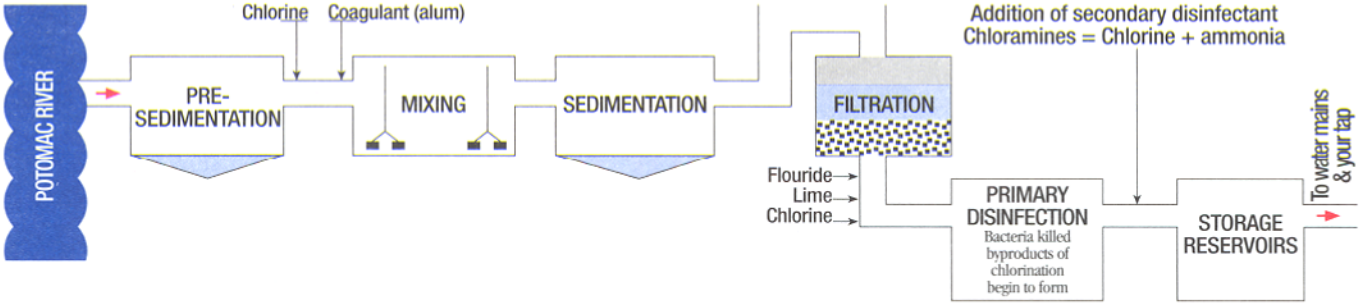
Main Treatment Processes at Dalecarlia and McMillan Water Treatment Plants



Pre-Sedimentation – Allows large particles in untreated water to settle out naturally.

Mixing – "Coagulants" are added to the water to cause small particles to stick together when the water is mixed, making larger, heavier particles.

Sedimentation – Allows the newly formed larger particles to settle out naturally.

Filtration – Removes smaller particles by trapping them in sand filters.

Primary Disinfection – with Chlorine/Chloramines (after 11-1-2000). Other chemicals added include:

Lime to adjust the pH (the water's acidity) to prevent corrosion.

Fluoride at low levels to protect teeth (as recommended by the American Dental Association).

Improving Your Water Quality - Chloramines As Secondary Disinfectant

Historically, chlorine has been the only chemical used for disinfection. Chlorine is added to water as a disinfectant to protect against harmful bacteria and other organisms. Starting November 1, 2000, Washington Aqueduct will use chloramines as a secondary disinfectant in addition to free chlorine as the primary disinfectant. The change in disinfectant is an effort to reduce the concentrations of disinfectant byproducts called trihalomethanes (THMs), in compliance with more stringent national standards set by EPA. Most customers will not observe any difference other than a reduced chlorine odor. However, some sections of the population, such as facilities providing kidney dialysis treatment, individuals and businesses maintaining fish tanks, and some laboratories and businesses, will be affected. These customers may need to change their pretreatment steps to remove chloramine instead of chlorine.

Water Treatment and Distribution System

The DC Water and Sewer Authority (WASA) distributes water to residences and businesses throughout DC for drinking, fire fighting and other uses. WASA purchases the drinking water from the US Army Corps of Engineers, Washington Aqueduct. The Washington Aqueduct withdraws approximately 180 million gallons of water each day from the Potomac River at the Great Falls and the Little Falls intakes, and then treats the water at the two water treatment plants, Dalecarlia and McMillan (see the water treatment scheme). WASA then distributes the drinking water throughout DC with the storage facilities, pumping stations and a network of 1300 miles of distribution system water pipes.

A Quick Read on the Table

In 1999, the highest level of all contaminants detected in your tap water was always below the highest level allowed by EPA (the MCL), generally by a wide margin.

Abbreviations and Definitions

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

CDC = Centers for Disease Control and Prevention, located in Atlanta, Georgia, whose mission is to promote health and quality of life by preventing and controlling disease, injury, and disability. CDC is an agency of the U.S. Department of Health and Human Services.

Haloacetic Acid (6) (HAA6) = The six haloacetic acid species required to be monitored by EPA.

MRDL = Maximum Residual Disinfectant Level. The highest level of a disinfectant that is allowed in drinking water.

MRDLG = Maximum Residual Disinfectant Level Goal. The level of drinking water disinfectant in water below which there is no known or expected risk to health. MDRLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

MCLG = Maximum Contaminant Level Goal. The level of a contaminant in water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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 technologies.

NA = Not Applicable.

NR = Not regulated by EPA at this time.

NTU = Turbidity is measured with an instrument called a nephelometer, which measures the intensity of light scattered by suspended matter in the water. Measurements are given in nephelometric turbidity units (NTUs).

pCi/L = Picocuries per liter (a measure of radioactivity).

ppm = Parts per million.

ppb = Parts per billion.

TT = Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.

Turbidity = A measure of the cloudiness of water. We measure turbidity because it is a good indicator of the effectiveness of the water treatment system. Turbidity in excess of 5 NTU is just noticeable to the average person.

"<" = less than. In some cases, the laboratory's analytical method was not capable of measuring at or below EPA's minimum detection level. In these cases, if the contaminant was not detected, a "less than" result is reported under the "Highest" detected level in DC's drinking water.

Washington, DC Drinking Water Analysis Data for 1999

REGULATED CONTAMINANTS

Category of Contaminants	Units	EPA Limits		DC Drinking Water		Typical Sources of Contaminants
		MCLG	MCL or TT	Highest*	Range	
Water Treatment Plant Performance						
Turbidity	NTU	NA (TT)	5 (maximum)	0.16	NA	Soil runoff.
	% of turbidity readings ≤ 0.5 NTU	NA (TT)	95% (minimum)	100%		
Microbiological Indicators						
Total Coliform Bacteria	% of total-coliform-positive samples	0	5% (maximum)	1.21%	0 to 1.21%	Naturally present in the environment.
Disinfectants and Disinfection Byproducts						
Chlorine	ppm	4 MRDLG	4.0 MRDL	2.7* (average)	2.3 to 3.1	Water additive that protects against microbiological contamination.
Total Trihalomethanes	ppb (4-quarter running average)	0	100	84 (highest 4-quarter average)	22 to 207 (individual samples)	Trihalomethanes are a byproduct of drinking water chlorination. Comment: Change over to chloramines will reduce trihalomethanes formation.
Inorganic Metals						
Antimony	ppb	6	6	2	< 1 to 2	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
Barium	ppm	2	2	0.04	0.03 to 0.04	Discharge of drilling waste and metal refineries; erosion of natural deposits.
Beryllium	ppb	4	4	< 1	< 1	Discharges from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
Chromium	ppb	100	100	2	≤ 1 to 2	Discharge from steel and pulp mills; erosion of natural deposits.
Copper (at the customer's tap)	ppm	1.3	1.3 (AL)	0 samples out of 55 above AL	90% of samples ≤ 0.1	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
Lead (at the customer's tap)	ppb	0	15 (AL)	3 samples** out of 55 above AL	90% of samples ≤ 12	Corrosion of household plumbing systems; erosion of natural deposits.
Thallium	ppb	0.5	2	< 1.0	< 1	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories.
Inorganic Ions						
Fluoride	ppm	4	4	1.1	0.7 to 1.1	Water additive that promotes strong teeth.
Nitrate	ppm	10	10	2.2	1.7 to 2.2	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits.
Nitrite	ppm	1	1	< 0.3	< 0.3	
Herbicides						
Atrazine	ppb	3	3	0.2	< 0.1 to 0.2	Herbicide runoff.
Simazine	ppb	4	4	0.3	< 0.07 to 0.3	

continued

Category of Contaminants	Units	EPA Limits		DC Drinking Water		Typical Sources of Contaminants
		MCLG	MCL or TT	Highest*	Range	
Radionuclides †						
Alpha Emitters	pCi/L	0	15	1.8	1.0 to 1.8	Erosion of natural deposits.
Beta Emitters	pCi/L	0	50 ††	4.7	2.5 to 4.7	Decay of natural and man-made deposits.
Strontium-90	pCi/L	8	8	< 1	< 1	Decay of man-made radiation.
Tritium	pCi/L	20,000	20,000	1570	< 650 to 1570	

UNREGULATED CONTAMINANTS

Category of Contaminants	Units	Status	Highest*	Range	Typical Sources of Contaminants
INORGANIC					
Sulfate	ppm	NR	40.9*	39.2 to 42.7	Naturally present in the environment and in mine drainage wastes.
Nickel	ppb	NR †††	2	<1 to 2	Used in manufacturing alloys, corrosion resistant batteries, and electroplating.
DISINFECTION BIPRODUCTS					
Chloral Hydrate	ppb	NR	6.0*	1.6 to 13.0	The non-regulated (NR) contaminants shown here are byproducts of drinking water chlorination. EPA required that large water providers monitor for these compounds to help determine the need for future regulations.
Chloropicrin	ppb	NR	0.7*	<0.5 to 0.9	
Haloacetic Acids(6)	ppb	NR	54.9*	18.3 to 85.4	
Haloacetonitriles	ppb	NR	6.2*	2.3 to 12.3	Note: The disinfectant byproduct analytical data are from year 1997 during the Information collection rule. The Haloacetic acid data are from the 1998 monitoring.
Haloketones	ppb	NR	2.4*	1.1 to 4.9	
Total Organic Halides	ppb	NR	237.5*	160 to 330	

Health Effects Total Trihalomethanes - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with the liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

* The average level detected is shown for non-regulated contaminants (NR). ** EPA regulations require that corrective action be taken if greater than 5 of 50 samples exceed the action level.
† Radionuclides values shown are for 1998, as EPA requires them to be monitored every four years. †† EPA considers 50 pCi/l to be the level of concern for beta particles. ††† Nickel is required to be monitored while EPA reconsiders its MCL.

Comments can also be e-mailed to **info@dcwasa.com** or faxed to **202-787-2210**

DCWASA

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DC WASA Public Affairs Office
5000 Overlook Ave., S.W.
Washington DC 20032

What's In My Drinking Water?

EPA establishes standards for drinking water to make sure that it's safe for you to drink. The table summarizes DC's drinking water test results during 1999. The water is tested for the presence of numerous (127) contaminants, but only those detected are listed in the table. The table compares the level of each detected contaminant to an allowable upper limit (maximum contaminant level, or MCL) and the ideal goal (maximum contaminant level goal, or MCLG) set by EPA. Note that the concentrations of all detected contaminants in DC's drinking water were considerably below EPA-established maximum limits.

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 expected health risks can be obtained by calling the Environmental Protection Agency Safe Drinking Water Hotline (1-800-426-4791).

Important Health Information

Cryptosporidium, a microorganism that lives in the gut of animal hosts, is found in surface water throughout the U.S. People can be exposed to *Cryptosporidium* through ingestion of contaminated food, recreational water, or drinking water containing *Cryptosporidium* cysts.

Exposure to *Cryptosporidium* may cause diarrhea, fever, and gastrointestinal illness. The illness is generally easily handled by healthy individuals. However, 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 the Safe Drinking Water Hotline (1-800-426-4791).

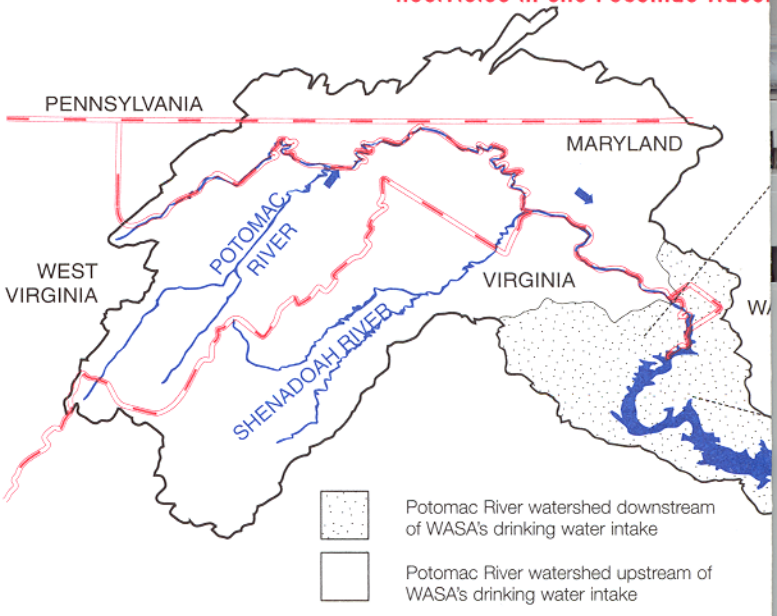
The Washington Aqueduct tests the untreated source water for *Cryptosporidium*. Tests of the source water (prior to treatment) have not detected *Cryptosporidium*. Because current test methods for *Cryptosporidium* cannot conclusively assure that the organism will never be present in our source water, WASA and WA continue to provide a multiple-barrier approach – chemical treatment, highly efficient filtration technology and disinfection – designed to remove *Cryptosporidium,* if present, at our water treatment plants, and minimize the risk to public health.

Serving the Public – Protecting the Environment

Ron M. Linton, *Chairman of the Board*

District of Columbia Water and Sewer Authority

Activities in the Potomac Watershed



What is Being Done to Improve Our Drinking Water Quality?

WA and WASA have embarked on many projects at the treatment plants and in the distribution system to improve water quality and provide you with safe drinking water. In addition to compliance monitoring, WASA has implemented supplementary monitoring programs to ensure water quality.

Treatment Plant Enhancements

At the treatment plants, new technologies, treatment changes, and rigorous maintenance are underway. Some examples are construction of new chemical feed systems, dredging of the Dalecarlia reservoir, and a comprehensive filter renovation project.

WATER QUALITY MONITORING PROGRAMS

Coliform Bacteria Monitoring - A primary method of testing the safety of drinking water is frequent laboratory analysis for coliform bacteria. Most coliform species are harmless; however, they have been found to be a useful measure of the effectiveness of the treatment process in the removal of harmful microorganisms, and of efforts to prevent their infiltration into the drinking water storage and distribution system. Thus, coliform bacteria monitoring throughout the District is used as an "early warning system" for potential contamination. If coliform bacteria are found in the water, more samples are immediately taken, and the situation is investigated to make sure that the water is safe to drink.

Lead and Copper Monitoring Program - One of the treatment objectives for DC's system is to reduce the corrosivity of the water to minimize leaching of lead or copper from customer plumbing into the water. Therefore, WASA regularly monitors for elevated lead and copper concentrations by collecting water samples at consumer taps. Lead concentrations found in DC's drinking water comply with EPA's requirements; however, tap water in some homes may contain higher levels of lead. Infants, young children, and pregnant women tend to be more vulnerable to lead than the general public. We have included some tips to help you to further minimize lead in drinking water:

Comment Card

What are your thoughts about our 1999 Water Quality Report? Please check the appropriate box.

How easy was it to read the Water Quality Report?

- ☐ Easy to read
- ☐ Mostly easy to read
- ☐ Difficult to read

How easy was it to understand the Water Quality Report?

- ☐ Easy to understand
- ☐ Mostly easy to understand
- ☐ Difficult to understand

Additional Comments:

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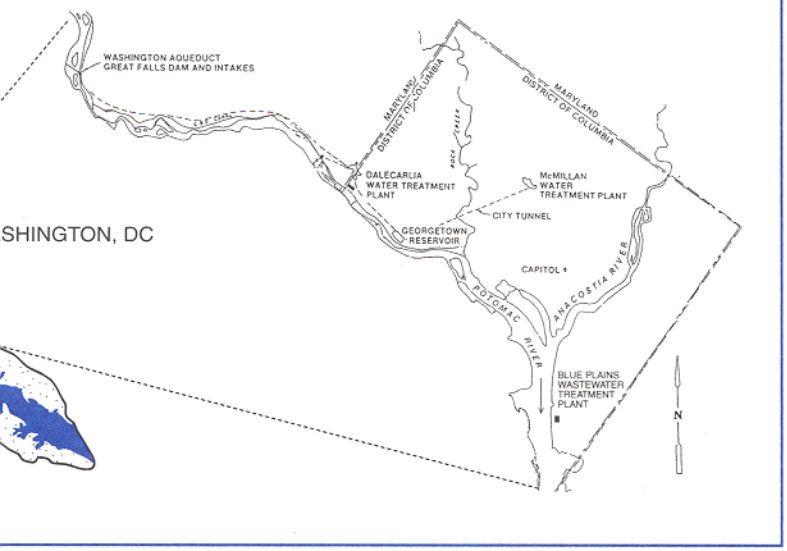
shed Affect Your Drinking Water!



SHINGTON, DC

- Drink water or prepare beverages, especially infant formula, from the cold water tap. Hot water dissolves lead more quickly than cold water.
- If water has been standing in the pipes without use for a few hours, run the cold water tap for a few minutes before drinking it. This will get rid of standing water that may contain dissolved lead from household plumbing.

Water Quality Enhancement Programs

The quality of drinking water is affected as it flows through the distribution system. WASA has undertaken a number of programs to protect, maintain and enhance the water quality in the distribution system. Examples include such proactive maintenance activities as comprehensive system flushing, water main rehabilitation, and cross-connection control management.

Water Main Flushing - Annually each spring through fall, WASA conducts an aggressive flushing program to systematically "flush" water mains in the distribution system. The water is released by sequentially opening fire hydrants and flushing water in a unidirectional manner. Flushing water through the pipes at high velocities removes buildup in pipes that can cause rusty or "dirty" water problems. Routine maintenance is also performed on the valves and hydrants as they are opened.

Cross-Connection Control Program - WASA began a new program this year to eliminate potential "cross connections" – physical links that could allow contaminants to flow into the District's water supply from customers' facilities. WASA is leading this cooperative effort that includes the DC Department of Health, the DC Department of Consumer and Regulatory Affairs, EPA, and consumers. Backflow of contaminating materials may cause serious illness. To protect public health , WASA is encouraging local businesses to install backflow prevention devices at the water service connection, which will prevent contaminants from entering the drinking water supply.

How You Can Help To Protect Washington, DC's Drinking Water Supply

Watershed Protection - A watershed is an area of land surrounding a river from which water eventually drains into the river. Everyone can help protect the Potomac River from contamination by protecting the watershed. Dispose of household wastes and motor oil in a proper manner. Never dump anything down a storm drain. To participate in watershed protection activities, contact the Interstate Commission on the Potomac River Basin at 301-984-1908.

Be a Volunteer - WASA has a number of drinking water quality monitoring programs in which you can participate. By participating in these you will not only be serving the community, but will also be able to receive detailed information about the water quality at your tap. For more information call the WASA Water Quality Division at 202-612-3440.

Be a partner in our cross-connection control program. - Our cross-connection surveyors will be conducting inspections of the drinking water supply in commercial, industrial and apartment buildings on a schedule prioritized by hazard potential. We appreciate the cooperation of building owners and managers in assisting our surveyors. Depending on the survey findings, WASA will inform the responsible party of the type of backflow preventor that may be needed.

Community Meetings - WASA periodically conducts community meetings with Advisory Neighborhood Commissions, civic associations, schools, libraries, and other groups. If you are interested in attending a community meeting, or would like a speaker from WASA to make a presentation to your community group, contact Ms. Libby Lawson, WASA Public Affairs Office Director, at 202-787-2200.

Board of Directors Meetings - The WASA Board of Directors conducts regular business meetings, open to the public, generally on the first Thursday of each month. If you'd like to attend, please call Linda Manley, Board Secretary, at 202-787-2330 to confirm the specific meeting time and location.

For More Information or Questions - concerning this report call Seema Bhat, Water Quality Division Manager, at 202-612-3440. For any other aspect please call one of the numbers listed below:

Drinking Water Quality	WASA Water Quality	202-612-3440
Other General Information	WASA Switchboard	202-787-2000
Water Bills	WASA Water Bill Action Line	202-354-3600
To Report Pipe Breaks, Leaks, or Open Hydrants (24 Hours per Day)	WASA Water Operations Emergency	202-612-3400
Information About WASA and WASA's Programs	WASA Public Affairs Office	202-787-2200
Storm Drain Complaints	WASA Department of Sewer Services	202-612-3400
Source Water Protection	DC Department of Health	202-535-2190
Source Water Protection	Interstate Commission on the Potomac River Basin	301-984-1908
Drinking Water Treatment	Washington Aqueduct Division, USACE	202-764-2753
Safe Drinking Water Hotline	EPA	800-426-4791

Visit Our Website - WASA's annual Water Quality Report and other information about WASA are available on the Internet at:

http://www.dcwasa.com

Other web sites with information about drinking water are listed below:

EPA's Surf Your Watershed	http://www.epa.gov/surf
American Water Works Association	http://www.awwa.org

이 안내지에는 귀하께서 드시는 식수의 질에 대한 중요한 정보가 들어있습니다. 이해하시는데 도움이 필요하시거나 질문이 있으시면 한인봉사센타 (Korean Community Service Center: KCSC) 에서 도와드릴 것이오니, 301-933-7010으로 연락 주시기 바랍니다.

本手册備有有關飲用水的信息，若在閱讀的過程中需要幫忙解釋，請與美京中華基督教會聯絡。電話是：202-898-0061

Copias en español de este folleto están a la disposición en las bibliotecas públicas y en las clínicas del Departamento de Salud del District of Columbia, o llamando a la Oficina de Asuntos Públicos de la Autoridad de Agua y Desagües al teléfono 202-787-2200.

Cassette recordings of this brochure are available and can be obtained by calling the WASA Public Affairs Office at 202-787-2200.