

ANNUAL WATER QUALITY REPORT

Water testing performed in 2008



HENRICO COUNTY
PUBLIC UTILITIES



PWS ID#: VA4087125

Meeting the Challenge

We are once again pleased to present Henrico County's annual water quality report. This edition covers all testing completed from January 1 through December 31, 2008. Over the years, we have dedicated ourselves to producing drinking water that meets or exceeds all state and federal drinking water standards. We continually strive to adopt new and better methods for delivering the highest quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please share with us your thoughts about the information in this report. After all, well-informed customers are our best allies.



Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 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 Hotline at (800) 426-4791.

Potential Substances in Drinking Water

To ensure that tap water is safe to drink, the U.S. EPA (United States Environmental Protection Agency) 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. Their presence does not necessarily indicate that the water poses a health risk.

Sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it can acquire naturally occurring minerals, radioactive material, and substances resulting from the presence of animals or human activity. Substances that may be present in source water include:

Microbial Contaminants, like 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 by-products of industrial processes and petroleum production and which 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.

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

Where Does My Water Come From?

Henrico County customers receive water from the county's and the City of Richmond's water treatment facilities. The source water for both facilities is surface water drawn from the James River. The county's water treatment facility began operations in April 2004 and currently produces up to 42 million gallons of drinking water daily. The facility was designed to meet the county's future drinking water needs and can produce up to 55 million gallons per day. The plant has multiple sources of electric power to enhance our ability to provide drinking water during local power outages.

“WELL-INFORMED CUSTOMERS
ARE OUR BEST ALLIES.”

Source Water Assessment

The Safe Drinking Water Act mandated that the Virginia Department of Health (VDH) perform source water assessments for all public water sources. 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. The VDH assessed our system in 2002 and determined that the source water for our system, the James River, was highly susceptible to contamination. As a result, both Richmond's and Henrico's water treatment facilities have systems that remove harmful contaminants from source water to ensure that high-quality drinking water is supplied to you. Information about the source water assessment is available from Nyibe Cousins-Flythe, Water Quality Engineer, Henrico County, Department of Public Utilities, at 727-8700.

Community Participation

Regular Meetings of the Henrico Board of Supervisors are typically held on the second and fourth Tuesdays of every month in the Board Room, Administration Building, Government Center, 4301 East Parham Road. The Board meeting schedule and agenda can be found at www.co.henrico.va.us/supervisors/.

Each Board agenda has a public comment period.



Questions?

If you have any questions about this report or your drinking water quality, please call Nyibe Cousins-Flythe, Water Quality Engineer, Henrico County, Department of Public Utilities, at 727-8700. Also, you can view this report on our Web site at www.co.henrico.va.us/utility/PDF/CCReport08.pdf.

Lead and Drinking Water

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. Henrico County 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 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your 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 www.epa.gov/safewater/lead.



How Long Can I Store Drinking Water?

The disinfectant in drinking water will eventually dissipate even in a closed container. If that container housed bacteria prior to filling up with the tap water the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water could be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth.

Is It Safe to Drink Water from a Garden Hose?

Substances used in vinyl garden hoses to keep them flexible can get into the water as it passes through the hose. These chemicals are not good for you, nor are they good for your pets. Allow the water to run for a short time in order to flush the hose before drinking or filling your pet's drinking containers. Hoses made with food-grade plastic will not contaminate the water. Check your local hardware store for this type of hose.

Should I Put a Brick in My Toilet Tank to Save Water?

Toilet flushing uses a lot of water: about 40% of a household's total water usage. Putting something in the toilet tank that takes up space, like a toilet dam or a water filled jug, is a good idea. But putting a brick in the tank is not a good idea; bricks tend to crumble and might damage your toilet.

Testing For Cryptosporidium

Cryptosporidium is a microbial parasite found in surface water throughout the United States. We collected 24 samples between 2006 and 2008 and found an average level of 2.1 Oocysts per 100 liters (Oocysts/100L). We also purchased water from Richmond. They collected 48 samples between 2004 and 2005 and found an average of 2.9 Oocysts/100L. Both values are less than the EPA's future action level of 7.5 Oocysts/100L.

What's Your Water Footprint?

You may have some understanding about your carbon footprint, but how much do you know about your water footprint? The water footprint of an individual, community, or business is defined as the total volume of freshwater that is used to produce the goods and services that are consumed by the individual or community or produced by the business. For example, 11 gallons of water are needed to irrigate and wash the fruit in one half-gallon container of orange juice. Thirty-seven gallons of water are used to grow, produce, package, and ship the beans in that morning cup of coffee. Two hundred and sixty-four gallons of water are required to produce one quart of milk, and 4,200 gallons of water are required to produce two pounds of beef.

According to the U.S. EPA, the average American uses about 100 gallons of water daily. In fact, in the developed world, one flush of a toilet uses as much water as the average person in the developing world allocates for an entire day's cooking, washing, cleaning, and drinking. The annual American per capita water footprint is about 8,000 cubic feet; twice the global per capita average. With water use increasing six-fold in the past century, our demands for freshwater are rapidly outstripping what the planet can replenish.

To check out your own water footprint, go to www.h2oconserve.org or visit www.waterfootprint.org to see how the water footprints of other nations compare.

Sampling Results

During the past year we took hundreds of water samples to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected. Although all of the substances listed here fall below the Maximum Contaminant Level (MCL) set by the EPA, we feel it is important that you know exactly what was detected and how much was present in the water.

The state requires the county 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							
SUBSTANCE (UNIT OF MEASURE)	SAMPLE DATE	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2005	15	0	0.4	0.1–0.8	No	Erosion of natural deposits
Chloramines ¹ (ppm)	2008	[4]	[4]	2.9	0.2–4.8	No	Water additive used to control microbes
Combined Radium (pCi/L)	2005	5	0	0.4	ND–0.6	No	Erosion of natural deposits
Fecal coliform and <i>E. coli</i> ² (# positive samples)	8/2008	see note ⁶	0	1	NA	No	Human and animal fecal waste
Fluoride (ppm)	2008	4	4	1.1	0.9–1.1	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] ¹ (ppb)	2008	60	NA	38	ND–71	No	By-product of drinking water disinfection
Nitrate (ppm)	7/2008	10	10	0.3	0.1–0.3	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] ¹ (ppb)	2008	80	NA	25	ND–40	No	By-product of drinking water chlorination
Total Coliform Bacteria ² (% positive samples)	2008	5% of monthly samples are positive	0	0.7% (1 sample)	NA	No	Naturally present in the environment
Total Organic Carbon Removal Ratio ³	2008	TT	NA	1.4	-0.5–2.8	No	Naturally present in the environment
Turbidity ⁴ (NTU)	2008	TT ⁷	NA	0.30 NTU, 100%	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2008	TT	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community (lead was not detected at the 90th percentile)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper ⁸ (ppm)	2006	1.3	1.3	0.15	0/61	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

¹Amount detected is the maximum of the rolling annual average. Range is the minimum and maximum of all 2008 samples used to calculate those averages.

²We sample for coliforms each month, and our highest monthly total occurred in May, June, and August. The results listed are the highest number of positive samples during any given month (1) and what percentage of the total monthly samples this number represents (0.7%).

³Amount detected is the lowest rolling annual average removal ratio. Range is the minimum and maximum of all samples used to calculate those averages. (A value of one or greater indicates that the water system complies with TOC removal requirements.)

⁴Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of our filtration system's effectiveness.

⁵Highest total number of fecal coliform sample results per month in 2008.

⁶A routine sample and a repeat sample are total coliform positive and one is fecal or *E. coli* positive.

⁷Highest single measurement at the combined filter effluent and the lowest monthly percentage of samples meeting monthly turbidity limits of 0.3 NTU, 95% of the time.

⁸90th percentile of the latest round of sampling = value of lead or copper at the 90% level of ascending results.

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which 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 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 (same as micrograms per liter).

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

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