



ANNUAL

# WATER QUALITY REPORT

*Water testing performed in 2009*



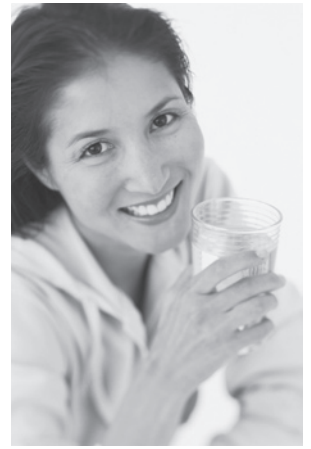
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## Maintaining High Standards

Once again we are proud to present our annual water quality report. This report covers all testing performed between January 1, 2009 and December 31, 2009. The events of the past few years have presented many of us with challenges we could not have imagined. Yet, in spite of this we have maintained our high standards in an effort to continue delivering the best quality drinking water possible. There may be other hurdles in the future but know that we will always stand behind you and the drinking water we work diligently to provide.

We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions, we are always available to assist you.



For more information about this report or for any questions relating to your drinking water, please call us at (413) 586-2390.

## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet every other Wednesday at the Hadley Town Hall, Hadley, MA. Meetings begin at 7:00 p.m.

## Water Source

The Town of Hadley's primary drinking water supply is groundwater, which is now drawn primarily from the Callahan wells. Our water comes from the Early Mesozoic basin aquifers. These aquifers, covering an area of about 216 square miles, are made of nonporous sandstone. Our groundwater supply is not exposed to air and is not subject to direct pollution and contamination like a river or a reservoir. In fact, groundwater is the safest and highest-quality water available to meet the public health demand of water intended for human consumption. Demand for good, safe drinking water is high: we provide to our customers roughly 700,000 gallons of drinking water every day.

Our water supply is part of the Middle Connecticut Watershed, which covers an area of roughly 1,000 square miles. Most of the watershed is covered by forest growth with agricultural and urban development accounting for less than one-third of watershed use. To learn more about our watershed on the Internet, go to U.S. EPA's Search Your Watershed at [www.epa.gov/surf](http://www.epa.gov/surf).

## Tap vs. Bottled

Thanks in part to aggressive marketing, the bottled water industry has successfully convinced us all that water purchased in bottles is a healthier alternative to tap water. However, according to a four-year study conducted by the Natural Resources Defense Council, bottled water is not necessarily cleaner or safer than most tap water. In fact, about 25 percent of bottled water is actually just bottled tap water (40 percent according to government estimates).

The Food and Drug Administration is responsible for regulating bottled water, but these rules allow for less rigorous testing and purity standards than those required by the U.S. EPA for community tap water. For instance, the high mineral content of some bottled waters makes them unsuitable for babies and young children. Further, the FDA completely exempts bottled water that's packaged and sold within the same state, which accounts for about 70 percent of all bottled water sold in the United States.

People spend 10,000 times more per gallon for bottled water than they typically do for tap water. If you get your recommended eight glasses a day from bottled water, you could spend up to \$1,400 annually. The same amount of tap water would cost about 49 cents. Even if you installed a filter device on your tap, your annual expenditure would be far less than what you'd pay for bottled water.

For a detailed discussion on the NRDC study results, check out their Web site at [www.nrdc.org/water/drinking/bw/exesum.asp](http://www.nrdc.org/water/drinking/bw/exesum.asp).



## Substances That Could Be in Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (Department) and the U.S. Environmental Protection Agency (U.S. EPA) prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) 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 these contaminants does not necessarily indicate that the water poses a health risk.

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.

Substances 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, or wildlife; Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 by-products of industrial processes and petroleum production, and which may also come from gas stations, urban stormwater runoff, and septic systems; Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## What's a Cross-connection?

Cross-connections that contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. For more information, review the Cross-Connection Control Manual from the U.S. EPA's Web site at [www.epa.gov/safewater/crossconnection.html](http://www.epa.gov/safewater/crossconnection.html). You can also call the Safe Drinking Water Hotline at (800) 426-4791.

## Lead and 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 materials and components associated with service lines and home plumbing. We are responsible for providing high quality drinking water, but cannot control the variety of materials 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 your 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 [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## What Are PPCPs?

When cleaning out your medicine cabinet, what do you do with your expired pills? Many people flush them down the toilet or toss them into the trash. Although this seems convenient, these actions could threaten our water supply.

Recent studies are generating a growing concern over pharmaceuticals and personal care products (PPCPs) entering water supplies. PPCPs include human and veterinary drugs (prescription or over-the-counter) and consumer products, such as cosmetics, fragrances, lotions, sunscreens, and house cleaning products. Over the past five years, the number of U.S. prescriptions increased 12 percent to a record 3.7 billion, while nonprescription drug purchases held steady around 3.3 billion. Many of these drugs and personal care products do not biodegrade and may persist in the environment for years.

The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. Never flush unused medications down the toilet or sink. Instead, check to see if the pharmacy where you made your purchase accepts medications for disposal, or contact your local health department for information on proper disposal methods and drop-off locations. You can also go on the Web at [www.Earth911.com](http://www.Earth911.com) to find more information about disposal locations in your area.

## Source Water Assessment and Protection

The Source Water Assessment and Protection (SWAP) program assesses the susceptibility of public water supplies to potential contamination by microbiological pathogens and chemicals. A susceptibility ranking of “high” was assigned to this system using the information collected during the assessment by the Massachusetts Department of Environmental Protection. The SWAP report notes the following key areas as possible sources of contamination: residential land uses; transportation corridors; agriculture; road and maintenance depots; and underground storage tanks located in the water supply protection area. The complete SWAP report is available at the water department or online at [www.mass.gov/dep/water/drinking/1117002.pdf](http://www.mass.gov/dep/water/drinking/1117002.pdf).

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

## Information on the Internet

The U.S. EPA Office of Water ([www.epa.gov/watrhome](http://www.epa.gov/watrhome)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) Web sites provide a substantial amount of information on many issues relating to water resources, water conservation and public health. Also, the DEP has a Web site ([www.mass.gov/dep](http://www.mass.gov/dep)) that provides complete and current information on water issues in Massachusetts, including valuable information about our watershed.

## Sampling Results

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. The state allows us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Antimony (ppb)	2008	6	6	1.2	ND-1.2	No	Discharge from petroleum refineries; Fire retardants; Ceramics; Electronics; Solder
Arsenic (ppb)	2008	10	0	3.7	3.4-3.7	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2008	2	2	.36	.1-.36	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium (ppb)	2008	100	100	7.2	5.7-7.2	No	Discharge from steel and pulp mills; Erosion of natural deposits
Haloacetic Acids [HAA] (ppb)	2009	60	NA	1.51	ND-1.51	No	By-product of drinking water disinfection
Nitrate (ppm)	2009	10	10	1.6	.28-1.6	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite (ppm)	2008	1	1	.11	ND-.11	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Selenium (ppb)	2008	50	50	2.7	ND-2.7	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
TTHMs [Total Trihalomethanes] (ppb)	2009	80	NA	12	ND-12	No	By-product of drinking water chlorination
Turbidity <sup>1</sup> (NTU)	2009	TT	NA	.41	.17-.41	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2007	1.3	1.3	0.14	0/20	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2007	15	0	7.6	1/20	No	Corrosion of household plumbing systems; Erosion of natural deposits

OTHER REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Nickel	2008	NA	NA	1.3	ND-1.3	No	NA

## SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
<b>Chloride</b> (ppm)	2009	250	NA	18	8.3–18	No	Runoff/leaching from natural deposits
<b>Copper</b> (ppm)	2009	1.0	NA	0.01	0.0014–0.01	No	Corrosion of household plumbing systems; Erosion of natural deposits
<b>Manganese<sup>2</sup></b> (ppb)	2009	50	NA	740	78–740	No	Leaching from natural deposits
<b>Odor</b> (TON)	2009	3	NA	1	1–1	No	Naturally-occurring organic materials
<b>Total Dissolved Solids [TDS]</b> (ppm)	2009	500	NA	180	160–180	No	Runoff/leaching from natural deposits
<b>Zinc</b> (ppm)	2009	5	NA	0.011	ND–0.011	No	Runoff/leaching from natural deposits; Industrial wastes
<b>pH</b> (Units)	2009	6.5- 8.5	NA	7.75	7.55–7.75	No	Naturally occurring

## UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
<b>Sodium</b> (ppb)	2008	10000	8500–10000	Natural sources; runoff from use as salt on roadways; By-product of treatment process
<b>Sulfate</b> (ppm)	2009	39	33–39	NA

## OTHER UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
<b>Alkalinity</b> (ppm)	2009	100	83–100	NA
<b>Calcium</b> (ppm)	2009	50	39–50	NA
<b>Hardness as Calcium Carbonate</b> (ppm)	2009	150	130–150	NA
<b>Magnesium</b> (ppm)	2009	9.1	7.4–9.1	NA

<sup>1</sup>Footnote for Town of Hadley Water Department: Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of water quality and the effectiveness of disinfectants.

<sup>2</sup>Footnote for Town of Hadley Water Department: Manganese was detected at a level exceeding the established state secondary MCL (SMCL), which was set to protect against unpleasant aesthetic effects such as color, taste, odor, and staining of plumbing fixtures (e.g., tubs and sinks) and of clothing during laundering. There are no adverse health effects expected with this exceedance.

Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

## Definitions

**90th Percentile:** Out of every 10 homes sampled, 9 were at or below this level.

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

**MCL (Maximum Contaminant Level):** 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.

**MCLG (Maximum Contaminant Level Goal):** 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.

**MRDL (Maximum Residual Disinfectant Level):** 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.

**MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**NA:** Not applicable

**ND (Not detected):** Indicates that the substance was not found by laboratory analysis.

**NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).

**TON (Threshold Odor Number):** A measure of odor in water.

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