

What is a cross connection and what can I do about it?

What is a cross connection?

A cross connection is a connection between a potential contaminated source (non-potable water and other substances) and your drinking water system. This has the potential of becoming a hazardous situation if the contaminant source were to enter (backflow) into the potable water. Backflow occurs when the water flow is reversed, due to a change in pressure, and water flows backwards, into and through the system. Contamination can also occur when the pressure in the drinking water system drops due to occurrences such as water main breaks and heavy water demand causing contaminants to be drawn (back-siphonage) into the potable water system.

Where do we find cross connections?



Garden hoses connected to an outside water tap are the most common sources of cross connections in the home. The garden hose creates a hazard when submerged in non-potable water such as a swimming pool or when attached to a chemical sprayer for weed control. Other common sources of cross connections in homes include connections of lawn sprinkler systems, solar heating systems, and fire sprinkler systems.

The Water Division is required to survey all industrial, commercial, and municipal facilities to ensure that all cross connections are eliminated or protected by a backflow prevention device. The Water Division is also responsible for inspecting and testing each device to ensure it is providing maximum protection.

••••What can I do to protect and conserve water?••••

Fresh water is a scarce resource, only 1% of the water on this planet is suitable for drinking. A recent government survey showed at least 36 states are anticipating local, regional, or statewide water shortages in 2013. You can help by conserving water. Needham's daily demand for water usage during the summer months can more than double over the wintertime demand. Most of this additional demand is due to outdoor watering. By using water more efficiently, you can help preserve water supplies for future generations, save money, and protect the environment. By changing a few habits, you will help protect your water supply and perhaps save on water and sewer charges. Here are some outdoor water saving tips that residents can implement in their homes.

- Water your lawn only as needed. Too frequent watering can actually weaken a lawn by encouraging shallow roots. The general rule of thumb is one inch per week including rain.
- Timing is critical for lawn watering. Water your lawn in the early morning or late evening to avoid evaporation.
- Install mulch to keep roots cool and moist. Mulch serves as a ground cover that reduces water evaporation from the soil.
- Keep your blades sharp and high. Raising your lawn mower blade prevents tearing of the grass. Longer grass provides shade for the roots and helps reduce water loss.
- Use shut off-nozzles on hoses and automatic shut-off devices on irrigation systems.
- Unattended hoses can use 10 gallons or more per minute.
- Install a rain sensor that turns automatic sprinkler systems off when it is raining.



Improvements to the water system

Each part of the water system needs routine maintenance in order to maintain a safe and dependable water supply. Listed are some of the projects undertaken by the Water Division in 2012.

- Replaced 8 older fire hydrants to ensure water supply for fire protection.
- Upgraded 846 water meters throughout the system.
- Replaced 500 feet of 8 inch water main on Beech Street.
- Replaced 100 feet of 6 inch water main on Sargent Street.
- Replaced 1871 feet of 12 inch water main on Highland Avenue from Webster Street to I-95 ramp.
- Replaced 38 feet of 20 inch water main at Webster Street/ Highland Avenue intersection.
- Replaced 153 feet of 8 inch water main on Highland Avenue between Sachem, Utica and Mills Road.
- Completed installation of a new replacement well at the Charles River Wellfield.
- On-going lead line replacement program.
- Conducted leak detection survey of the entire water system. This survey is necessary to identify and eliminate the unaccounted for water (UAW), lost from the system.

Future Projects for 2013

- On-going water meter replacement program. The initiative is to convert all customers to radio read meters continues. If you have received an estimated bill, please call us to schedule an appointment to change your meter.
- On-going water main and water service replacement programs.
- Upgrade filter media at the Charles River Wellfield.
- Well #2 and 3 Redevelopment.
- Upgrade Supervisory Control and Data Acquisition system (SCADA).
- Integrate Water and Sewer Operations into the Town's GIS system.

Needham Department of Public Works
500 Dedham Avenue
Needham, MA 02492-1364



2012 Water Quality Report

Drinking water test results and other important information from the Town of Needham

2012 report on your drinking water



2012 Drinking Water Consumer Confidence Report

Town of Needham • Needham Water and Sewer Division PWS #3199000.

2012 Drinking Water Consumer Confidence Report Town Of Needham Needham Water Division PWS #3199000.



Richard P. Merson
Director of Public Works

Vincent J. Roy
Water & Sewer Superintendent

Dear Resident,

The Needham Department of Public Works once again proudly presents this year's Annual Water Quality Report. This edition covers all water testing completed from January through December 2012 and other important information about your drinking water. Over the years, Needham has dedicated itself to producing and delivering high quality water to the residents and businesses of Needham. We are proud to report that water delivered to our customers has met or exceeded all Federal and State drinking water standards. Our compliance with drinking water regulations established in the Safe Drinking Water Act remains exemplary. Needham takes many steps to provide you high quality tap water including extensive water monitoring and testing programs and water treatment and distribution system improvements. The steps we take will ensure a reliable and safe drinking water supply for years to come. Needham has great confidence in the water that is delivered to your home and we want you to have this same confidence. While maintaining water quality is critical and is our top priority, other issues such as service reliability, adequacy of supply, preparing for future growth, protecting our water supply, conservation and holding water rates down are also of key importance. For the seventh year in a row, a system wide leak detection survey consisting of 140 miles of water mains was conducted. What was found, if left undetected, could have wasted forty-two million gallons of water. We encourage you to take time to look over this report. If you have any further questions, or would like additional copies of this report, please contact Steve Cusick, Water Treatment Manager at (781) 416-4071 or Vincent Roy, Water & Sewer Superintendent at (781)-455-7550.

Sincerely,

Department of Public Works
500 Dedham Ave
Needham, MA



Where does my water come from?

Needham draws potable water from two separate sources. The primary source is the Charles River Wellfield, which has been the major source of water since the 1930's. Water is drawn from the wellfield and treated at the adjacent Charles River Water Treatment Facility. The Town's secondary source is the Massachusetts Water Resources Authority (MWRA). The MWRA supply is conveyed through a 36" diameter pipe from the MWRA's Metro West Tunnel in Weston to a booster station on Central Avenue at St. Mary Street. This connection was constructed in the mid-1950's. The combined capacity of the Water Treatment Facility and MWRA is 10 million gallons of potable water per day. In addition, Needham has emergency connections to provide and receive water from the towns of Wellesley and Dedham.



Understanding our water treatment process

In order to maintain compliance with Federal and State Drinking water standards, Needham well water must be treated before it reaches consumers' taps. The Charles River Water Treatment Facility utilizes processes which include the removal of manganese by oxidation and filtration. Adding potassium permanganate precipitates (oxidizes) the manganese prior to removal by greensand filtration. Sodium hydroxide is used to raise the natural pH and alkalinity of water to reduce the corrosion of lead and copper from household plumbing systems. Chlorine, a highly efficient disinfectant, is added to kill disease-causing bacteria that water or its transport pipes might contain. Chlorine levels are continuously monitored and controlled to ensure that disinfection residuals are maintained at the Facility and throughout the distribution system. Ortho-polyphosphate, a food based additive, that is then added to minimize calcium precipitating in hot water systems. Finally, fluoride is added to prevent tooth decay. In our system, the fluoride level is adjusted to an optimal level averaging one part per million (ppm) to improve oral health in children. At this level it is safe, odorless, colorless and tasteless. Our water system has been providing this treatment since 1972. All components of the water distribution and treatment systems are closely monitored by State certified operators through computerized Supervisory Control and Data Acquisition (SCADA) systems.

Source Water Protection

To ensure the highest quality of drinking water for residents, the Town has adopted by-laws and health regulations designed to preserve and protect existing and potential sources of drinking water supplies and conserve natural resources. The Department of Environmental Protection (DEP) approved the Town's water source protection strategy based on land use and operational restrictions in areas of influence to the Town's drinking water wells. The information collected was incorporated into the Source Water Assessment Protection (SWAP) report. The report is a planning tool to support local and state efforts to improve water supply protection. The assessment helps focus protection efforts on appropriate best management practices and drinking water source protection measures. Residents can help protect sources by taking hazardous household chemicals to hazardous collection days and by limiting the use of pesticides and fertilizers. The complete SWAP report is available on line at <http://www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3199000.pdf>.

We are pleased to report that during the past year water delivered to your home complied with or exceeded all State and Federal drinking water regulations. In 2012, the Town collected more than 500 water samples for over 100 potential contaminants. Needham tested for bacteria, volatile organics, synthetic organics, total trihalomethanes, haloacetic acids, nitrates, sodium and fluoride. For your information, the table below contains only the contaminants that were detected in Needham's water. Although the substances are significantly below the Maximum Contaminant Level (MCL) set by the EPA, it is important for you to know what was detected and the amount present in the water.

Tested After Treatment						
Substance	Units	Needham		MCLG	Major Sources	
		(MCL)	Detected Level			
Chlorine	ppm	4 MRDL	0.72	0.65-0.80	4 MRDLG	Water additive for disinfection
Fluoride	ppm	4 MRDL	1.00 avg	0.90-1.10	4	Water additive which promotes strong teeth
Manganese	ppm	0.05	0.01 avg	0.005--0.015	0	Naturally found mineral in the earth
Nitrate	ppm	10	0.83	0.83	10	Runoff from fertilizer use, Leaching from septic tanks

In the Distribution System						
Disinfection By-products	Frequency Collected	(MCL)	Highest results or RAA*	Range of Detections	MCLG	Major Sources
(TTHM) Total Trihalomethanes	Quarterly	80 ppb	29.4	4.5-47.9	0	Byproducts of water chlorination
Haloacetic Acids	Quarterly	60 ppb	9	3.3-15.2	0	Byproducts of water chlorination

*RAA= Highest running annual average of four consecutive quarters.

Microbiological Contaminant	(MCL)	Highest # of Positive Samples	Major Sources
Total Coliform	No more than 5% of samples positive in a given month.	2 (No violations)	Naturally present in the environment

Follow up testing confirmed negative coliform at positive test sites.

Lead & Copper- "At the Tap" Sampling							
Inorganic Contaminants	Date Collected	90th Percentile	Action Level	MCLG	# of sites sampled	# of sites above Action level	Major Sources
Lead * (ppb)	2012	8	15	0	30	0	Corrosion of household plumbing
Copper* (ppm)	2012	0.03	1.3	0	30	0	

* The next round of sampling will be in the summer of 2015.

Definitions & Acronyms

ppm = parts per million, **ppb** = parts per billion (1 ppm = 1000 ppb), **ND** = not detected

Safe Drinking Water Act (SDWA) - The Federal Law that governs the regulation of public water supplies

Maximum Contaminant Level (MCL) - The highest allowable level of a contaminant in drinking water. MCL's are set as close to the MCLG's 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 not known, or expected, risk to health.

Maximum Residual Disinfection Level (MRDL) - The highest level of a drinking water disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfection Level Goal (MRDLG) - The level of drinking water disinfectant below which there is no expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

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

Environmental Protection Agency (EPA) - The federal agency responsible for the development of SDWA regulations.

Department of Environmental Protection (DEP) -The Massachusetts state regulatory agency responsible for the implementation of the SDWA.

Regulatory Notification: The Massachusetts Department of Environmental Protection (MassDEP) issued a Notice of Non Compliance (NON) to the Town for failure to implement restrictions on non-essential water use. The restrictions are as per regulations 310 CMR 36.00 and the Town's Water Management Act Permit. Special Condition 7 of the WMA permit requires the Town to implement restrictions on non-essential outdoor water use based on the stream flow of the Charles River or by enforcing mandatory restrictions from May 1st through September 30th.

Drinking Water & Public Health

The Safe Drinking Water Act (SDWA) is the main Federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and other water suppliers who implement those standards. SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. The EPA, MassDEP, and Needham DPW then work together to make sure that these standards are met. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health have established regulations that limit contaminants in bottled water which must provide the same protection for public health.

Contaminants that may be present in source water include:

Microbiological contaminants: such as viruses and bacteria that may come from sewage septic systems, agricultural livestock and wildlife.

Pesticides and herbicides: that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Inorganic contaminants: such as salts and metals that can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining or farming.

Organic contaminants: synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, also urban stormwater run off, and septic systems.

Radioactive contaminants: can be naturally occurring or result from oil and gas production, and mining activities.

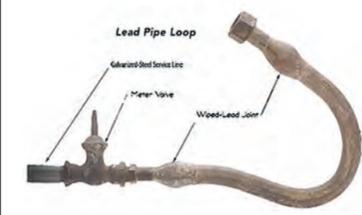


Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contamination. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable than others 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 from their health care providers.

Your drinking water is routinely tested for these substances in accordance with Federal and State drinking water regulations. These substances have not been detected or are significantly below the (MCL) allowed.

What should I know about lead in tap water?



Under EPA regulations, each year Needham must test tap water in homes that are likely to have high lead levels. These are usually homes with lead service lines.

The EPA requires that 90% of the sampled homes must have lead levels below the action level of 15 parts per billion (ppb). To further decrease your potential exposure, you should always use cold water for drinking and cooking.

"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 old service lines and home plumbing. Needham is responsible for providing high quality 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 and 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: <http://www.epa.gov/safewater/lead>.

What can I do to reduce exposure to lead from drinking water?

Never use hot water from the faucet for drinking or cooking, especially when making baby formula or other food for infants.

Ask the DPW if there are lead service pipes leading to your home.

Check your plumbing fixtures to see if they are lead-free. Be careful of places you may find lead in or near your home. Paint, soil, dust, and some pottery may contain lead.

WHERE TO GO FOR MORE INFORMATION

Massachusetts Dept. of Environmental Protection
www.mass.gov/dep • 617-292-5500

Massachusetts Dept. of Public Health • www.mass.gov/dph • 617-624-6000

Massachusetts Water Resource Authority • www.mwra.com • 617-242-5323

Department of Conservation and Recreation
www.mass.gov/dcr/watersupply.htm • 617-626-1250

US Center for Disease Control and Prevention (CDC)
www.cdc.gov • 800-232-4636

U.S Environmental Protection Agency • www.epa.gov 800-311-3435

State Certified Water Quality Testing Labs
www.mwra.com/04water/html/testinglabs.html