

1999 WATER QUALITY REPORT

Your Drinking Water:



It's safe, it's reliable,
and soon it will be even better!

The City of Portsmouth is pleased to present
our 1999 Water Quality Report.

The good news is that
your tap water is top quality.



Your Drinking Water:

It's

Safe.

Portsmouth's water surpasses all standards.

Drinking water produced by the City of Portsmouth's Department of Public Utilities surpasses all current standards established by the Environmental Protection Agency (EPA). We are preparing to surpass future standards well before they are in place.

Portsmouth's water quality is constantly monitored.

Water quality is monitored continuously at our water treatment facility. We also test the water quality once it leaves our plant by sampling water at 100 locations throughout the City.

Portsmouth protects its water after it leaves the plant.

Our backflow prevention program maintains the water quality in the distribution system pipes. It is recognized by the Virginia Department of Health as one of the Commonwealth's most stringent programs.

Portsmouth is committed to the best possible performance.

We participate in EPA's national, voluntary Partnership for Safe Water (PSW) program. PSW is a cooperative effort between EPA and a variety of other organizations. It strives to help water providers continuously evaluate and improve the performance of their drinking water systems.

It's

Reliable.

Groundwater and surface water sources provide adequate supply.

Our water supply includes four surface water reservoirs and five deep wells for groundwater. Our combination of groundwater and surface water keeps us from being dependent on only one source.

Ongoing investments mean continued reliable service.

To help maintain our investment and keep the system safe and reliable, we plan upgrades and improvements to our:

- 350 miles of water pipe
- 2,500 fire hydrants
- 3 pumping stations
- 12,000 valves
- 5 water towers
- 31,000 meters
- 4 ground-level tanks

Soon

It Will Be Even Better!

Surface water source protection guards against accidental spills in the water supply lakes.

A comprehensive source water protection program is nearing completion. This program identifies and tracks industries that store and use hazardous materials within our watershed. This allows routine inspections and promotes safe handling of materials to better safeguard the water supply.

Improving water quality is an ongoing effort.

In response to concerns that have been raised about the long-term health effects of chlorine as a disinfectant (a common utility practice), we plan to change the disinfectant in our distribution system in 2000. Preparations for this change are currently under way. You will receive more information about this change in the coming months.

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.

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 (µg/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 - 1998 Data

Regulated Parameters	Concentration Units	EPA Goal MCLG	EPA Limit MCL	Portsmouth's Concentration Level	Typical Sources	Notes/Health Effects
Microbiological Contaminants						
Total Coliform Bacteria	--	0	Presence of coliform bacteria in > 5% of monthly samples	3%	Naturally present in the environment	This value represents the highest monthly positive samples during 1998.
Fecal Coliform	--	0	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	1	Human and animal fecal waste	This value represents a total number of positive samples taken during 1998. A minimum of 100 samples are taken per month.
Turbidity	NTU	N/A	TT	0.49	Soil runoff	100% of the samples taken met turbidity limits.
Radioactive Contaminants						
Alpha emitters	pCi/L	0	15	1	Erosion of natural deposits	
Beta/photon emitters	pCi/L	0	50	3	Decay of natural and man-made deposits	The MCL for Beta particles is 4 mrem per year. EPA considers 50 pCi/L to be the level of concern for beta particles.
Inorganic Contaminants						
Antimony	ppb	6	6	< 2	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	
Arsenic	ppb	N/A	50	< 2	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes	
Barium	ppm	2	2	< 0.2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	
Beryllium	ppb	4	4	< 2	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries	

Cadmium	ppb	5	5	< 2	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	
Chromium	ppb	100	100	< 10	Discharge from steel and pulp mills; erosion of natural deposits	
Copper	ppm	1.3	AL = 1.3	0.48	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	Zero of 83 samples taken exceeded Action Level
Cyanide	ppb	200	200	< 10	Discharge from steel/metal factories; discharge from plastic and fertilizer factories	Most recent data in 1996 (see Note 1 below)
Fluoride	ppm	4	4	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories	
Lead	ppb	0	AL = 15	2	Corrosion of household plumbing systems; erosion of natural deposits	Zero of 83 samples taken exceeded Action Level
Selenium	ppb	50	50	< 10	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines	
Thallium	ppb	0.5	2	< 2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	
Synthetic Organic Contaminants						
2,4-D	ppb	70	70	< 0.3	Runoff from herbicide used on row crops	Most recent data in 1994 (see Note 1 below)
Endrin	ppb	2	2	< 0.4	Residue of banned insecticide	Most recent data in 1994 (see Note 1 below)
Lindane	ppt	200	200	< 100	Runoff/leaching from insecticide used on cattle, lumber, gardens	Most recent data in 1994 (see Note 1 below)

Methoxychlor	ppb	40	40	< 0.2	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock	Most recent data in 1994 (see Note 1 below)
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Regulated Parameters	Concentration Units	EPA Goal MCLG	EPA Limit MCL	Portsmouth's Concentration Level	Portsmouth's Concentration Range	Typical Sources	Notes/Health Effects
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Volatile Organic Contaminants

TTHMs [Total trihalomethanes] (see Note 2 below)	ppb	0	100	81	41 - 93	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 getting cancer.
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Information Collection Rule (ICR) Parameters

Giardia	Total Cysts	NGE	NLE	8	6 - 8	Human and animal fecal waste	Only two occurrences above the analytical detection limit were observed in the source water prior to treatment.
THM4	ug/L	NGE	NLE	46	19 - 46	By-product of drinking water chlorination	
HAA5	ug/L	NGE	NLE	81	37 - 81	By-product of drinking water chlorination	
HAN	ug/L	NGE	NLE	7	5 - 7	By-product of drinking water chlorination	
HK	ug/L	NGE	NLE	7	3 - 7	By-product of drinking water chlorination	
CP	ug/L	NGE	NLE	1	0 - 1	By-product of drinking water chlorination	
CH	ug/L	NGE	NLE	11	2 - 11	By-product of drinking water chlorination	
TOX	ug/L	NGE	NLE	284	123 - 284	By-product of drinking water chlorination	

Residual Chlorine	mg/L	NGE	NLE	6	2 - 6	By-product of drinking water chlorination
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Non-regulated Parameters	Concentration Units	Portsmouth's Concentration Level	Typical Sources
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Additional Water Quality Parameters

Aluminum	ppb	< 200	
Iron	ppb	< 200	Erosion of natural deposits; leaching from pipes; residual of drinking water treatment process
Manganese	ppb	40	Erosion of natural deposits; by-product of drinking water treatment process
Sodium	ppm	64	
pH	--	7.6	
Alkalinity - Total	ppm	100	Erosion of natural deposits
Chloride	ppm	12	Erosion of natural deposits
Color	PCU	6	Leaching from vegetation
Corrosion Index	--	11	
Calcium Hardness	ppm	14	
Hardness - Total	ppm	27	Erosion of natural deposits
Ammonia	ppb	< 40	Runoff from fertilizer use; by-product of drinking water chloramination



Note 1: The Virginia Department of Health has waived requirements to test for the following elements because they are not expected to occur in drinking water in this area: Synthetic Organic Pesticides, Carbamates, Volatile Fumigants, Chlorinated Herbicides, cyanide, diquat, dioxin, endothall, glyphosate, and asbestos.

Note 2: The City of Portsmouth has enhanced coagulation, and Chloramines will be added to the filtration system in the fall of 2000. The addition of Chloramines will reduce TTHM levels in the future.

General Water Information

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).

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.

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 stormwater 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.

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.

A special health-related item...

One occurrence of *Cryptosporidium* at the analytical detection limit was observed in the source water prior to treatment during 1998.

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*.

At the City of Portsmouth Water Quality Division, we value our customers and work hard to ensure your satisfaction. If you have questions or comments about this report or other issues, please call us or the other helpful sources of information listed below:

**City of Portsmouth
Water Quality Laboratory
(757) 539-2201**

**Virginia Department of Health
Office of Water Programs
(757) 363-3876**

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

If you want to participate in decisions affecting your drinking water quality, please contact the City Clerk to learn when water quality presentations are scheduled before the Portsmouth City Council. For times and agenda, please call (757) 393-8639.