

The Metropolitan District's Water Quality Report

2010

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MDC
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(Este reporte contiene información importante sobre el agua potable. Si necesita este Reporte en Español por favor llame al 860-278-7850 ext. 3221.)

OVERVIEW

The MDC's Water Quality Report, required by federal and state regulations, provides a summary of last year's (2010) water quality and includes information on how the MDC collects, treats and delivers quality drinking water. In 2010, the MDC's state-licensed Water Analysis Laboratory, located at Reservoir No. 6 in Bloomfield, conducted more than 100,000 physical, chemical and bacteriological tests. These tests search for over 130 potential water contaminants at the MDC's reservoirs, treatment plants and the 47 state-approved sampling sites throughout the 12 town service area. These tests and others conducted at various consulting laboratories ensure that the potable water supplied by the MDC meets all State of Connecticut Public Health Code and Federal Environmental Protection Agency standards for water quality in 2010.

Last year, the MDC distributed an average of 52.40 million gallons of water per day to a population of approximately 400,000.



WATER SOURCE

The MDC's untreated water comes entirely from surface water sources in watersheds that cover approximately 89.7 square miles. A watershed is considered to be all the land area that drains to a particular water course or water body, such as a reservoir.

The MDC's water supply comes from the East Branch of the Farmington River and the Nepaug River, a tributary of the Farmington River. The reservoirs are: the 30-billion gallon Barkhamsted Reservoir, impounded by the Saville Dam, located about one mile north of New Hartford; and the 9-billion gallon Nepaug Reservoir, created by the Phelps Brook and Nepaug Dams, located about one mile northwest of Collinsville. Both reservoirs are in Connecticut's northwest hills, roughly 20 miles from Hartford and they feed into reservoirs in West Hartford and Bloomfield. These relatively remote, less developed watershed locations help reduce the chance of pollution. Even so, the MDC aggressively implements various source protection programs to further ensure the quality of its reservoir supplies.

SOURCE WATER PROTECTION

Source water is untreated water used to supply public drinking water. Natural processes and human activities that occur within a watershed area can greatly impact the quality of that source water. As water travels over the surface of the land or through the ground, it can carry substances such as soil particles, salts, metals, oils, bacteria, fertilizers and pesticides that can contaminate water supplies. The MDC is very fortunate to have heavily forested watersheds, which help safeguard the water supplies by acting as a natural filter and a buffer to potential contaminants.

In order to prevent contamination and unsanitary conditions in our watershed areas, the MDC performs annual watershed inspections on properties draining to the Barkhamsted and Nepaug Reservoirs. In 2010, the MDC expanded its state-mandated inspection program to include the West Hartford Reservoirs and Reservoir No. 6 public water supply watersheds. Property owners and municipal officials were given advance notification of the new program in these areas.

The MDC's watershed inspector visits residential, business and farm properties located within the watersheds to identify conditions that may adversely affect drinking water supplies. The inspector checks for signs of septic system failure, leaking fuel oil tanks, soil erosion and sedimentation issues, illegal discharges and dumping, improper storage of chemicals and animal waste, and other conditions that have the potential to affect water quality. In 2010, a total of 1,211 watershed inspections were conducted. The MDC's watershed staff also reviews land use development proposals that come before watershed towns and when appropriate, submits comments to encourage practices that protect reservoir water quality.

In addition, routine raw water sampling of reservoirs and tributaries is performed in order to monitor for changes in water quality. The MDC's Water Analysis Laboratory conducts the physical, chemical, nutrient and biological analyses to help identify potential drinking water contaminants.

Permanently protecting additional water supply watershed land is one of the most important measures that can be taken to strengthen source protection efforts. To this end, the MDC implemented a land acquisition program and fund. In 2010, the District acquired a 29.8 acre parcel in West Hartford that links District-owned land between the West Hartford Reservoirs and Reservoir No. 6. Since 2006, the MDC has acquired a total of 112 acres of additional watershed land under this program.

SOURCE WATER ASSESSMENT

The State of Connecticut Department of Public Health (DPH) Drinking Water Section completed an assessment of all public drinking water sources in 2003 to identify and document potential sources of contamination that could adversely impact drinking water quality. The assessments found that reservoirs owned by the MDC have a low susceptibility to potential sources of contamination. The Source Water Assessment Program report can be found on the Connecticut DPH's website: <http://www.ct.gov/dph/publicdrinkingwater>. For more information on source water assessment visit the EPA's website: <http://water.epa.gov/infrastructure/drinkingwater/sourcewater>.

WATER TREATMENT

The MDC has always filtered its water supplies. The slow sand filtration plant located just off Farmington Avenue in West Hartford is the site of 22 underground filter beds. In the filter beds, water trickles down through more than three feet of sand and stones, where solids and microscopic bacteria are trapped on top of or in the first 2-3 inches of the sand. Additional chemical treatment follows to eliminate any remaining bacteria.

The Reservoir No. 6 plant in Bloomfield is a rapid sand filtration facility, also known as a complete conventional plant. The system utilizes chemical treatment prior to filtration at six filter beds in the plant. Because pre-treatment removes most impurities, those remaining impurities can be removed quickly by the filtration process. While the filtration process is accomplished somewhat differently at each plant, there are five basic components in the treatment process that the plants have in common:

1. Filtration
2. Disinfection through chlorination
3. Fluoridation (mandated by the State of Connecticut Department of Public Health to help prevent tooth decay)
4. pH adjustment of all treated water
5. Corrosion control

CROSS CONNECTION

The State of Connecticut Department of Public Health (DPH) regulations and the MDC Ordinances require that the MDC conduct periodic inspections of properties for potential cross connections. A cross connection is an actual or potential connection between a public water system and any other source or system through which it is possible to introduce any contamination or polluting agent. The regulations require that commercial, industrial and residential structures maintain a cross connection control device or devices if there is a possibility of a "toxic or objectionable substance" being used at, in or outside the structure. State cross connection regulations require that the homeowner notify the MDC and obtain approval of the plans prior to the installation of any of the previously mentioned installations. The cross connection requirements have been expanded to include, but are not limited to fire suppression systems, lawn irrigation systems, marinas, boilers, solar heat, geothermal wells, lawn irrigation wells, ice machines and facilities which utilize chemicals within the premises, which would meet the definition of toxic or objectionable substances.

Lawn irrigation systems have gained in popularity over the past few years and many homeowners have pursued installation of such systems. If you have a system that has not been inspected and/or tested, please notify the MDC at (860) 278-7850, ext. 3600 to arrange for an inspection.

WATER CONSERVATION

Water is a limited resource, so it is vital that we all work together to maintain it and use it wisely. Here are a few tips that you can follow to help conserve water:

- Check for leaky fixtures. A leaking faucet or toilet can dribble

away thousands of gallons of water per year.

- Store a jug of ice water in the refrigerator for a cold drink.
- Water lawn and plants in the early morning or during the evening to avoid excess evaporation. Don't water on a windy, rainy or very hot day.
- Apply mulch around flowers, shrubs, vegetables and trees to reduce evaporation.



LEAD

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 materials and components associated with service lines and home plumbing. The MDC 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 in the residential plumbing 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 may take to minimize exposure is available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

Another simple way to reduce the possible exposure to lead is to regularly clean your faucet screens to remove material that may become trapped in the screen. Some of that material may be lead particles from your home's internal plumbing. Finally, do not use hot water from the tap to make infant formula or for cooking. Hot water may have higher mineral content than the cold water supplied by the MDC.

Infants and young children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water containing lead in excess of the action level over many years could develop kidney problems or high blood pressure. Infants and young children are typically more vulnerable to lead in drinking water than the general population. While the MDC uses no lead pipes in its distribution system, it is possible that lead levels may be elevated in your home, which is a result of materials used in your home's plumbing.

LEAD (continued)

The table on page 6 of this report summarizes the results of lead and copper testing. Federal regulations require that a minimum of 50 homes be periodically sampled by having the homeowner collect a one-liter sample from the cold-water kitchen tap as "first draw" (after water has been standing motionless in household pipes for at least six hours). During the last lead and copper sampling round conducted in 2008, the MDC collected samples from 52 homes. Since less than 10 percent of the homes sampled were above the action level set by the EPA, the MDC was in compliance with the Lead and Copper Rule.

During this testing, homeowners were also asked to collect an additional sample after having the water run for a few minutes. These samples were also analyzed for lead and copper content. The results consistently showed that little or no lead or copper was present in the water coming from the MDC water mains after the water was allowed to run for a short period of time. Of the 52 sites tested for lead, 49 had values below the EPA's action level of 15 parts per billion. The remaining 3 homes had a value above the action level. Because the MDC does not use lead pipes in its distribution system, the high value in these homes was due to lead in the building's water pipes or other plumbing fixtures, such as a new faucet. In cases where lead levels are above the action level, the MDC advises homeowners on corrective actions, such as simply flushing the water as noted above. The MDC is scheduled to conduct the next round of lead and copper testing in 2011.

COPPER

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some individuals who may drink water containing elevated copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal health care provider. During the lead and copper monitoring period conducted in 2008, there were no exceedances of the copper action level in any of the standing samples collected by the homeowners. The lower level of copper found in the flushed sample versus the standing sample showed that the water within the mains had a very low level of copper.

UNREGULATED CONTAMINANT MONITORING RULE 2 (UCMR2)

On a quarterly basis in 2010, samples were collected by MDC laboratory staff for analysis by an Environmental Protection Agency certified laboratory for 25 chemicals using 5 different analytical methods, which could possibly be found within the nation's drinking water. The compounds of interest during the yearlong study included nitrosamines, breakdown products of herbicides and insecticides, flame retardants and possible by-products of explosives.

Analysis of the quarterly samples collected at the MDC's sample points did not show the presence of any of the 25 compounds of interest required to be analyzed under the UCMR2 throughout the year-long study. Analytical results are available for review at the MDC's Water Analysis Laboratory.

TOTAL AND HEXAVALENT CHROMIUM

The MDC has been testing for total chromium, which includes Chromium VI, or hexavalent chromium, since the EPA established the maximum level of 0.100 parts per million in the early 1990s. Without exception, all detected values for total chromium have been below this regulatory maximum level. This year, test results for total chromium indicated a range of 0.011 to 0.014 parts per million.

Currently, there is no EPA established maximum contaminant level specifically for hexavalent chromium, nor is there any requirement to independently analyze for this contaminant. However, in response to the recent concerns over hexavalent chromium in drinking water within other water distribution systems, the MDC conducted sampling at fifteen different locations within its treatment and supply system. The samples were sent to an independent analytical laboratory in California with extensive experience in the EPA method for detection of hexavalent chromium. All fifteen samples submitted for analysis were negative (none detected) for the presence of hexavalent chromium. The minimum reporting level used by the laboratory was 0.05 parts per billion.

Hexavalent chromium is one of 20 chemicals currently under review by the EPA for possible further regulation. The EPA's risk assessment should be completed by the summer of 2011, and may lead to more stringent drinking water standards for total chromium levels, as well as specific maximum levels for hexavalent chromium. The MDC will continue to stay abreast of any new developments in these regulations and monitor the watershed closely for any possible source of contaminants. Our testing protocol will remain in place to ensure that we meet or exceed EPA standards as they presently exist or as may be modified.

Through careful management and vigilant protection of our superior watershed system, and through diligence in maintaining and operating our two water filtration and treatment plants, we continue to provide the highest quality drinking water to our customers and have the capacity to do so for the foreseeable future.

INFORMATION ABOUT DRINKING WATER 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 watershed land or through the ground, it removes naturally occurring minerals, and in some cases, radioactive material. Radon, a radioactive gas found commonly in well water, is not present in MDC water since all its drinking water is initially derived from surface water reservoirs.

The water may also pick up substances resulting from the presence of animals or from human activity within the watershed areas.

Contaminants that may be present in source water include:

- Microbes, such as viruses and bacteria, which may come from septic systems, agricultural livestock operations and wildlife;
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges into septic leach fields, and mining or farming;

INFORMATION ABOUT DRINKING WATER CONTAMINANTS (continued)

- 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.

To ensure that tap water is safe to drink, the EPA established regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration is in the process of establishing regulations for contaminants in bottled water, which would provide the similar 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.

HOW TO READ THE TABLE (PAGE 6)

The table on page 6 shows the results of the MDC's water quality analyses on its treated drinking water.

The table lists all drinking water analytes that were detected during the 2010 calendar year. Unless otherwise noted, the data presented in this table are from tests performed between January 1 - December 31, 2010. The table contains the name of each substance, the highest level allowed by regulation (Maximum Contaminant Level, or MCL), the ideal goals for public health, the amount detected, the usual sources of each substance and a key to units of measurement.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is 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): 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.

DEFINITIONS

Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL: Maximum Contaminant Level

MCLG: Maximum Contaminant Level Goal

NTU: Nephelometric Turbidity Units

pCi/l: picocuries per liter (a measure of radioactivity)

ppm: parts per million, or milligrams per liter

ppb: parts per billion, or micrograms per liter

Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

HOW TO LEARN MORE ABOUT YOUR WATER

If you have questions about the quality of your tap water or the information in this report, please call 860-278-7850, ext. 3221 during normal business hours.

The MDC welcomes public input and participation in decisions affecting your drinking water. All District Board meetings, committee agendas and schedules are posted at the MDC's Headquarters located at 555 Main Street in Hartford, CT and are also found on the District's website. Meetings are open to the public.

For more information on water quality, water treatment and water conservation visit: www.themdc.com

Water Quality and Billing Questions: (860) 278-7850, ext. 3600
Cross Connections: (860) 278-7850, ext. 3673

OTHER SOURCES OF INFORMATION:

EPA Water Resource Center: (800) 832-7828

EPA Safe Drinking Water Hotline: (800) 426-4791

CT Department of Public Health: (860) 509-7333



2010 MDC Water Quality Results

Substance (units)	Highest Level Allowed (EPA's MCL)	Goals (EPA's MCLG)	Average	Range	Major Sources
Inorganics					
Fluoride (ppm)	4	4	0.98	0.81 - 1.22	Erosion of natural deposits; water additive that promotes strong teeth
Calcium (ppm)	NA	NA	3.5	2.00 - 9.8	Erosion of natural deposits
Chloride (ppm)	250	NA	7.6	6.4 - 9.1	Byproduct of drinking water disinfection
Nitrate (ppm)	10	10	0.02	<0.02 - .006	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrite (ppm)	1	1	<0.01	<0.01	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Disinfectant residual distribution (ppm)	4.0	4.0	0.44	0.00 – 0.95	Byproduct of drinking water disinfection
Sodium (ppm)	28 (state level)	N/A	10.9	9.2 - 12.6	Erosion of natural deposits and byproduct of water treatment
Sulfate	NA	NA	4.81	3.86 - 6.55	Erosion of natural deposits
Orthophosphate (ppm)	N/A	N/A	0.93	0.71 - 1.2	Corrosion control inhibitor
Alkalinity (ppm)	NA	NA	13.5	7.0 - 25	Erosion of natural deposits
pH	N/A	6.4-10 (State of CT)	7.51	7.09 - 8.40	Corrosion control
Copper (ppm)	1.3	1.3	0.006	0.002 - 0.010	Erosion of natural deposits
Chromium (ppb)	100	100	13	12 - 14	Erosion of natural deposits
Barium (ppm)	2.0	2.0	0.006	0.006 - 0.007	Erosion of natural deposits
Turbidity & Bacteria					
Turbidity (NTU-Max allowable) West Hartford Plant	1.0	0	0.12	0.04 - 0.61	Soil Runoff
Turbidity (NTU-Max allowable) Reservoir #6 Filter Plant	0.3	0	0.05	0.03 - 0.13	Soil Runoff
Total coliform (Distribution system) (2441 samples- 2160 required) One thermo-tolerant fecal coliform was recovered	Presence of coliform bacteria in 5% of monthly samples	0	0.4%	0 - 0.5%	Naturally present in the environment
Radioactivity					
Alpha emitters (pci/1)	15	0	0.3	0 - 0.5	Erosion of natural deposits
Uranium (m/L)	30	0	ND	ND	Erosion of natural deposits
Beta/photon emitters (pci/1)	4	0	0.94	-1.71 - 4.56	Decay of natural and man-made deposits
Volatile Organics & Organic Carbon					
Total haloacetic acids (ppb)	60	None set	31.27	2.35 - 74.23	Byproduct of drinking water disinfection
Total trihalomethanes (ppb)	80	None set	42.9	15.08 - 95.72	Byproduct of drinking water disinfection
Total organic carbon	N/A	Minimum removal ratio 35%	43%	38% - 46%	Rapid sand filter plant only treatment technique
Household Lead and Copper (2008 data — (most recent required household testing))					
Substance (units)	Action Level	Goals (EPA's MCLG)	90 th Percentile	Highest Level Detected	Major Sources
Lead (ppb)	15	0	5	276 ppb 52 sites tested (number of sites above AL=3)	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	1.3	1.3	0.08	1.05 ppm 52 sites tested (number of sites above AL=0)	Corrosion of household plumbing systems; erosion of natural deposits