District of Columbia
Water and Sewer Authority

Drinking Water

Quality Report 2008

Dear Consumer,

At the District of Columbia Water and Sewer Authority (DC WASA), delivering safe, clean, high-quality water is one of our highest priorities.

This *Annual Water Quality Report* provides information on the source of our drinking water, the water treatment process* and the quality of the water that DC WASA delivers in the nation's capital. This report lists the regulated contaminants detected in the treated water and the level at which they were found for the preceding calendar year.

You are our customers. You are our neighbors and our children, and DC WASA is committed to doing everything we can to continue to bring you the safest and highest quality water possible. If you have questions about drinking water quality in the District of Columbia, you can find more information on our website at www.dcwasa.com or contact our Office of Water Quality at (202) 612-3440.

Sincerely,

Jerry N. Johnson
DC WASA General Manager

*DC WASA purchases treated water from the U.S. Army Corps of Engineers, Washington Aqueduct Division

THE POTOMAC RIVER—OUR WATER SUPPLY SOURCE

Drinking water for the District of Columbia comes from the Potomac River, a "surface water" supply. As water travels over the surface of the land, and into the Potomac River, it dissolves naturally occurring minerals, leaves and vegetation, and sometimes even radioactive materials and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water (before treatment) include:

- Microorganisms, such as viruses and bacteria that come from agricultural livestock operations, septic systems, wastewater treatment plants and wildlife
- Inorganic chemicals, such as salts and metals that can be naturally occurring or result from urban stormwater runoff, farming, and industrial or domestic wastewater discharges
- Pesticides and herbicides that may come from agriculture, urban stormwater runoff, and residential uses
- Organic chemicals, including synthetic and volatile organic chemicals which are by-products of industrial processes, petroleum products from gas stations and urban stormwater runoff and septic systems

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PROTECTING THE DISTRICT DRINKING WATER SUPPLY

Protect The Watershed—A watershed is an area of land that drains to a particular point along a stream or river. The best way to protect the Potomac River from contamination is to help protect the watershed. Simple reminders that play a crucial role in protecting the watershed include:

- Take precautions to ensure that trash and debris do not enter storm drains and catch basins
- Dispose of household waste, grease and motor oil properly
- Report spills that could potentially enter the waterways
- Do not flush pharmaceuticals down the toilet or drain

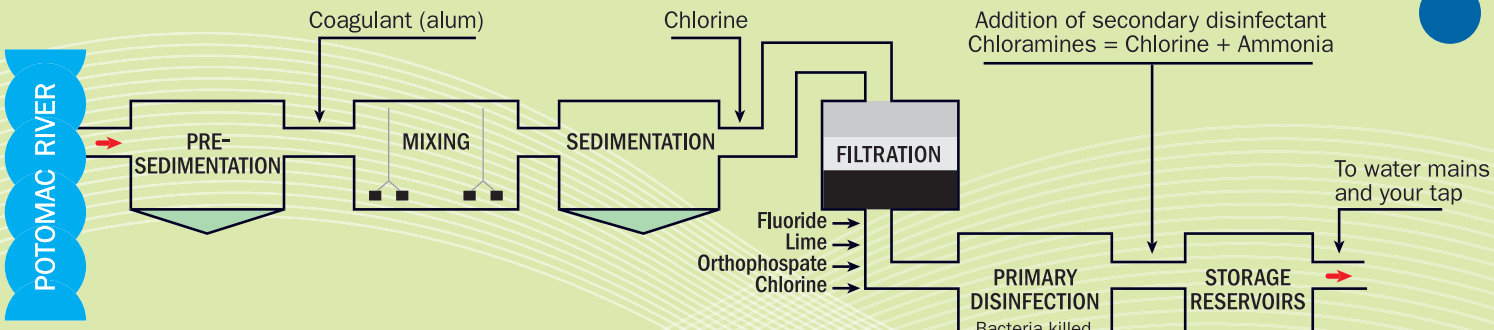
Please contact the Mayor's 311 call center to report spills or to seek assistance on waste disposal.

Get Involved—**The DC WASA Board of Directors** conducts regular business meetings that are open to the public, generally on the first Thursday of each month at the Blue Plains Facility, 5000 Overlook Ave, SW, Washington, DC 20032. Please contact the Office of the Board Secretary at (202) 787-2330 to confirm the specific meeting time and location.

THE WATER TREATMENT AND DISTRIBUTION SYSTEM

The District of Columbia Water and Sewer Authority (DC WASA) maintains about 1,300 miles of pipe and distributes potable water to over 500,000 residents and businesses throughout the District. DC WASA purchases drinking water from the U.S. Army Corps of Engineers, Washington Aqueduct Division. The Washington Aqueduct draws water from the Potomac River at the Great Falls and the Little Falls intakes and treats the water at the Dalecarlia and McMillan Treatment Plants (see the water treatment diagram). The treatment process includes sedimentation, filtration, fluoridation, pH adjustment, primary disinfection using free chlorine, secondary disinfection with chloramine through the addition of ammonia, and corrosion control with orthophosphate.

Chloramine is a federally approved alternative to free chlorine. Chloramine must be removed from water used for kidney dialysis or aquariums. Please contact your physician or kidney dialysis center for the appropriate water treatment process. Contact your local pet store for the appropriate water treatment for fish tanks. For more information about chloramine go to http://www.dcwasa.com/waterquality/faqs.cfm or http://www.epa.gov/safewater/disinfection/chloramine/index.html.



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) and orthophosphate to prevent corrosion.
- Fluoride at low levels to protect teeth (as recommended by the American Dental Association)

POTOMAC RIVER

CONTINUED FROM PAGE 1

- Radioactive chemicals that can be naturally occurring or the result of mining activities

The Interstate Commission on the Potomac River Basin conducted a Source Water Assessment of the Potomac River watershed in April 2002 under contract to the District of Columbia government. The assessment identified urban runoff, toxic spills, agriculture and inadequate wastewater treatment as potential contamination sources to the water supply. A redacted version of this document can be found at http://www.potomacriver.org/cms/index.php?option=com_content&view=article&id=122&Itemid=95.

Contact the Interstate Commission on the Potomac River Basin at (301) 984-1908 for more information or to join your neighbors in activities that help protect our water supply.

SPECIAL MONITORING

In the summer of 2008, the Washington Aqueduct participated in a one-time regional effort coordinated by the Metropolitan Washington Council of Governments to monitor for select pharmaceutical, personal care products (PPCP) and potential endocrine-disrupting compounds (EDC) in the source and treated water using a commercial laboratory. The following twenty parameters were analyzed, and two contaminants (atrazine and carbamazepine) were detected as summarized below. For more information related to pharmaceuticals and personal care products in the Potomac River go to www.dcwasa.com/waterquality.

Contaminants Detected (ppb)	
Atrazine—Regulated Herbecide	
Potomac River	0.1
Dalecarlia WTP	0.1
McMillan WTP	0.1
Carbamazepine—Anti Epileptic Pharmaceutical	
Potomac River	0.01
Dalecarlia WTP	0.01
McMillan WTP	0.004

Contaminants Monitored
17 alpha-Ethynyl estradiol
17 beta-Estradiol
4-n-Octylphenol
4-tert-Octylphenol
Atrazine
Bisphenol A
Butylbenzylphthalate
Caffeine
Carbamazepine
Di(2-ethylhexyl)phthalate
Di-n-butylphthalate
Estrone
Gamma-BHC (Lindane)
Ibuprofen
Linuron
Methoxychlor
Monensin
Naproxen
Nonylphenol, isomer mix
Sulfamethoxazole

WHAT'S IN MY DRINKING WATER?

EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems to ensure that tap water is safe to drink. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

The table compares the level of each detected contaminant to limits set by EPA: an allowable upper limit, the maximum contaminant level (MCL) or treatment technique (TT) requirement, and a goal, the maximum contaminant level goal (MCLG). Contaminants highlighted in yellow indicate a violation of the National Primary Drinking Water Regulations.

WASHINGTON, DC DRINKING WATER ANALYSIS DATA FOR 2008

Regulated Contaminants YELLOW HIGHLIGHT INDICATES TREATMENT VIOLATION

Washington Aqueduct Water Treatment Plant Performance					
	Units	EPA Limits		DC Drinking Water	Description / Typical Sources of Contaminants
		MCLG	MCL or TT		
Turbidity **(exceeded EPA limit — See Treatment Violation Section)**	NTU	NA	TT = 1 (maximum)	(maximum) 0.11 (hourly) **> 1 (instantaneous)[1]**	Turbidity is often caused by soil runoff
	% of monthly turbidity readings ≤ 0.3 NTU	NA	TT = 95% (minimum)	100%	
Total Organic Carbon (TOC)	% removal	NA	TT 25-35% removal	42% (lowest annual average) 30% to 59% (range of monthly averages)	Naturally present in the environment

Water Entering DC WASA's Distribution System						
	Units	EPA Limits		DC Drinking Water		Description / Typical Sources of Contaminants
		MCLG	MCL	Highest	Range	
Inorganic Metal						
Arsenic	ppb	0	10.	0.67	ND to 0.67	Erosion of natural deposits; runoff from orchards
Barium	ppm	2	2	0.05	0.03 to 0.05	Erosion of natural deposits
Chromium	ppb	100	100	3	0.8 to 3	Erosion of natural deposits
Selenium	ppb	50	50	1.4	0.4 to 1.4	Erosion of natural deposits; discharge from mines
Inorganic Anions						
Fluoride	ppm	4	4	1.1	0.62 to 1.1	Water additive which promotes strong teeth
Nitrate	ppm	10	10	2.9	0.4 to 2.9	Runoff from fertilizer use; erosion of natural deposits
Nitrite	ppm	1	1	0.06	ND to 0.06[2]	Runoff from fertilizer use; erosion of natural deposits
Synthetic Organic Contaminants						
Atrazine	ppb	3	3	0.07	ND to 0.07	Runoff from herbicide used on row crops
Di-(2-ethylhexyl) phthalate	ppb	0	6	0.9	ND to 0.9	Discharge from rubber and chemical factories
Radionuclides						
Beta emitters	pCi/L	0	50[3]	4	ND to 4	Decay of natural and man-made deposits
Combined radium	pCi/L	0	5	2	ND to 2	Erosion of natural deposits

[1] The turbidity instrumentation could not read values greater than 1 NTU.

[2] The highest detected level shown for this parameter was derived from both compliance data and routine process control data.

[3] The MCL for beta particles is 4 mrem/year. EPA considers 50pCi/L to be the level of concern for beta particles.

DC WASA's Distribution System						
	Units	EPA Limits		DC Drinking Water		Description / Typical Sources of Contaminants
		MCLG	MCL or TT	Highest	Range	
Microbial Indicators						
Total Coliform Bacteria	% of total-coliform-positive samples	0	5% (maximum)	1.8%	0 to 1.8%	Naturally present in the environment
Fecal Coliform	Number positive	0	0	0	0	Human and animal fecal waste
E.coli bacteria	Number positive	0	0	0	0	Human and animal fecal waste
Disinfectants and Disinfection Byproducts						
Chlorine	ppm	4 (MRDLG) (annual average)	4 (MRDL) annual average)	3.4 (Highest running annual average)	ND to 4.5 (Range of single site results)	Water additive that protects against microbiological contamination. Chlorine is combined with ammonia to form chloramine.
Total Trihalomethanes	ppb	NA	80 (4-quarter running average)	37 (Highest 4-quarter running average)	13 to 110 (Range of single site results)	By-products of drinking water disinfection
Haloacetic Acids (5)	ppb	NA	60 (4-quarter running average)	27 (Highest 4-quarter running average)	17 to 68 (Range of single site results)	By-products of drinking water disinfection
Lead and Copper (at the customer's tap)						
	Units	EPA Limits		DC Drinking Water		Description / Typical Sources of Contaminants
		MCLG	Action Level	Samples above AL	90th Percentile	
Lead						
Jan-June 2008 Monitoring Period	ppb	0	15	3 of 103	7	Corrosion of household plumbing systems; erosion of natural deposits
July-Dec 2008 Monitoring Period				5 of 112	8	
Copper						
Jan-June 2008 Monitoring Period	ppm	1.3	1.3	0 of 103	0.1	Corrosion of household plumbing systems; erosion of natural deposits
July-Dec 2008 Monitoring Period				0 of 112	0.1	

Unregulated Contaminants

Water Entering DC WASA's Distribution System							
Contaminant	Units	Average	Range	Contaminant	Units	Average	Range
Aluminum[4]	ppb	49	19 to 321	Molybdenum	ppb	0.8	ND to 1.2
Bromide	ppm	ND	ND to 0.07	N-Nitrosodimethylamine (NDMA)[5]	ppt	ND	ND to 2.9
Calcium	ppm	44	31 to 61	Nickel	ppb	2.0	1.5 to 2.5
Chloride	ppm	33	16 to 85	Perchlorate[6]	ppb	ND	ND to 0.8
Cobalt	ppb	0.1	ND to 0.2	Potassium	ppm	2.9	2.3 to 3.9
Copper	ppb	3.3	0.9 to 8.0	Sodium	ppm	16	12 to 22
Iodide	ppb	27	5 to 99	Strontium	ppb	179	107 to 252
Iron	ppb	1.5	ND to 17.2	Sulfate	ppm	53	34 to 81
Lead	ppb	ND	ND to 0.4	Tritium[7]	pCi/L	100	ND to 800
Lithium	ppb	2.5	1.4 to 3.8	Vanadium	ppb	0.8	0.4 to 1.5
Magnesium	ppm	8.9	4.2 to 14.5	Zinc	ppb	1.3	0.3 to 2.5
Manganese	ppb	1.2	0.4 to 3.7				

Other Water Quality Parameters —DC WASA's Distribution System			
Contaminant	Units	Average	Range
Alkalinity	ppm as $CaCO_3$	62	35 to 98
Ammonia—Free	ppm as Nitrogen	0.2	0.1 to 0.4
Calcium Hardness	ppm as $CaCO_3$	108	58 to 147
	grains per gallon (gpg)	6	3 to 9
Nitrite	ppm as $N\text{-}NO_2$	0.006	0 to 0.044
Dissolved Orthophosphate	ppm	2.3	1.8 to 3.0
pH	—	7.6	7.2 to 8.1
Temperature	Degrees Fahrenheit	66	44 to 87

[4] Aluminum exceeded the non-enforceable secondary maximum contaminant level (SMCL) of 200 ppb in one sample collected in October 2008.

[5] NDMA was monitored using a modified version of EPA Method 1625 as well as EPA Method 521. No detects were reported using EPA Method 521 during monitoring.

[6] The Washington Aqueduct (WA) used a modified version of EPA Method 314 that detects lower levels than the standard EPA Method 314. These results were listed in the table. For more information pertaining to these and other perchlorate results and general information about perchlorate, go to www.dcwasa.com/waterquality.

[7] EPA requested the monitoring for tritium once every 3 years. In 2008 the Washington Aqueduct monitored quarterly samples for tritium. EPA considers 20,000 pCi/L to be the level of concern for tritium.

TREATMENT VIOLATION

The Washington Aqueduct's McMillan Water Treatment Plant briefly exceeded the U.S. Environmental Protection Agency standard for filtered water turbidity on December 22, 2008. Turbidity is a measure of the cloudiness of the water. The standard is for filtered water turbidity to be below 1 turbidity unit at all times. For a 14-minute period on that evening, this limit was exceeded. Because the Washington Aqueduct continually analyzes and records filtered water turbidity, it was possible to immediately detect the problem and take action to overcome the equipment problem.

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

The Washington Aqueduct consulted with EPA Region III, which is responsible for regulating drinking water in DC. EPA Region III determined that the event did not create an emergency requiring immediate public notification or any specific action by the public.

IMPORTANT HEALTH INFORMATION

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 (800) 426–4791.

Cryptosporidium

Cryptosporidium is a microbial pathogen found in most surface water in the U.S. The Washington Aqueduct monitors for *Cryptosporidium* in the Potomac River every month. In October 2005, the Washington Aqueduct detected *Cryptosporidium* at 1.5 oocysts per 100 liters in one sample. *Cryptosporidium* has not been detected in any sample since October 2005.

Ingesting *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people are at greater risk of developing a life-threatening illness. DC WASA encourages immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection.

Lead

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. DC WASA is 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 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking 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.

Disinfection By-Products

Total trihalomethanes (TTHM) and haloacetic acids (HAA) are byproducts of drinking water disinfection. Disinfection by-products can form when chlorine disinfectant reacts with natural material from the Potomac River. The EPA's Maximum Contaminant Limit (MCL) for TTHM is a running annual average of 80 ppb while HAA5 is a running annual average of 60 ppb. DC WASA's highest running annual average was 37 ppb for TTHM and 27 ppb for HAA5 during the 2008 compliance monitoring period. However, three individual samples had TTHM values ranging between 81 ppb and 110 ppb and a single HAA5 sample had a value of 68 ppb.

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may also have an increased risk of getting cancer. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

ABBREVIATIONS AND DEFINITIONS

AL = Action Level. The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement that a water system must follow. Other requirements may include additional testing, public notification or capital improvements. The AL is not equivalent to a maximum contaminant level or MCL (see definition at right).

$CaCO_3$ = Calcium carbonate

Haloacetic acids (5) = HAA5. The five 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. 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.

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.

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.

mrem/year = millirems per year (a measure of radiation absorbed by the body)

NA = Not Applicable

ND = Non-Detectable

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).

oocyst = The earliest stage of the life cycle of a parasitic protozoan (e.g., *Cryptosporidium*) in which it is enclosed in a hard-shelled capsule.

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

ppm = parts per million

ppb = parts per billion

ppt = parts per trillion

SMCL = Secondary Maximum Contaminant Limit. Established only as a guideline to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor.

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.

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IMPROVING DRINKING WATER QUALITY IN YOUR HOME

Water quality may deteriorate once it leaves the public mains and enters your household plumbing.

Here are some tips for enhancing water quality in your home:

- **Reduce water stagnation in your home.** If the water has not been used for several hours, run your cold water tap for approximately two minutes before using for drinking and cooking.
- **Clean your faucet aerator.** Routinely remove the faucet aerator and clean the strainer of debris to prevent the buildup of metals and other sediments.
- **Replace your home water filter routinely.** Replace the water filter in water pitchers and other devices as instructed by the manufacturer since used filters can elevate bacteria levels and accumulate metal.
- **Don't use hot water for drinking, cooking or making baby formula.** Hot water generally comes from a hot-water heater that may contain impurities such as metals from household plumbing that should not be ingested. These impurities dissolve more rapidly in hot water.
- **Drain your hot water heater annually.** Draining your water heater helps remove sediment and calcium build-up that can affect your water pressure. For instructions on how to drain your hot water heater, go to **www.dcwasa.com/waterquality/water-heater.pdf**.
- **Flush your faucets if you replace your pipes or fixtures.** After you replace plumbing fixtures or pipes, flush your cold water taps for at least five minutes over the next several days before drinking or cooking use to remove any pipe scale that may have detached or pipe shavings from pipe cuttings.

CONTACT INFORMATION

If you have any questions about this report or your drinking water, please call DC WASA's Water Quality Division at (202) 612-3440 or visit us on the web at **www.dcwasa.com**. For other DC WASA related information or services, please call:

Customer Services.....(202) 354-3600
Emergency.....(202) 612-3400
Public Affairs.....(202) 787-2200

Other important numbers:

Source Water Protection
DC Department of Environment.....(202) 535-2600
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

You can also visit the EPA on the web at **www.epa.gov**.
William M. Walker — Chairman of the Board
Jerry N. Johnson — General Manager

이 안내지에는 귀하께서 드시는 식수의 질에 대한 중요한 정보가 들어있습니다. 이해하시는데 도움이 필요하시거나 질문이 있으시면 한인봉사센타 (Korean Community Service Center: KCSC) 에서 도와드릴 것이오니, 240-683-6663 으로 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 estes 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.