Contamination from Cross-Connections

Cross-connections that could 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 siphoned 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 can 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 City 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, call us at 617-349-4770 or visit the Web site of the American Backflow Prevention Association (www.abpa.org) for a discussion of current issues.

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24 Hour Emergency/Customer Service
Phone Number 1-617-349-4770

Visit Our Web Site at
www.cambridgema.gov/cwd/

Email us at cwd@cambridgema.gov

Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

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Este relatório contem informação muito importante sobre seu que bebendo água. Por favor traduza-o, ou fala com alguém quem entende-o.

This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

Questa relazione contiene delle informazioni molto importanti del suo che la bendo acqua. Per favore tradurrlo, o parlare con qualcuno che capisce esso.

Ce rapport contient des informations importantes à propos de votre eau potable. Demander à quelqu'un de traduire ces informations pour vous ou discuter avec une personne qui comprend ces informations.

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

이 보고서에는 귀하의 식수에 대한 중요한 내용이 실려있습니다. 그러므로 이 보고서를 이해할 수 있는 사람한테 번역해 달라고 부탁하시기 바랍니다.

此报告包含有关您的饮用水的重要信息。请人帮您翻译出来，或请看懂此报告的人将内容说给您听。

City of Cambridge Water Department
2004 Annual Drinking Water Quality Report

250 Fresh Pond Parkway
Cambridge, MA 02138

DEP PWS ID#3049000

June 2005

24 Hour Emergency/Customer Service
Phone Number 1-617-349-4770

"This report is a snapshot of drinking water quality that we provided in 2004, last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal drinking water standards. We are pleased to be providing this report and encourage you to use the contact information if you have questions or need further information about your water system." Sam Corda, Managing Director, Cambridge Water Department (CWD)

This Year's Annual Drinking Water Quality Report Includes:

- **An introduction to our Automated Meter Reading Project**
- **Our Contact Information**
- **Opportunities for Public Involvement**
- **Water Conservation Tips**
- **Cambridge Water System Description**
- **2004 Water Quality Data**
- **DEP and US EPA Water Quality Information**
- **An Introduction to Cross-Connections**

Costomer Service: Automated Meter Reading (AMR) Project

The Cambridge Water Department (CWD) began installing an, Automated Meter Reading (AMR) system on Oct. 12, 2004. The system will remotely transmit a signal that will enable the Water Department to read water meters on a daily basis. To date over 4,500 MTU's and 2,300 new meters have been installed. Over the next 2 years, every home and business in Cambridge will be upgraded with the new AMR system. The cost to implement this program is included in your water rates.

Benefits:
CWD is constantly looking for ways to improve service to our customers. The AMR program helps to advance this goal as follows:

- Virtually eliminate estimate bills, providing readings based on actual water usage;
- Reduce the number of visits by Water Department staff as the meters will be read remotely;
- Water conservation; and most importantly
- Improve customer service by proactively monitoring extraordinary water usage and notifying customers.

AMR Installation:
The City's contractor, Mass Installation Inc., will contact customers to schedule an appointment. The installation pattern has been according to our Water billing cycles. Cycle 3 began in October 2004 Cycle 4 in February 2005 we will then move to cycles 5, 6, and then 1and 2. If you don't know what cycle you are in please refer to your water bill or call the AMR hotline at 617 349-6293. Appointments will be available during weekdays and on Saturdays.

An installer will arrive with proper ID and knowledge to perform the installation of the new system upgrade. An adult over the age of 18 is required to be present and standard installation should take less than an hour. There may be a brief interruption of your water service if your meter needs to be replaced.

A majority of water meters are located inside residential homes and it is essential that the AMR installer gain access to your property.

After installation is complete, the installer will leave behind an informational card with a contact number. Property owners should call if there are any concerns or questions about the AMR system or about the old water meter.

The AMR system will allow the CWD to read water meters remotely, thereby reducing the need to enter your home for meter readings. However, there may be certain circumstances when we will need to access your home to investigate, change or repair the new water meter system.

Leaks are Costly:
A major component of the AMR system is the systems ability to produce information daily and in time define usage patterns. If an account begins to show unusual activity CWD personnel will be alerted so that we may notify the homeowner of the discovery and then assist with a solution.

Safety First:
The Cambridge Water Department continues to ensure that customer safety is its number one priority with the AMR system.

Working together, we, the City and Mass Installation Inc. want to assure you that installations will be performed by certified well-trained professionals. These installers will use identifiable vehicles and a photo ID .Be sure to ask your installer to present his/her photo identification before entering your home.

AMR hotline at 617 349-6293

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Visit Our Web Site at
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Opportunities for Public Participation and Further Information

•The Cambridge Water Board meets monthly, usually on the first Monday of the month, from 5:00 pm to 6:30 at Walter J. Sullivan Water Purification Facility at 250 Fresh Pond Parkway, Cambridge, MA 02138.
•For more information about the dates of upcoming meetings and to review minutes from previous meetings, refer to the Cambridge Water Department Website (www.cambridgema.gov/cwd/).
•If you have additional questions about your water supply, please contact Timothy W.D. MacDonald, Manager of Water Operations, at 617-349-4773.

Water leaks are costly and an unnecessary waste of water. A simple investigation could save you money and conserve water!

Water Conservation Tip - Checking for Leaks:
Many households have water leaks and do not even know it. Typically, most leaks are found at the toilet tank. Leaks are costly, and consumers can end up paying a great deal for wasted water and the resulting sewer charges. Here are some useful tips to determine if you have a leak in your home:

To check the internal plumbing system in your house:
1.) Read your water meter before you go to bed or leave for work in the morning, when no one will be using the water in your house for several hours.
2.) Read the meter again in the morning or when you get home from work.
3.) The two readings should be about the same.
4.) If they are not, you probably have a leak.

To check for leaks in a toilet:
1.) Test the flapper plug. Carefully remove the lid from the toilet tank. Mark the water level in the tank with a pencil. Shut off the water supply to the toilet. If the water remains on the mark you made for at least 10 minutes, the flapper plug is not leaking. If the water level does drop below the mark, it is leaking and should be replaced.
2.) Check the overflow tube. The water level in the tank should be at least 1 inch below the top of the overflow tube. If the water level is at the top of the overflow tube, this could be where a leak is occurring. The float that controls the water level in the tank should be adjusted so that the water level in the tank is at least 1 inch below the top of the tube.
3.) Most toilet tank leaks result from worn parts or misalignment of a part of the flushing mechanism. If you are an experienced "do-it- yourselfers," you can probably handle the repair. If you don't feel comfortable repairing it, call a plumber.

Facts About the Cambridge Water System and Water Qauality Data from 2004

The Cambridge Water Supply: The Cambridge water supply comes from three surface water reservoirs located in Cambridge, Lexington, Waltham, Lincoln and Weston. The Hobbs Brook (3049000-01S-4S) and Stony Brook (3049000-03S) reservoirs are the primary sources of water for our system. The total capacity of the two up-country reservoirs is 3095 million gallons. The water is transferred to the terminal reservoir, Fresh Pond (3049000-02S), via the Stony Brook Conduit. The Fresh Pond Reservoir has an additional 1308 million gallons of water storage. Our supply is also backed up by interconnections to the Massachusetts Water Resources Authority(MWRA) water system.

Our water system is routinely inspected by the Department of Environmental Protection (DEP) for its technical, financial and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality water the system is operated by Massachusetts certified treatment and distribution operators. Descriptions and details of ongoing improvements in watershed, distribution, and treatment systems and our customer service efforts in engineering, billing and metering are available on the City and Department Web sites www.cambridgema.gov and www.cambridgema.gov/cwd/

Watershed Protection: As part of the CWD's ongoing commitment to protecting the resource water we participated with the DEP in the preparation of a Source Water Assessment Program (SWAP) Report for the Cambridge water supply system during 2003. The SWAP Report assesses the susceptibility of our public water supply and notes the key land use and protection issues, which includes: Zone A Land Uses, Residential Land Uses, Transportation Corridors, Hazardous Material Storage and Use, and Presence of Oil or Hazardous Materials Contamination Sites.

The report commends the Cambridge Water Department for taking an active role in promoting source protection measures and recommends that we continue these efforts to further protect the supply. These practices include:
•Working cooperatively with watershed towns on emergency response and storm water management.
•Placing spill kits at strategic points within the watershed.
•Actively monitoring source water quality throughout the watersheds and using the data to target source protection.
•Working cooperatively with businesses in the watersheds to encourage source protection.
•Adopting the Fresh Pond Master Plan, which includes long-term source protection measures for the Fresh Pond Reservation.
•Dedicating staff resources to inspections, public education, and coordinating of source protection efforts.

While a susceptibility ranking of High was assigned to the Cambridge water supply system using the land use and potential sources of contamination information collected during the assessment by DEP, the actual risks may be lower based on the implementation of best management practices (BMP's) throughout the Cambridge watershed and by the ongoing watershed protection programs.

For a copy of the SWAP Report and details of CWD's plans and schedules for implementing recommendations, please visit our web site at www.cambridgema.gov/cwd/

How We Treat Your Water: The Walter J. Sullivan Water Purification Facility at Fresh Pond Reservation changes the incoming source waters of the Cambridge reservoir system into the drinking water that is delivered to your home or business. The raw water is treated to exceed State and Federal drinking water standards. The processes include:

Pretreatment: This includes the pre-oxidation with the application of ozone , rapid mix, coagulation and dissolved air flotation (DAF). These processes and a coagulant chemical, alum, remove: manganese, natural color, particles, algae, protozoa, viruses and bacteria from the water.
Primary Ozone Disinfection: Fine bubbles of ozone are dissolved into the water and disinfect the water by killing bacteria, viruses, and protozoa. The ozone is generated in the plant and introduced into the water in a series of chambers that allow contact and mixing of the ozone with the water.
Filtration using Granular Activated Carbon (GAC) Media: This step follows the ozone application to help remove any organic compounds by biological action in the filters and further polish the water by removing additional particles, color and protozoa from the water.
Chlorination/Chloramination: Kills bacteria that may develop during the normal operation of the filters. This second disinfection step provides a level of redundancy in the overall process and provides a constant disinfection level in the distribution system.
Post Treatment Chemical Addition: This includes the adjustment of pH for corrosion control and the addition of fluoride for dental health.

The water quality of our system is constantly monitored by us in our State certified laboratory and the DEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

Cambridge Water Department - Consumer Confidence Report 2004 Data

Lead and Copper	Units	90% Value	Range	Action Level(AL) (90%)	MCLG	Violation	Sites exceeding the AL	
Copper (2002)	ppm	0.06	0 - 0.09	1.3	0	NO	0 of 60	Corrosion of household plumbing.
Lead (2002)	ppb	6	0 - 251	15	0	NO	3 of 60	Corrosion of household plumbing.
Regulated- Inorganic Contaminants		Highest	Range	MCL	MCLG	Violation		
Barium	ppm	0.045	0.03-0.045	2	2	NO		Erosion of natural deposits.
Fluoride	ppm	1.2	0.98-1.21	4	4	NO		Water additive to promote strong teeth.
Nitrate as Nitrogen	ppm	0.76	0.25-0.76	10	10	NO		Runoff from fertilizer use.
Nitrite as Nitrogen	ppm	0.1	0.004-0.10	1	1	NO		Runoff from fertilizer use.
Unregulated - Inorganic Contaminant		Average	Range					
Sulfate	ppm	25	23-30					Erosion of natural deposits.
Sodium	ppm	73	68-82					road salt.
Unregulated - Organic Contaminants		Average	Range					
Bromodichloromethane	ppb	3	1.4-4.6					By-product of drinking water chlorination.
Bromoform	ppb	1.3	0.5-2.1					By-product of drinking water chlorination.
Chloroform	ppb	1.6	0.6-3.1					By-product of drinking water chlorination.
Dibromodichloromethane	ppb	3.9	2.0-5.8					By-product of drinking water chlorination.
Regulated -Volitale Organic Contami		Highest Ave	Range	MCL	MCLG	Violation		
Total Trihalomethanes(THMs)	ppb	15.4	4.4-15.4	80	0	NO		By-product of drinking water chlorination.
Haloacetic Acids(HAA5)	ppb	14.1	2.6-14.1	60	0	NO		By-product of drinking water chlorination.
		Highest Ave	Range	MRDL	MRDLG	Violation		
Chlorine as Chloramine	ppm	2.2	1.5 - 2.2	4	4	NO		Water additive used to control microbes.
Regulated - Radioactive Contaminants						Violation		
Gross Beta Activity(2002)	pCi/L	13	n/a	50	0	NO		Decay of naturally occurring deposits.
Turbidity	TT	Lowest Monthly %		Highest Daily Value		Violation		
Daily Compliance(NTU)	1			0.19		NO		Suspended matter from soil runoff.
Monthly Compliance	At least 95%	100				NO		Suspended matter from soil runoff.
Bacteria	Highest % Positive in a Month			Total # positive	MCL	Violation	MCLG	
Total Coliform	1% (Apr,Sept,Dec)			1,1,1	>5%	NO	0	Naturally occurring in the enviroment.

What the EPA and DEP say about Drinking Water - Substances Found In Tap Water:

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 stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and 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 Massachusetts Department of Environmental Protection (DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit 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 that must provide the same protection for public health. All 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 EPA's Safe Drinking Water Hotline (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 some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

IMPORTANT DEFINITIONS
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.
Maximum Residual Disinfectant Level (MRDL) — The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) — The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) below which there is no known expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.
Action Level (AL) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.
Variances and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
ppm= parts per million, or milligrams per liter (mg/l)
ppb= parts per billion, or micrograms per liter (ug/l)
ppt= parts per trillion, or nanograms per liter
pCi/l = picocuries per liter (a measure of radioactivity)
NTU= Nephelometric Turbidity Units
N/A= Not Applicable
ND= Not Detected
mrem/year = millimrems per year (a measure of radiation absorbed by the body)