



# Your Drinking Water

## test results 2004



Massachusetts Water Resources Authority and Your Local Water Department

Presorted Standard U.S. Postage Paid Permit #6 Hudson, MA 01749

This is a "right-to-know" report required to be sent to you under the U.S. environmental protection laws. It contains important information on the quality of your drinking water!

<p>This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.</p>	<p>Si usted desea obtener una copia de este reporte en español, llámenos al teléfono 617-788-1190.</p>	<p>La relazione contiene importanti informazioni sulla qualità dell'acqua della Comunità. Tra-durlo o parlane con un amico che lo comprenda.</p>	<p>O relatório contém informações importantes sobre a qualidade da água da comunidade. Tra-duza-o ou peça a alguém que o ajude a entendê-lo melhor.</p>	<p>Sprawozdanie zawiera ważne informacje na temat jakości wody w Twojej miejscowości. Poprosz kogoś o przełumowanie go lub porozmawiaj z osobą która je dobrze rozumie.</p>	<p>يحتوي هذا التقرير على معلومات هامة عن نوعية ماء الشرب في منطقتك. يرجى ترجمته، أو ابحث التقرير مع صديقك يفهم هذه المعلومات جيداً.</p>	<p>Η κατολένη αναφορά παρουσιάζει στοιχεία πληροφοριών για το ποσόν νερού σας. Παρακαλώ να το μεταφράσετε ή να το σχολιαστείτε με κάποιον που το καταλαβαίνει αλληλώς.</p>	<p>Отчет содержит важную информацию о качестве воды в Вашем районе. Переведите его или попросите друга, хорошо понимающего текст, объяснить Вам его содержание.</p>
<p>Im Bericht steht wichtige Information über die Qualität des Wassers Ihrer Gemeinschaft. Der Bericht soll übersetzt werden, oder sprechen Sie mit einem Freund, der ihn gut versteht.</p>	<p>这份报告中有些重要的信息，讲到关于您所在社区的的水的品质。请您找人翻译一下，或者请能看得懂这份报告的朋友给您解释一下。</p>	<p>この資料には、あなたの飲料水についての大切な情報が書かれています。内容をよく理解するために、日本語に翻訳して読むか説明を受けてください。</p>	<p>इस रिपोर्ट में 'पीने के पानी' के निम्न पर बहुत जरूरी जानकारी दी गई है। कृपया इसका अनुवाद कीजिये, या किसी जन्कार से इस बारे में पूछिये।</p>	<p>ရေသောက်ရန်အတွက်အရေးကြီးသော အချက်အလက်များကို ဖော်ပြထားပါသည်။ ဤအချက်အလက်များကို သိရှိလိုပါက ဤစာရွက်ကို အခြားသူထံ ပို့ပေးပါ။</p>	<p>이 보고서에는 귀하가 거주하는 지역의 수질에 관한 중요한 정보가 들어 있습니다. 이것을 번역하거나 충분히 이해하지는 친구와 상의하십시오.</p>	<p>Bản báo cáo có ghi những chi tiết quan trọng về phẩm chất nước trong cộng đồng quý vị. Hãy nhờ người thông dịch, hoặc hỏi một người bạn biết rõ về vấn đề này.</p>	<p>Le rapport contient des informations concernant la qualité de l'eau de votre communauté. Faites-le traduire, ou parlez-en à un ami qui le comprend bien.</p>

 A LARGE PRINT VERSION OF THIS REPORT IS AVAILABLE. PLEASE CALL US AT 617-242-5323 FOR A COPY.



Massachusetts Water Resources Authority • Charlestown Navy Yard • Building 39 • Boston, MA 02129

## June 2005

Dear Customer:

The Massachusetts Water Resources Authority is pleased to send you the annual report on your drinking water quality. The report describes the journey the water takes from the reservoir to your tap and contains other important information regarding the water we deliver to your home. Under strict federal and state guidelines, the MWRA and your local water department take up to 500 water quality samples each week. The results for 2004 are excellent. Of the 120 contaminants we test for each year, MWRA met every standard. Simply put, MWRA's water is top quality.

The lead test results in 2004 and the first half of 2005 show that system-wide, MWRA was below the Lead Action Level. However, some individual communities had more than one home above the Action Level. If you live in one of those communities, your town letter on page 7 will provide you with additional information. It is important to remember that lead is not in the source water, but can enter the water through some household plumbing that contains lead. Please read page 5 to learn what MWRA is doing to help reduce lead at the tap and what you can do to reduce lead exposure in your home.

Over the last ten years, MWRA has made an enormous investment in improving our water system. This summer we will complete the last major construction project, a state-of-the-art water treatment plant that uses ozone instead of chlorine for primary disinfection. We think you may even notice that the water tastes better over the next few months.

I hope you will take a few moments to read this important report. MWRA has great confidence in the water that is delivered to over 2 million customers, and we want you to have the same confidence. Please contact us if you have any questions or comments about your water quality, or any of MWRA's programs.

Sincerely,

**FREDERICK A. LASKEY** Executive Director

### what's inside

Where your water comes from	2
How your water is treated	2
Test results	3
Map of system	4
Improvements to the system	4
Information about lead	5
Special notice for the immuno-compromised	6
List of further resources	6

### Share Your Thoughts

Help us improve this report by sending your comments. Give us a call, send a letter or e-mail, and let us know what you think.

Massachusetts Water Resources Authority  
Charlestown Navy Yard, Building 39, Boston, MA 02129  
617-242-5323, [www.MWRA.com](http://www.MWRA.com)  
Español: 617-788-1190



THIS REPORT IS REQUIRED under the Federal Safe Drinking Water Act Public Law 104-182, Section 1414(c) (4)  
MWRA PWS ID #6000000

## Where does your water come from?

The MWRA supplies wholesale water to local water departments in 47 communities, 41 in greater Boston and MetroWest, three in Central Massachusetts, and as back-up supply for three others. This water comes from Quabbin Reservoir, about 65 miles west of Boston, and Wachusett Reservoir, about 35 miles west of Boston. The two reservoirs combined supplied about 220 million gallons a day of high quality water to consumers in 2004.

Rain and snow falling on the watersheds - protected land around the reservoirs - turn into streams that flow to the reservoirs. This water comes in contact with soil, rock, plants, and other material as it follows its natural path to the reservoirs. While this process helps to clean the water, it can also dissolve and carry very small amounts of material into the reservoir. Minerals from soil and rock, including low levels of natural radioactive materials, do not typically cause problems in the water. But, water can also transport contaminants from human and animal activity. These can include bacteria, viruses, pesticides, and fertilizers - some of which can cause illness. The test data in this report show that these are not a problem in your reservoirs' watersheds.

Quabbin and Wachusett watersheds are protected naturally with over 85% of the watersheds covered in forest and wetlands. About 75% of the total watershed land cannot be built on. The natural undeveloped watersheds help to keep MWRA water clean and clear. Also to ensure safety, the streams and the reservoirs are tested often and patrolled daily by the Department of Conservation and Recreation (DCR).

The Department of Environmental Protection (DEP) has prepared a Source Water Assessment Program Report for the Quabbin and Wachusett Reservoirs. The report notes that wildlife (birds and aquatic animals), agriculture, transportation corridors, transmission lines, and residential land use are the key issues in the watershed. The DEP report commends DCR and MWRA on the existing source protection plans, and states that our "watershed protection programs are very successful and greatly reduce the actual risk of contamination." The report recommends that DCR and MWRA maintain present watershed plans and continue to work with the residents, farmers, and other interested parties to maintain the pristine watershed areas.



## The next step from reservoir to your home

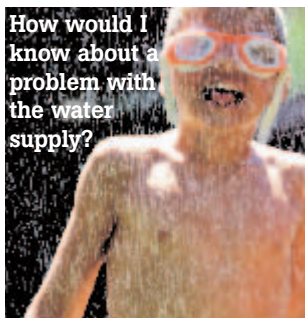
### Water Treatment

MWRA's licensed treatment operators treat water at several places in the system. The first treatment step is the primary disinfection of reservoir water. We carefully add measured doses of chlorine to the water to kill any pathogens (germs) that may be

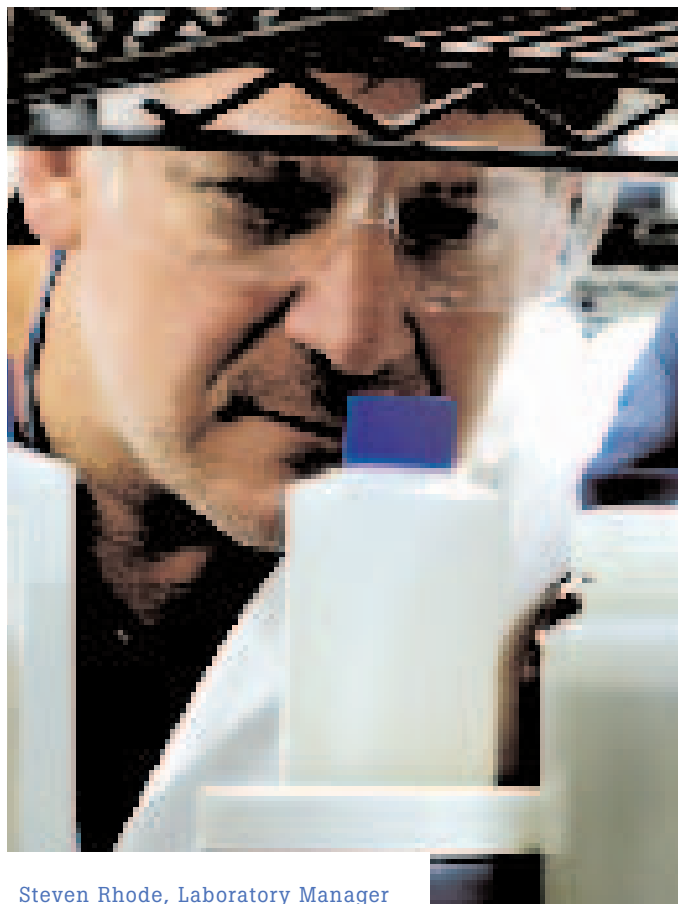
present in the water. By July 2005, we will be using ozone instead of chlorine as the primary disinfectant. (See page 4 for more information.) Next, the water chemistry is adjusted to reduce corrosion of lead and copper from home plumbing (see page 5). Fluoride is then added to reduce cavities. Last, we add chloramine, a mild and long lasting disinfectant combining chlorine and ammonia, which protects the water while it is in the local pipelines.



How would I know about a problem with the water supply?



MWRA and your local water department keep close watch on the water supply. If there is a problem with your water, you would get the news by radio, television and newspapers, from MWRA, your local water and health departments, and the state Departments of Public Health (DPH) and Environmental Protection (DEP).



Steven Rhode, Laboratory Manager





# Testing your water – every step of the way

## Tests Before Treatment

We test the water as it leaves the reservoir to see how well protected our watershed is. Test results show few contaminants are found in the reservoir water. The few that are found are in very small amounts, well below EPA's standards.

Turbidity (or cloudiness of water) is one measure of overall water quality. Typical levels at Wachusett Reservoir are 0.3 NTU (Nephelometric Turbidity Units). In 2004, turbidity was always below EPA's standard of 5.0 NTU. It was below the stricter Massachusetts standard of 1.0 NTU over 99.9% of the time, with the highest level at 1.44 NTU. This did not interfere with effective disinfection.

MWRA also tests reservoir water for pathogens - such as fecal coliform, bacteria, viruses, and the parasites *Cryptosporidium* and *Giardia*. They can enter the water from animal or human waste. All test results were well within state and federal testing and treatment standards.

## Tests After Treatment

EPA and State regulations also require many water quality tests after treatment to check the water you are drinking. MWRA follows - and even goes beyond - these tests. We conduct tens of thousands of tests per year. This allows us to better understand the quality of your water.

### What does this table tell me?

EPA requires that we test for over 120 contaminants. For a complete list, go to [www.mwra.com](http://www.mwra.com). MWRA found only those noted in this report.

### What is the bottom line?

The water quality is excellent. All of the levels are well below EPA's allowable limits.



## Tests in Community Pipes

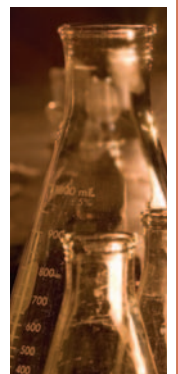
MWRA and local water departments test 300 to 500 water samples each week for total coliform bacteria. Total coliform bacteria can come from the intestines of warm-blooded animals, or can be found in soil, plants, or other places. Most of the time, these bacteria are not harmful. However, their presence could signal that harmful bacteria from fecal waste may be there as well. The EPA requires that no more than 5% of the samples in a given month may be positive for total coliform. If a water sample tests positive for total coliform, we run more specific tests for *E.coli*. *E.coli* is found in human and animal fecal waste and may cause illness

## How Did We Do in 2004?

The table reports test results from 30 communities that receive all of their water from MWRA. Total coliforms were found in 7 communities. Two of these communities exceeded the EPA standard. (\*Residents of these communities should read their community letter on page 7)

Total Coliform Results

Community	Highest % of positive samples and month	Violations of EPA's 5% limit
Everett	1.9% (March)	No
Quincy	1.1% (February)	No
Somerville	1.2% (August)	No
Southborough*	16.8% (October)	Yes
Waltham	1.4% (August)	No
Watertown	2.3% (February)	No
Weston*	6.0% (August)	Yes
MWRA transmission line	0.4% (June)	No



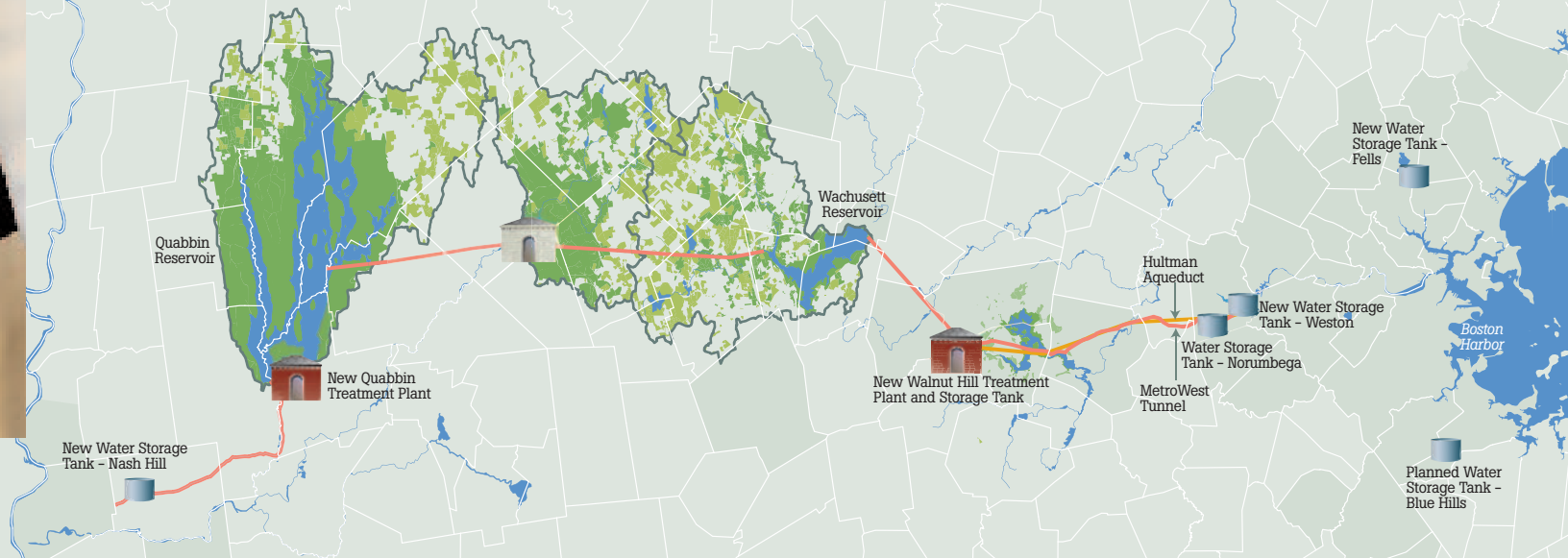
Reservoir Water Test Results – After Treatment

Compound	Units	(MCL) Highest level allowed	(We found) Detected level	Range of detections	(MCLG) Ideal goal	Violation	How it gets in the water
Barium	ppm	2	0.011	0.009-0.011	2	no	Common mineral in nature
Benzene^	ppb	5	2.1	1.6-2.1	0	no	Not known - see below^
Chloramine	ppm	4-MRDL	avg=1.26	0.03-2.2	4-MRDLG	no	Water disinfection
Fluoride	ppm	avg=4	avg=1.21	0.03-7.7*	4	no	Additive for dental health
Nitrate	ppm	10	0.15	0.03-0.15	10	no	Natural deposits, stormwater/fertilizer runoff
Nitrite	ppm	1	0.005	0.005	1	no	Breakdown of disinfectants
Total Trihalomethanes	ppb	avg=80	avg=74	44-110	0	no	Byproducts of water disinfection
Haloacetic Acids-5	ppb	avg=60	avg=37	1-62	0	no	Byproducts of water disinfection

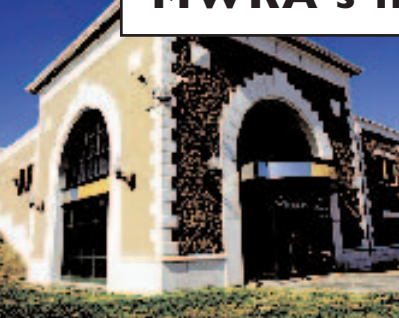
**KEY:** MCL=Maximum Contaminant Level - The highest level of a contaminant allowed in water. MCLs are set as close to the MCLGs as feasible using the best available technology. MCLG=Maximum Contaminant Level Goal - The level of contaminant in drinking water below which there is no known or expected 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 health risk. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination. ppm=parts per million ppb=parts per billion avg=compliance based on average.

^In over 10 years of testing, benzene had never been found anywhere in the MWRA water supply. Based on testing results, there appears to have been a short duration contamination issue between 12/30/04 and 1/10/05. The contaminants found were all below health concerns and federal and state standards, and were found for only a short period of time.

\*During the testing of the new Walnut Hill Treatment Plant, there was a 4-hour increase in fluoride levels. There was no health concern with this temporary increase, and levels quickly returned to normal.



## MWRA's improvements to the water supply



### MWRA has nearly completed its 10-year, \$1.7 billion Integrated Water Supply Improvement Program.

The last major project, the Walnut Hill Water Treatment Plant, will go on line by July 2005. These projects

are the largest investments made in the water system since the Quabbin Reservoir was constructed in the 1930s. During 2004, the Norumbega Covered Storage Tank and the MetroWest Tunnel were brought on-line. For the first time, once water leaves the Wachusett Reservoir, it does not see the light of day until it comes out of a faucet in your home. Also, with the start-up of Walnut Hill and the use of ozone for disinfection, water quality is even better. The following major projects have improved system reliability and security and were completed on time and within budget.

### MetroWest Water Supply Tunnel

With a width of 14 feet and a length of 17.6 miles, the new tunnel is the backbone of the MWRA's new water system. The tunnel began operating in November 2003. It connects the new treatment plant at Walnut Hill to the greater Boston area, roughly the distance from Route 495 to Route 95/128. The new tunnel greatly improves

dependability, capacity, and safety. This is now the main transmission line with the old Hultman Aqueduct acting as the back-up.

### Water Storage Tanks

The last of MWRA's open distribution reservoirs was replaced with covered storage in March 2004. Five new tanks now provide better water quality control and security for water on the way to your tap. The Norumbega Storage Tank in Weston is one of the largest covered storage tanks in the country and holds 115 million gallons. Other covered storage tanks are in Weston, Ludlow, Stoneham, and Marlborough.

### Walnut Hill Water Treatment Plant

This new plant provides state-of-the-art treatment to drinking water. It consolidates all treatment steps into one plant, and uses ozone rather than chlorine for primary disinfection. Chloramine will continue to be used for residual disinfection. The plant will go on-line by July 2005.

### What is Ozone?



Walnut Hill's new ozone generator.

Ozone consists of three atoms of oxygen. It is created by applying an electrical current to pure oxygen in a specially designed chamber. Ozone provides better disinfection than chlorine alone, especially against *Cryptosporidium* and other hard to kill germs. It also reduces the amount of potentially harmful chlorination by-products.



### Why did my water taste different over the summer?



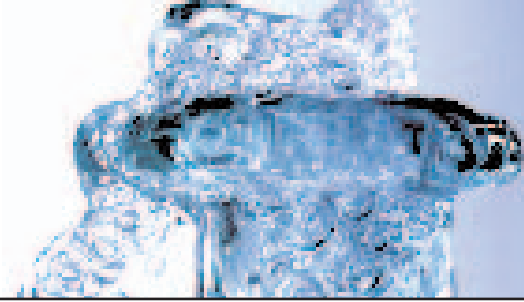
In July and August of 2004, a large and persistent algae bloom occurred in the Wachusett Reservoir. The bloom of *Chryso-sphaerella* algae caused a metallic taste in the tap water. This algae is a harmless microscopic plant, and the water was always safe to drink. We apologize for any inconvenience the off taste may have caused. The new Walnut Hill Water Treatment Plant uses ozone gas, which is usually helpful in addressing algae taste and odor issues. If you have any questions about the taste of your water, please contact MWRA at 617-242-5323.

### Will My Water Taste Different?

We expect you may notice an improvement or change in the taste of the water with this new treatment plant. Call or e-mail us and let us know what you think about the new taste.

### Pipeline Rehabilitation

MWRA and local water departments continue to work to replace, clean, and re-line both MWRA and locally owned older pipes to maintain the water's high quality all the way to the tap.



## What to know about lead in your tap water

### MWRA Water Is Lead-Free When It Leaves The Reservoirs.

MWRA and local pipes that carry the water to your community are made mostly of iron and steel, and do not add lead to water. However, lead can get into tap water through pipes in your home, your lead service line, lead solder used in plumbing, and some brass fixtures. Corrosion or wearing away of lead-based materials can add lead to tap water, especially if water sits for a long time in the pipes before use.

### What is MWRA Doing To Lower Lead Levels? What Can I Do?

MWRA has made the water less corrosive, thereby reducing the leaching of lead into drinking water. In 1996, MWRA began operating a new facility in Marlborough where sodium carbonate and carbon dioxide are added to adjust the water's pH and buffering capacity. This change has made the water less likely to leach lead from the pipes. Lead levels found in sample tests of tap water have dropped significantly since this treatment change. Also, local water departments are working to decrease lead corrosion by replacing existing lead service lines.

To further decrease your potential exposure, you should always use cold, fresh running water for drinking or cooking and buy plumbing fixtures that have no or low lead levels. Read the labels of any new plumbing fixtures closely.

### MWRA Meets 2004 Lead Standards

Under EPA rules, each year MWRA and your local water department must test tap water in a sample of homes that are likely to have high lead levels. These are usually homes with lead service lines or lead solder. The EPA rule requires that 9 out of 10, or 90%, of the sampled homes must have lead levels below the Action Level of 15 parts per billion (ppb).

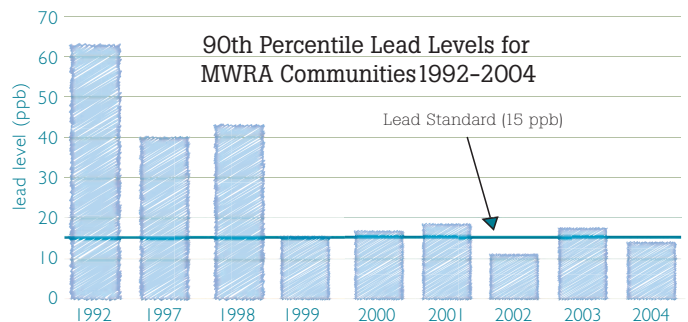
Lead levels in sampled worst case homes have dramatically dropped since 1992. Over the last several years, the results have been close to the EPA standard. Results for September 2004 are shown in the table, with the overall test score meeting the 90% standard. 9 of 10 houses were below 14.6 ppb, which is below the Action Level of 15 ppb. Since testing for copper began, MWRA has always met the copper Action Level.

Some individual communities had more than one home test above the Action Level for lead. If you live in one of these communities your town letter on page 7 will provide you with more information.

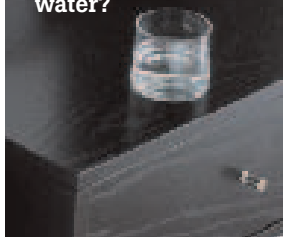
2004 Lead & Copper Results

	Range	90% value	(Target) Action Level	(Ideal Goal) MCLG	# homes above AL/# homes tested
Lead	1.2 - 714	14.6	1.5 ppb	0	42/440
Copper	0.003 - 1.34	0.12	1.3 ppm	0	1/440

AL= Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. Definition of MCLG is available on page 3.



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



- \* Be careful of places you may find lead in your home. Paint, soil, dust, and some pottery may contain lead.
- \* Run the tap until after the water feels cold. Then fill a pitcher with fresh water and place in refrigerator for future use.
- \* Never use hot water from the faucet for drinking or cooking - especially when making baby formula or other food for infants.
- \* Ask your local water department

if there are lead service pipes leading to your home.

\* Test your tap water. Contact MWRA (617-242-5323, [www.mwra.com](http://www.mwra.com)) for tips and a list of certified labs.

\* Call the Massachusetts Department of Public Health at 1-800-532-9571 for health information.

### Important Lead Information from EPA

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels in your home may be higher than in other homes in the community as a result of materials used in your homes plumbing. Infants and 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 this water over many years could develop kidney problems or high blood pressure. If you are concerned about lead levels in your home's water, you may wish to have your water tested and flush your tap until after the water is cold before using.



# Important information from EPA and DEP about...



## Drinking Water and People with Weakened Immune Systems:

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 infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from EPA's Safe Drinking Water Hotline (1-800-426-4791).

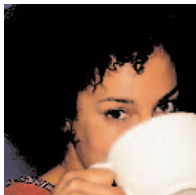


## Contaminants in Bottled Water and Tap Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence 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) or your local water supplier.



In order to ensure that tap water is safe to drink, EPA and the Massachusetts DEP prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations establish limits



for contaminants in bottled water which must provide the same protection for public health.

## Research for New Regulations

MWRA has been working with EPA and other researchers to define new national drinking water standards by testing for contaminants which are not regulated. Our results will be used with those of other water suppliers to help EPA set regulations if they are necessary. MWRA is also participating with Tufts University on a nationally-funded study testing for Cryptosporidium and Giardia.

Test	Measurement Units	2004 Results
Cryptosporidium	oocysts per 100L	0.01 <sup>^</sup>
Giardia	cysts per 100L	0.01
Radon	pCi/L	27 <sup>*</sup>

pCi/L = picoCuries per liter  
<sup>^</sup> Proposed threshold is 1 oocyst per 100 liters.  
<sup>\*</sup> Proposed radon standard for groundwater supplies is 300 pCi/L.

**facts about sodium** Sodium in water contributes only a small fraction of a person's overall sodium intake (less than 10%). MWRA tests for sodium monthly and the highest level found was 33.4mg/L (about 7mg per glass). This is considered very low sodium by the FDA.

## Where to go for further information

health issues	websites	phone
Massachusetts Department of Public Health (DPH)	<a href="http://www.mass.gov/dph">www.mass.gov/dph</a>	617-624-6000
US Centers for Disease Control & Prevention (CDC)	<a href="http://www.cdc.gov">www.cdc.gov</a>	800-311-3435
List of State Certified Water Quality Testing Labs	<a href="http://www.mwra.com/water/html/qual6.htm">www.mwra.com/water/html/qual6.htm</a>	617-242-5323
water systems & regulations		
Massachusetts Water Resources Authority (MWRA)	<a href="http://www.mwra.com">www.mwra.com</a>	617-242-5323
Massachusetts Department of Environmental Protection	<a href="http://www.mass.gov/dep">www.mass.gov/dep</a>	617-292-5500
Department of Conservation & Recreation	<a href="http://www.mass.gov/dcr">www.mass.gov/dcr</a>	617-626-1250
Source Water Assessment and Protection Report	<a href="http://www.mwra.com/sourcewater.htm">www.mwra.com/sourcewater.htm</a>	617-242-5323
public meetings		
MWRA Board of Directors	<a href="http://www.mwra.com/02org/html/gov.htm">www.mwra.com/02org/html/gov.htm</a>	617-788-1117
MWRA Advisory Board	<a href="http://www.mwraadvisoryboard.com">www.mwraadvisoryboard.com</a>	617-742-7561
Water Supply Citizens Advisory Committee	<a href="http://www.mwra.com/02org/html/wscac.htm">www.mwra.com/02org/html/wscac.htm</a>	413-586-8861



IF YOU WOULD LIKE MORE IN-DEPTH INFORMATION on your water quality, a monthly report is available. Please visit our website [www.mwra.com](http://www.mwra.com) or call 617-242-5323. Thank you for reading this report.