatment. At each of our wells, the following water treatment products are added to the groundwater before it is pumped into the distribution system:

- ◆ **Fluoride (helps prevent tooth decay)** State of Minnesota requires all municipal water systems add fluoride to the drinking water to promote strong teeth. A typical source of fluoride includes erosion of natural deposits, discharge from fertilizer and aluminum factories. Natural groundwater in Rochester contains 0.23 ppm fluoride. Over 3,200 fluoride tests were performed in 2011 at different residential and business sites around the city. RPU's fluoride ranged from 1.1 to 1.2 ppm, with an average level of 1.2 ppm. The Maximum Contaminant Level (MCL) and Maximum Contaminant Level Goal (MCLG) for fluoride is 4 ppm.
- ◆ **Chlorine (disinfects drinking water)** is added to the water at each well to minimize the chance for any bacteria, viruses, or fungi in the distribution system. Total Chlorine is measured weekly at the 25 different sites around the city averaging 0.85 ppm. The Maximum Residual Disinfectant Level (MRDL) and the Maximum Residual Disinfectant Level Goal (MRDLG) for Chlorine is 4 ppm. In 2011 RPU collected and tested over 1,200 water samples for coliform bacteria, which we showed no bacteria present in the water.
- ◆ **Polyphosphate (used for corrosion control)** is added to our water to help prevent "rusty" water. A concentration of approximately 0.5 ppm is maintained in the distribution system. Polyphosphate is also used for corrosion control, by coating distribution mains and household piping to prevent the leaching of lead and copper from household plumbing into the drinking water.

Contaminants of Emerging Concern Program

Through this program, Minnesota Department of Health (MDH)

is investigating and communicating the health and exposure potential of contaminants of emerging concern in drinking water. The program supports the Clean Water Fund mission to protect drinking water sources and the MDH mission to protect, maintain, and improve the health of all Minnesotans.

Contaminants of emerging concern are substances that have been released to, found in, or have the potential to enter Minnesota waters (groundwater or surface water) and:

- do not have Minnesota human health-based guidance (how much of a substance is safe to drink);
- pose a real or perceived health threat; or
- have new or changing health or exposure information.

RPU has been proactive in testing for contaminants of emerging concern as they are identified by MDH.

Compliance with National Primary Drinking Water Regulations

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.

Contaminants that may be present in source water include:

- ◆ **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 storm 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 by-products 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.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) 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 Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

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 and the 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 at 1-800-426-4791.

Results of Monitoring

No contaminants were detected at levels that violated State or Federal drinking water standards. However, some contaminants were detected in trace amounts that were below legal limits. The table that follows shows the contaminants that were detected in trace amounts last year. Some contaminants are sampled less frequently than once a year; as a result, not all contaminants were detected for in 2011. If any of these contaminants were detected the last time they were sampled for, they are included in the table along with the date that the detection occurred.