Proudly Presented By:

Chesterfield County Department of Utilities

Annual Water Quality Report

Water testing performed in 2006

PWS ID#: VA4041845

Para asistencia en español, por favor llame a Juan Santacoloma Enlace Hispano del Condado de Chesterfield
Teléfono: 796-7085

Substances That Might Be in Water Sources

The 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, in some cases radioactive material, and substances resulting from the presence of animals or from human activity. Substances 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 or wildlife;

Inorganic contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or 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 byproducts of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff and septic systems;

Radioactive contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hot Line at (800) 426-4791.

Continuing Our Commitment

Once again we proudly present our annual water quality report. This edition covers all testing completed from January 1 through December 31, 2006. We are pleased to tell you that our compliance with all state and federal drinking-water laws remains exemplary. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain vigilant in meeting the needs of all of our water users.

For more information about this report, or to ask questions relating to your drinking water, please call Wendy Harding, quality assurance coordinator, at (804) 744-1360.

Source Water Assessment

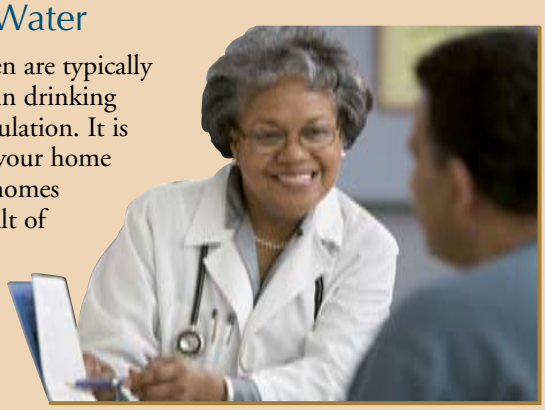
The Safe Drinking Water Act mandated source-water assessments be performed by the Virginia Department of Health for all public water sources, including those servicing Chesterfield County. During 2001, the Virginia Department of Health conducted a source-water assessment of our system.

Using criteria developed by the state in its U.S. EPA-approved Source Water Assessment Program, the Swift Creek Reservoir, the James River and Lake Chesdin were determined to be highly susceptible to contamination. The assessment reports consist of maps showing the source-water assessment area, an inventory of known land-use activities of concern, and documentation of any known contamination within the last five years from the date of the assessment. These reports are available by contacting Wendy Harding, quality assurance coordinator, at (804) 744-1360, or the Utilities Department at P.O. Box 608, Chesterfield, Virginia 23832.

Each month, laboratory staff collect water quality samples from Swift Creek Reservoir. This data may be obtained from Scott Flanigan, water quality manager for Chesterfield County, at (804) 768-7435.

Lead in Drinking Water

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 other homes in the community as a result of materials used in your home's plumbing. If your home has copper plumbing and was built before 1986, water standing in pipes for more than six hours can accumulate lead from the joints. Eliminate this possibility by running the cold-water tap until the house line is flushed—usually until the water turns cooler. This can take one to five minutes. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested. Additional information is available from the Safe Drinking Water Hot Line at (800) 426-4791.



Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as those with cancer and undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune-system disorders, some elderly, and infants, may be particularly at risk from infections. These people should seek advice about drinking water from their health-care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hot Line at (800) 426-4791.

Cryptosporidium in Drinking Water

Cryptosporidium is a microbial parasite found in surface water throughout the U.S. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100 percent removal. Current test methods do not determine if organisms are dead or capable of causing disease. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people are at greater risk of developing life-threatening illness. We encourage immunocompromised individuals to consult their doctors regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

During 2006, the source waters for all three water-treatment plants supplying the Chesterfield County potable-water distribution system were tested for *Cryptosporidium*. Twenty-four samples were collected from the Swift Creek Reservoir, source water for the Addison/Evans Water treatment Plant, with no *Cryptosporidium* detected in any of the 24 samples.

Twenty-four samples were collected from the James River, source water for the City of Richmond Water Treatment Plant, with values ranging from none detected to 18 *Cryptosporidium* oocysts per100 liters and an average of 3.9 oocysts per 100 liters.

Six samples were collected from Lake Chesdin, source water for the Appomattox River Water Authority with values ranging from none detected to 20 *Cryptosporidium* Oocysts/100 liters and an average of 3.3 oocysts per 100 liters.

Sampling Results

During the past year, water delivered to your home or business complied with, or exceeded, all state and federal primary drinking-water regulations. For your information, we have compiled the table below to show what substances were detected in your drinking water during 2006. Although all of the substances listed are below the Maximum Contaminant Limit set by the U.S. EPA, we believe it is important that you know exactly what was detected and how much of the substance was present in the water. The state allows us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES				ARWA		Addison-Evans		Richmond			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2002	15	0	ND	NA	0.2	0.2–0.2	0.3	0.3–0.3	No	Erosion of natural deposits
Beta/Photon Emitters[1] (pCi/L)	2002	50	0	1.9	1.9–1.9	2.8	2.8–2.8	1.9	1.9–1.9	No	Decay of natural and man-made deposits
Chloramines[2] (ppm)	2006	[4]	[4]	3.04	0.9–5.0	3.04	0.9–5.0	3.04	0.9–5.0	No	Water additive used to control microbes
Chlorite (ppm)	2006	1	0.8	0.68	0.03–0.68	ND	NA	ND	NA	No	Byproduct of drinking-water disinfection
Combined Radium (pCi/L)	2002	5	0	0.6	0.6–0.6	0.3	0.3–0.3	0.2	0.2–0.2	No	Erosion of natural deposits
Fluoride (ppm)	2006	4	4	1.10	ND–1.10	1.24	0.14–1.24	1.26	0.40–1.26	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2006	60	NA	18.7	13–30	18.0	12–30	27.9	20–35	No	Byproduct of drinking-water disinfection
Nitrate (ppm)	2006	10	10	ND	NA	ND	NA	0.47	0.47–0.47	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2006	80	NA	34.9	15–58	34.3	21–48	26.8	20–35	No	Byproduct of drinking-water disinfection
Total Coliform Bacteria (% positive samples)	2006	5% of monthly samples are positive	0	2	NA	ND	NA	ND	NA	No	Naturally present in the environment
Total Organic Carbon (removal ratio)	2006	TT	NA	1.38	1.32–1.40	1.32	1.02–1.42	1.3	1.0–2.1	No	Naturally present in the environment
Turbidity[3] (NTU)	2006	TT	NA	0.98	0.02–0.98	0.18	0.02–0.18	0.24	0.02–0.24	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2006	TT	NA	98.7	NA	100	NA	100	NA	No	Soil runoff

Tap water samples were collected from sample sites throughout the community				ARWA		Addison-Evans		Richmond			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	ACTION LEVEL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE ACTION LEVEL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2004	1.3	1.3	0.128	0	0.126	0	0.29	0	No	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	2004	15	0	2.9	1	6	0	6.1	1	No	Corrosion of household plumbing systems; erosion of natural deposits

SECONDARY SUBSTANCES				ARWA		Addison-Evans		Richmond			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Sulfate (ppm)	2006	250	NA	17.4	17.4–17.4	42.8	42.8–42.8	39.4	39.4–39.4	No	Runoff/leaching from natural deposits; industrial wastes

UNREGULATED SUBSTANCES		ARWA		Addison-Evans		Richmond		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2006	6.0	3.2–8.4	7.0	5.0–9.3	3.6	2.4–5.2	Byproduct of drinking-water disinfection
Chlorodibromomethane (ppb)	2006	1.0	ND–2.3	1.4	ND–2.3	ND	ND–0.7	Byproduct of drinking-water disinfection
Chloroform (ppb)	2006	27.9	11–49	25.9	13–43	23.0	17–29	Byproduct of drinking-water disinfection

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

[2] Chloramine MRDL and MRDLG compliance is regulated by calculating on a running annual average. The County's distribution system running annual average was 3.04 ppm (in compliance with the MRDL and MRDLG). Every month 150 measurements of total chlorine are performed in the distribution system and used in this calculation. Note that individual measurements are allowed by regulation to exceed the MRDL and MRDLG, as the highest measurements in year 2006 were above 4 ppm.

[3] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

What's My Water Source?

The Chesterfield County Utilities Department customers are fortunate because their water is supplied by three sources. These sources assure an adequate water supply well into the 21st century. The three sources that supply Chesterfield County's potable water are Swift Creek Reservoir, Lake Chesdin and the James River. In 2006, an average of 36.2 million gallons of water per day (mgd) were treated and delivered from these three water supplies.

The Department of Utilities owns and operates the Addison-Evans Water Production and Laboratory Facility, which is located on Swift Creek Reservoir. This facility has a capacity of 12 mgd and produced an average of 7.3 mgd. The county is one of five members of the Appomattox River Water Authority (ARWA). The ARWA is located on the northern side of Lake Chesdin. The county has a daily allocation of 66.54 mgd from the authority and received an average of 16.6 mgd from the facility. The third water source is the James River, which supplies the treatment facility owned and operated by the city of Richmond. This plant supplies water to Richmond and to the counties of Henrico, Goochland, Hanover and Chesterfield. The county's contract with the city assures an available supply of 27 mgd. An average of 12.3 mgd of drinking water was received from the James River in 2006.

Table Definitions

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

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.

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.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that the 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.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

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