

Annual
**WATER
QUALITY
REPORT**
Reporting Year 2012



Presented By
Town of Hadley Water Department

PWS ID#: MA1117002

There When You Need Us

We are once again proud to present our annual water quality report, covering all testing performed between January 1 and December 31, 2012. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

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, MA. Meetings begin at 7:00 p.m.

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 or <http://water.epa.gov/drink/hotline>.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. 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.

Lead in Home Plumbing

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.

Where Does My Water Come From?

The Town of Hadley's primary drinking water supply is groundwater, which is now primarily drawn 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 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 the U.S. EPA's Search Your Watershed at www.epa.gov/surf.

QUESTIONS?

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

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.

Unmet Monitoring Requirements

We failed to complete required sampling in a timely manner, which is a monitoring and reporting violation.

Every three years, we are required to test water samples for the presence of inorganic contaminants (IOCs)(1), such as manganese; volatile organic compounds (VOCs)(2); synthetic organic compounds (SOCs)(3); nitrite; and perchlorate. In addition, we are required to test annually for nitrate. The samples from the two Callahan wells are supposed to be collected after treatment, to ensure that the water sample is representative of the water that you are drinking. However, during the appropriate monitoring periods from 2008 through 2010, we collected raw water samples representative of water coming directly from our Callahan wells and did not monitor for these contaminants at the required post-treatment locations. Because we did not take the required number of samples, we did not know whether the contaminants were present in your drinking water, and we are unable to tell you whether your health was at risk during that time. Some of the individual contaminants and their potential health and aesthetic effects are listed in the footnotes at the bottom of this section.

Upon being notified of this violation by the Massachusetts Department of Environmental Protection, we collected samples for perchlorate, nitrate, nitrite, IOC and VOC analysis at the proper post-treatment locations in 2011 and SOCs in 2012 and concentrations of all of these contaminants were either non-detect or well below Maximum Contaminant Levels. In addition to sampling for these contaminants, our system provided public notification in 2012, after becoming aware of these violations. We do not believe that missing this monitoring requirement had any impact on public health and safety. We have already taken the steps to ensure that adequate monitoring and reporting will be performed in the future so that this oversight will not be repeated.

(1) Regulated IOCs are chemicals for which EPA has established Maximum Contaminant Levels to protect the public against consumption of drinking water contaminants that present a risk to human health. Regulated IOCs are antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, sodium, and thallium. Unregulated IOCs are contaminants for which non-mandatory water quality guidelines have been set and which are not considered to present a risk to human health at the Secondary Maximum Contaminant Level. However, EPA has set a health guideline for lifetime exposure to manganese in drinking water of 0.3 mg/L (300 ppb). Unregulated IOCs are aluminum, calcium, chloride, copper, iron, magnesium, manganese, potassium, silver, sulfate, zinc, color, hardness (CaCO₃), odor, pH, total alkalinity (CaCO₃), total dissolved solids, and turbidity. Unregulated IOCs may produce aesthetic effects, such as undesirable tastes or odors; cosmetic effects which do not damage the body but are still undesirable; and technical effects, such as damage to water equipment or reduced effectiveness of treatment for other contaminants.

(2) VOCs are commonly used in industrial and manufacturing processes and include benzene, carbon tetrachloride, chlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, cis-dichloroethylene, trans-dichloroethylene, dichloromethane, 1,2-dichloropropane, ethylbenzene, styrene, tetrachloroethylene, 1,1,1-trichloroethane, trichloroethylene, toluene, 1,2,4-trichlorobenzene, 1,1-dichloroethylene, 1,1,2-trichloroethane, vinyl chloride, and xylene.

(3) SOCs are chemicals that come from agriculture and urban storm runoff. SOCs include carbofuran, oxamyl(vydate), 2,4-D, 2,4,5-TP(silvex), dalapon, dinoseb, picloram, pentachlorophenol, alachlor, atrazine, endrin, heptachlor, heptachlor epoxide, lindane, methoxychlor, hexachlorobenzene, hexachlorocyclopentadiene, simazine, benzo(a)pyrene, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, chlordane, toxaphene, pcb aroclor 1016, pcb aroclor 1221, pcb aroclor 1232, pcb aroclor 1242, pcb aroclor 1248, pcb aroclor 1254, pcb aroclor 1260, dibromochloropropane (dbcp), ethylenedibromide (edb).

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 to find more information about disposal locations in your area.

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. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, review the Cross-connection Control Manual from the U.S. EPA's Web site at <http://water.epa.gov/infrastructure/drinkingwater/pws/crossconnectioncontrol/index.cfm>. You can also call the Safe Drinking Water Hotline at (800) 426-4791.

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 Commonwealth 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
Nitrate (ppm)	2012	10	10	0.35	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Turbidity ¹ (NTU)	2012	TT=< 1 NTU	NA	0.04	0.03–0.04	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2012	TT=95% of samples < 0.3 NTU	NA	100	NA	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)	2010	1.3	1.3	0.33	0/20	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2010	15	0	7.4	0/20	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2010	250	NA	21	6.8–21	No	Runoff/leaching from natural deposits
Manganese (ppb)	2011	50	NA	40	40–40	No	Leaching from natural deposits
Odor (TON)	2010	3	NA	1	1–1	No	Naturally occurring organic materials
pH (Units)	2010	6.5–8.5	NA	7.89	7.60–7.89	No	Naturally occurring
Sulfate (ppm)	2010	250	NA	49	42–49	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2010	500	NA	220	160–220	No	Runoff/leaching from natural deposits
Zinc (ppm)	2010	5	NA	0.010	ND–0.010	No	Runoff/leaching from natural deposits; Industrial wastes

UNREGULATED SUBSTANCES ²				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Nickel (ppm)	2011	0.0025	ND–0.0025	Naturally occurring
Sodium (ppm)	2011	8.5	5.6–8.5	Natural sources; Runoff from use as salt on roadways; By-product of treatment process

¹Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

²Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the 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.