

ANNUAL  
WATER QUALITY  
REPORT

*Water testing performed in 2005*

*Presented By:*

PORTSMOUTH  
WATER DIVISION  
[www.cityofportsmouth.com](http://www.cityofportsmouth.com)



PWS ID#: NH1951010

## Substances That Might Be in Drinking Water

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.

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 can acquire 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 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 potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Continuing Our Commitment

As required by state and federal regulations we present our annual water quality report. This edition covers all testing completed from January through December 2005. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

For more information about this report, or for any questions relating to your drinking water, please call Peter Rice, P.E. City Engineer for the Water/Sewer Divisions, at (603) 427-1530. New Castle customers should call Brad Meade at (603) 431-6710.

## Community Participation

You are invited to voice your concerns at any regularly scheduled city council meeting. Meetings are usually scheduled twice each month on Monday evenings starting at 7:00 p.m. at Portsmouth City Hall, 1 Junkins Avenue, Portsmouth, NH. Call (603) 431-2000 for the date of the next meeting. New Castle Water Works customers should call (603) 431-6710 for meeting dates and times.

## Information on the Internet

The U.S. EPA Office of Water ([www.epa.gov/watrhome](http://www.epa.gov/watrhome)) and the Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) Web sites provide a substantial amount of information on many issues relating

to water resources, water conservation and public health. Also, the New Hampshire Department of Environmental Services has a Web site ([www.des.state.nh.us/waterdiv.htm](http://www.des.state.nh.us/waterdiv.htm)) that provides complete and current information on water issues in our own state.



## Where Does My Water Come From?

The main source of Portsmouth's water is the Bellamy Reservoir located in Madbury and Dover. The water is piped to a water treatment plant in Madbury, where it is treated, filtered and disinfected. This location is also the site of the City's Madbury Wells 2, 3 and 4. From this site water is pumped under pressure to consumers in Madbury, Dover and Durham and then to a booster pumping station in Newington, where the pressure is boosted. It is then pumped to consumers in Newington, Portsmouth, Greenland, Rye and the New Castle Water Works. Many consumers are also served by the City's groundwater well sources. These wells include the Collins and Portsmouth Wells in Portsmouth and the Greenland Well in Greenland. The Pease International Tradeport is served by the Haven and Smith wells.

The New Hampshire Department of Environmental Services (NHDES) has conducted a source water assessment of our water system. A copy is available for viewing at the Portsmouth Water Division's office at 680 Peverly Hill Road. Please call 766-1413 for an appointment to view the report. You may also visit the Drinking Water Source Water Assessment Program Web site at [www.des.state.nh.us/dwspp](http://www.des.state.nh.us/dwspp).

## How Is My Water Treated and Purified?

The treatment process consists of a series of steps. First, raw water is drawn from the Bellamy Reservoir. The water then goes to a mixing tank where polyaluminumchloride and sodium hydroxide are added. The addition of these substances cause small particles to adhere to one another (called floc), making them heavy enough to settle out of the water. Powdered activated carbon is added (seasonally) to control taste and odor. The water is then filtered through layers of fine sand. As smaller, suspended particles are removed, turbidity disappears and clear water emerges. Sodium hypochlorite (bleach) is added at this point for disinfection. (We carefully monitor the amount of sodium hypochlorite, adding the lowest quantity necessary to protect the safety of your water without compromising taste.) Finally, sodium hydroxide (used to adjust the final pH and alkalinity), fluoride (used to prevent tooth decay) and a corrosion inhibitor (used to protect distribution system pipes) are added before the water is pumped to sanitized, underground reservoirs, water towers and into your home or business.



### Radon

Radon is a radioactive gas that occurs naturally in some groundwater. It may pose a health risk when the gas is released from water into air, as occurs during showering, bathing, or washing dishes and clothes. Radon gas released from drinking water is a relatively small part of the total radon in air. Radon is released into homes and groundwater from soil. Inhalation of radon gas has been linked to lung cancer, however, the effects of radon ingested in drinking water are not yet clear. If you are concerned about radon in your home, tests are available to determine the total exposure level. For additional information on how to have your home tested, please call (800) SOS-RADON.

### 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.



## About Our Turbidity Violation

As a result of a significant amount of rainfall in October, the Madbury Water Treatment plant was unable to comply with a drinking water treatment technique standard involving a slight amount of cloudiness in the water. The treatment plant exceeded the 1 NTU level on October 17 and the 0.30 NTU standard for the month of October. Water department operations staff adjusted treatment processes, reduced plant flow, and increased the proportion of water supplied by the city's wells to improve the water quality to within treatment standards. According to the NHDES, "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."



## Water Conservation Tips

Water conservation measures are an important first step in protecting our water supply. Such measures not only save the supply of our source water, but can also save you money by reducing your water bill. Here are a few suggestions:

### INSIDE YOUR HOME:

- Fix leaking faucets, pipes, toilets, etc.
- Replace old fixtures; install water-saving devices in faucets, toilets and appliances.
- Wash only full loads of laundry.
- Do not use the toilet for trash disposal.
- Take shorter showers.
- Do not let the water run while shaving or brushing teeth.
- Soak dishes before washing.
- Run the dishwasher only when full.

### OUTDOORS:

- Water the lawn and garden in the early morning or evening.
- Use mulch around plants and shrubs.
- Repair leaks in faucets and hoses.
- Use water-saving nozzles.
- Use water from a bucket to wash your car, and save the hose for rinsing.

Information on other ways that you can help conserve water can be found at [www.epa.gov/safewater/publicoutreach/index.html](http://www.epa.gov/safewater/publicoutreach/index.html).

## Lead in Drinking Water

Lead is a naturally occurring element in our environment. Consequently, our water supply is expected to contain small, undetectable amounts of lead. However, most of the lead in household water usually comes from the plumbing in your own home, not from the local water supply. The U.S. EPA estimates that more than 40 million U.S. residents use water that can contain lead in excess of EPA's Action Level of 15 ppb.

Lead in drinking water is a concern because young children, infants and fetuses appear to be particularly vulnerable to lead poisoning. A dose that would have little effect on an adult can have a big effect on a small body. On average, it is estimated that lead in drinking water contributes between 10% and 20% of the total lead exposure in young children.

All kinds of water, however, may have high levels of lead. We maintain our drinking water supply at an optimum pH and mineral content level to help prevent corrosion in your home's pipes. To reduce lead levels in your drinking water you should flush your cold-water pipes by running the water until it becomes as cold as it will get (anywhere from five seconds to two minutes or longer) and use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead.

For more information, please call the Safe Drinking Water Hotline at (800) 426-4791.



## 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

**NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water.

**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.

## Sampling Results

During the past year we have taken hundreds of water samples in order 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 in the water. The state requires 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				Portsmouth		New Castle		VIOLATION	TYPICAL SOURCE
SUBSTANCE (UNITS)	YEAR SAMPLED	MCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH		
Alpha emitters (pCi/L)	2001	15	0	2	ND-2	NA	NA	No	Erosion of natural deposits
Arsenic (ppb)	2004	10 <sup>1</sup>	0 <sup>1</sup>	2.1	ND-2.1	NA	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2004	2	2	0.0183	0.0077-0.0183	NA	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nitrate (ppm)	2005	10	10	4.59	ND-5.17	NA	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
HAAs [Haloacetic Acids] (ppb)	2005	60	NA	31	ND-69.2	53	45-69.3	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2005	80	NA	45	4.1-126.2	74	41.4-109.9	No	By-product of drinking water disinfection
Turbidity (NTU) <sup>2</sup>	2005	TT	NA	1.01	0.04-1.01	NA	NA	Yes <sup>3</sup>	Soil runoff due to rain

### Tap water samples were collected for lead and copper analyses from homes throughout the service areas

SUBSTANCE (UNITS)	YEAR SAMPLED	Portsmouth				New Castle		Pease International Tradeport		VIOLATION	TYPICAL SOURCE
		AL	MCLG	AMOUNT DETECTED (90th% TILE)	SITES ABOVE AL/ SITES SAMPLED	AMOUNT DETECTED (90th% TILE)	SITES ABOVE AL/ SITES SAMPLED	AMOUNT DETECTED (90th% TILE)	SITES ABOVE AL/ SITES SAMPLED		
Copper (ppm)	2005	1.3	1.3	0.239	0/30	0.188	0/5	0.453	0/5	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2005	15	0	13	1/30	ND	0/5	ND	0/5	No	Corrosion of household plumbing systems; Erosion of natural deposits

### UNREGULATED SUBSTANCES (Portsmouth Results)

SUBSTANCE (UNITS)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2005	2.3	ND-2.3	Disinfection by-product
Chloroform (ppb)	2005	14	ND-14	Disinfection by-product
MtBE (ppb)	2005	3.1	ND-6.1	Gasoline additive
Radon (pCi/L)	2001	1,600	ND-1,600	Natural decay in rocks

<sup>1</sup>These arsenic values were effective January 23, 2006; however, during 2005 the MCL was 50 ppb and there was no MCLG.

<sup>2</sup>Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. In the month of October of the reporting year, 90.6% of the water samples taken to measure turbidity met water quality standards.

<sup>3</sup>The MCL violation for turbidity occurred only in Portsmouth.