



**2004  
Water  
Quality**

**City of Portsmouth  
Department of Public Utilities**

# Water quality starts with you!

Imagine a source of drinking water. Do you think of a lake or river of clean flowing water? For many of us rivers and lakes, or reservoirs, do supply drinking water. Did you know, however, that the health of these waters depend on the watershed that surrounds them?

**A watershed is** a land area that collects snow and rainfall and empties it into a specific body of water.

As water flows over land and through the ground, it's quality is affected by naturally occurring substances as well as contaminants that result from human activity! **In this sense, water quality begins with you!**

The City of Portsmouth has an active program to protect the watersheds surrounding the lakes that supply your drinking water.

Like many Americans, Portsmouth residents do not live in the watershed that supports their water supply. This is why watershed protection has become a national initiative.

## What you can do!

By learning how your daily activities affect water quality you can help protect water resources.

Besides supplying drinking water, healthy waterways also provide recreation, support thriving fisheries and contribute to overall quality of life. A few examples of things you can do are:

- properly use, store and dispose of household and automotive chemicals
- use lawn and garden fertilizers and pesticides according to manufacturers directions
- maintain septic systems by having them pumped every 3 -4 years.
- keep grass clippings, leaves and yard debris out of storm drains and gutters

## How can I learn more?

The local library has a wealth of material on water quality and watershed protection. Another good place to look for information is on the World Wide Web. A good place to start is the EPA's water protection site at [WWW.EPA.GOV/SURF/](http://WWW.EPA.GOV/SURF/)



Your tap water comes from both surface lakes and deep wells. Portsmouth's water treatment facility has the capacity to treat 33 million gallons of water each day and serves over 120,000 customers in Portsmouth, Chesapeake and Suffolk.

#### About source water prior to treatment:

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 and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity. A comprehensive study of Portsmouth's watershed is maintained and available for review at the Lake Kilby administrative office.

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

#### Contaminants that may be present in source water include:

- **Microbial** contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic** contaminants, such as salts and metals, that can be naturally occurring or result from urban storm-water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** that 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, that are by-products of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive** contaminants that can be naturally occurring or the result of oil and gas production and mining activities.

**Cryptosporidium** is a microbial organism. When ingested, it can cause diarrhea, fever, and other gastrointestinal symptoms. This organism is found in animal wastes and sewage, and is washed into rivers and streams when it rains. The best defense against this organism is an effective treatment process, most importantly, filtration. Portsmouth's triple-media filters are successfully removing tiny particles, including particles the same size as these organisms, from our water. We believe that new upgrades to our filtration and treatment process will enable us to achieve even greater particle removal, and thus, greater protection from *Cryptosporidium*.

#### A word about drinking water...

(1) 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 potential health effects can be obtained by calling EPA's Safe Drinking Water Hotline (1-800-426-4791).

(2) 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 people, 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).

## Definitions:

**Maximum Contaminant Level Goal or MCLG:** 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.

**Maximum Contaminant Level or MCL:** 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.

**Maximum Residual Disinfectant Level or MRDL:** The highest level of disinfectant allowed by the EPA, calculated as a running quarterly average of monthly samples.

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

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

**ppm** = concentration in parts per million, or milligrams per liter (mg/L); this is equivalent to 1¢ in \$10,000.

**ppb** = concentration in parts per billion, or micrograms per liter (ug/L); this is equivalent to 1¢ in \$10,000,000.

**ppt** = concentration in parts per trillion; this is equivalent to 1¢ in \$10,000,000,000.

**pCi/L** = picocuries per liter; a measure of radioactivity.

**N/A** = Not Applicable.

**NLE** = No Level Established.

**NGE** = No Goal Established.

**NTU** = Nephelometric Turbidity Units; units describing how cloudy a water sample appears.

**<** = less than; when seen in a table, it usually refers to below detectable levels

**Contaminant:** Anything found in water (including microorganisms, minerals, chemicals, radionuclides, etc.) that may be harmful to human health.

**Raw Water:** Water in its natural state, prior to any treatment for drinking.

**Source Water:** Water in its natural state, originating from the watershed that supplies a water system with its raw water.

**Watershed:** The land area from which water drains into a stream, river, or reservoir.

**Treated Water:** Water to be used by a public water system that has received the application of approved water treatment chemicals.

**Drinking Water:** Water that has been treated to comply with EPA regulations and is pumped to water customers for their use.

**Water Quality Table - 2003 Data**

Regulated Parameters	Concentration Units	EPA Goal MCLG	EPA Unit MCL	Portsmouth's Concentration Level	Typical Sources	Notes Health Effects	
<b>Microbial Contaminants</b>							
Total Coliform Bacteria	-	0	Presents of coliform bacteria in <5% of monthly samples	0%	Normally present in the environment.	This value represents the highest monthly percentage of positive samples during 2003. A minimum of 100 samples are each month.	
Fecal Coliform	-	0	A routine sample and a repeat sample are total coliform positive and one is also fecal or e. coli positive.	0	Human and animal fecal waste.	This value represents the total number of positive samples taken during 2003.	
Turbidity	NTU	N/A	TT	1.06	Soil runoff	>99% of samples taken met turbidity limits. 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. See Note 1.	
<b>Radioactive Contaminants (1999 Data)</b>							
Beta/Photon emitters	PCi/l	0	50	1.8	Decay of natural and manmade deposits.	The MCL for Beta particles is 4mrcm per year. EPA considers 50pCi/L to be the level of concern for beta particles.	
Combined radium (radium 226 or 228)	PCi/l	0	5	0.4	Erosion of natural deposits	Some people who drink water containing radium 225 or 228 in excess of MCL over many years may have an increased risk of getting cancer.	
<b>Inorganic Contaminants</b>							
Barium	ppm	2	2	0.03	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits		
Beryllium	ppb	4	4	<.5	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defensive industries		
Cadmium	ppb	5	5	<5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste, batteries and paints		
Copper	ppm	1.3	AL=1.3	.16	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	Zero of 96 samples taken exceeded Action Level. Portsmouth's concentration range is <.01 -.43 2003 data	
Fluoride	ppm	4	4	.76	Corrosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories		
Lead	ppb	0	AL=15	1	Corrosion of household plumbing systems; Level erosion of natural deposits	Three of 96 samples taken exceeded Action Level. Portsmouth's concentration range is <1 - 25. 2003 data	
Thallium	ppb	0.5	2	<2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories		
<b>Disinfectant</b>							
Regulated Parameters	Concentration Units	EPA Goal MCLG	EPA MRDL	Portsmouth's Concentration Level	Portsmouth's Concentration Range	Typical Sources	Notes Health Effects
Total Chlorine	ppm	N/A	4.0	2.8	1.3-4.6	Used as a disinfectant in drinking water treatment	
<b>Volatile Organic Compounds</b>							
THMs	ppb	N/A	60	50	32-88	By-product of drinking water chlorination	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 have an increased risk of cancer.
HAAs	ppb	N/A	60	44	32-52	By-product of drinking water chlorination	Some people who drink water containing haloacetic acids in excess of the MCL over many years may experience an increased risk of cancer.
TOC	mg/l	N/A	TT	1.19	1.07-1.49	Naturally present in the environment	

**Note 1:** Turbidity measurements reported on the CCR table represent finished water values however turbidity is also monitored as a measure of our filter plant performance. Normal turbidity values for our filter plant are less than 0.1 turbidity units however, on Saturday, August 9, 2003 at 4:00 AM a water sample taken showed a level of 2.0 turbidity units. This sample was above the standard of 1.0 turbidity unit constituting a treatment technique violation under US EPA and Virginia drinking water regulations.

**Note 2:** Pursuant to the Environmental Protection Agency's Unregulated Contaminant Monitoring Rule the City of Portsmouth monitored for unregulated contaminants in 2001. Questions concerning the results of this monitoring should be directed to the Water Quality Specialist at (757) 539-2201 X232.

End compliance table

Non Regulated Parameters	Concentration Units	Portsmouth's Concentration Level	Typical Sources
<b>Additional Water Quality Parameters</b>			
Aluminum	ppm	.137	
Iron	ppm	.024	Erosion of natural deposits; leaching from pipes; residual or drinking water treatment process
Sodium	ppm	42.3	
pH	-	7.6	
Alkalinity	ppm	69	Erosion of natural deposits
Chloride	ppm	17	Erosion of natural deposits
Calcium Hardness	ppm	19	
Hardness - Total	ppm	28	Erosion of natural deposits

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At the City of Portsmouth Department of Public Utilities, we value our customers and work hard to ensure your satisfaction. If you have questions or comments about this report or other issues concerning water quality, please call us or the other sources of water quality information listed below:

City of Portsmouth  
Water Quality Division  
(757) 539-2201 X232

Additional sources of information regarding water quality may be found at:

Virginia Department of Health  
Office of Water Programs  
(757) 683-2000

U.S. Environmental Protection Agency  
Safe Drinking Water Hotline  
1-(800) 426-4791

This Water Quality Report as well as other City issues can also be viewed at our Web site. Please visit us at:

<http://www.portsmouth.va.us>