

2008 WATER QUALITY REPORT NORFOLK NAVAL SHIPYARD PORTSMOUTH, VIRGINIA



Norfolk Naval Shipyard is committed to providing you drinking water that is safe and reliable. We believe that providing you with accurate information about your water is the best way to assure you that your water is safe. This 2008 Water Quality Report will explain where your water comes from and lists all of the contaminants detected in your drinking water.



DRINKING WATER SOURCES AND TREATMENT

Norfolk Naval Shipyard purchases finished water from the city of Portsmouth. Portsmouth's water supply comes from a system of four surface lakes (Kilby, Meade, Cohoon, and Speight's Run) and five deep wells in the Middle Potomac Aquifer. From these lakes and wells, the water is pumped through pipes to a water treatment facility which has the capacity to treat 33 million gallons of water each day and serves over 120,000 customers in Portsmouth, Chesapeake and Suffolk. Water treatment chemicals are added to the water causing small solid particles to clump together and sink to the bottom of a settling basin. The water is then filtered to remove bacteria, algae, and other impurities. Finally, the water is disinfected with chloramines to kill any remaining bacteria.

DRINKING WATER AND YOUR HEALTH

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, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- **inorganic contaminants**, such as salts and metals, which 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**, 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 can also come from gas stations, urban stormwater runoff, and septic systems;
- **radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

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

All 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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

WATER QUALITY DATA

The following water quality data tables list those contaminants that were present in your drinking water at levels detectable by laboratory equipment. This information is based on testing done during 2008 or as indicated. The EPA sets the Action Levels (AL), Maximum Contaminant Levels (MCLs) and the Maximum Contaminant Level Goals (MCLGs) listed in the tables.

City of Portsmouth							
Substance (Unit of Measure)	Year Sampled	MCL [MRDL]	MCLG [MRDLG]	Amount Detected	Range Low- High	Violation	Typical Source
Barium (ppm)	2008	2	2	0.033	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beta/Photon Emitters (pCi/L)	2003	50	0	1.8	NA - NA	No	Decay of natural and man-made deposits
Chloramines (ppm)	2008	[4]	[4]	3.5	1.75 - 3.5	No	Water additive used to control microbes
Combined Radium (pCi/L)	2008	5	0	0.2	NA	No	Erosion of natural deposits
Fluoride (ppm)	2008	4	4	0.71	NA	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Total Organic Carbon (ppm)	2008	TT	NA	3.2	2.5 - 3.8	No	Naturally present in the environment
Turbidity (NTU)	2008	TT	NA	0.06	0.04 - 0.06	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2008	TT	NA	100	NA	No	Soil runoff

NORFOLK NAVAL SHIPYARD							
Substance (Unit of Measure)	Year Sampled	MCL	MCLG	Amount Detected	Concentration Range	Violation	Typical Source
Total Coliform	2008	2	0	7	0 - 7	YES	Naturally present in the environment
Copper (ppm)	2008	1.3 AL	1.3	(90th%tile) 0.276	ND- 0.634	No	Corrosion of household plumbing systems; Erosion of natural deposits;
Lead (ppb)	2008	15 AL	0	(90th%tile) 8 1 sample exceeded the action level	ND- 15	No	Corrosion of household plumbing systems; Erosion of natural deposits
Haloacetic Acids [HAA5] (ppb)	2008	60	NA	18	ND - 40	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2008	80	NA	44.9	13 - 69	No	By-product of drinking water chlorination
Haloacetic Acids [HAA5]- IDSE Results (ppb)	2008	NA	NA	NA	ND - 36	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)- IDSE Results	2008	NA	NA	NA	31 - 72	No	By-product of drinking water chlorination

ST. JULIENS CREEK ANNEX							
Substance (Unit of Measure)	Year Sampled	MCL	MCLG	Amount Detected	Concentration Range	Violation	Typical Source
Total Coliform	2008	2	0	4	0 - 4	YES	Naturally present in the environment
Haloacetic Acids [HAA5] (ppb)	2008	60	NA	2	ND	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2008	80	NA	47	21 - 41	No	By-product of drinking water chlorination
Copper (ppm)	2008	1.3 AL	1.3	(90th%tile) 0.295	ND- 0.346	No	Corrosion of household plumbing systems; Erosion of natural deposits;
Lead (ppb)	2008	15 AL	0	(90th%tile) 11 1 sample exceeded the action level	ND- 26	No	Corrosion of household plumbing systems; Erosion of natural deposits

VIOLATION INFORMATION

Testing for coliform bacteria is performed throughout the Norfolk Naval Shipyard's water distribution system on a weekly basis. Coliform bacteria are generally not harmful. They are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. If they are detected, we are required to take repeat samples in that portion of the distribution system until the coliform bacteria is absent.

During 2008, we exceeded the Primary Maximum Contaminant Level (PMCL) for total coliform bacteria in 7 samples. This resulted in the Shipyard receiving notices of violation. Although these incidents were not emergencies, our customers have the right to know what happened and what we did to correct the situation. The Shipyard's drinking water distribution system has challenges in maintaining water quality due to extended detention times and aging cast iron service mains. The Shipyard had positive detections in total coliform bacteria samples during the following months in 2008: February-2, June-3, July-2, August-2, October-2, November-2 and December-2. These samples indicated the presence of total coliform bacteria. The standard is that no more than one sample per month can test positive for total coliform. Flushing was conducted in the areas of the positive samples during each occurrence and repeat samples indicated the absence of total coliform bacteria.

At St. Juliens Creek Annex, we exceeded the PMCL for total coliform bacteria in April 2008 in 4 samples. St. Juliens Creek Annex also had positive detections in total coliform bacteria in July-1 and November-2. This resulted in the St. Juliens Creek Annex receiving notices of violation. The standard is that no more than one sample per month can test positive for total coliform. Flushing was conducted in the areas of the positive samples during each occurrence and repeat samples indicated the absence of total coliform bacteria. In August 2008, we failed to collect all required bacteriological monitoring samples; only 2 samples were collected and analyzed instead of five. This resulted in St. Juliens Creek Annex receiving a notice of violation.

In addition, both the Shipyard and St. Juliens Creek Annex received notices of violation for failure to collect lead and copper samples during the required sampling period of June 1 through September 30th. The resolution of this violation will be accomplished by publishing notice in this report to consumers and re-sampling of each site during the specified period in 2009.

To improve the water quality at Norfolk Naval Shipyard, an investigation team was established to investigate recurring water quality issues that contribute to the increase in total coliform bacteria. The team identified several remedies to improve water quality including identifying dead ends and redundant mains in the piping system for removal to reduce water stagnation and conducting unidirectional flushing throughout the water distribution system. Unidirectional flushing involves systematic flushing of hydrants to push water out of the system in a single direction at a high velocity.

Unidirectional flushing can improve water quality by reducing bacterial re-growth, dislodging biofilm from pipe walls, and removing sediments and deposits from the water lines.

INFORMATION FOR SPECIAL POPULATIONS

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 systems disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and/or Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline (800-426-4791).

Kidney dialysis patients should consult with their health care providers or dialysis centers in order to take special precautions when using chloraminated water. Fish owners should be sure chloramines are removed from the water before it is used in aquariums or ponds. Most pet stores sell water conditioners for chloraminated water.

LEAD IN 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. Naval Weapons Station Yorktown is responsible for providing high quality drinking, 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 15 to 30 seconds or until it becomes cold or reaches a steady temperature 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 Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

DEFINITIONS

- **Action Level (AL)** - The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.
- **Coliform** - A group of bacteria commonly found in the environment. They are an indicator of potential contamination of water. Adequate and appropriate disinfection effectively destroys coliform bacteria.
- **Contaminant** - Any natural or man-made physical, chemical, biological, or radiological substance or matter in water, which is at a level that may have an adverse effect on public health, and which is known or anticipated to occur in public water systems.
- **Disinfection** - A process that effectively destroys coliform bacteria.
- **Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (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 Residual Disinfectant Level (MRDL)** - 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.
- **Maximum Residual Disinfectant Level Goal (MRDLG)** - 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 contamination.
- **NTU (nephelometric turbidity unit)** - A measure of the clarity of water.
- **Pathogens, disease-causing pathogens, waterborne pathogens** - A pathogen is a bacterium, virus or parasite that causes or is capable of causing disease. Pathogens may contaminate water and cause waterborne disease.
- **pCi/L, picocuries per liter** - A measurement of radiation released by a set amount of a certain compound.
- **pH** - A measure of the acidity or alkalinity of water.
- **ppb, ppm** - part per billion, part per million. Measurements of the amount of contaminant per unit of water. A part per million is like one cent in \$10,000 and a part per billion like one cent in \$10,000,000.

- **Trihalomethanes (THM)** - Four separate compounds (chloroform, dichlorobromomethane, dibromochloromethane, and bromoform) that form as a result of disinfection.
- **Treatment Technique (TT)** - A required process intended to reduce the level of a contaminant in drinking water.

NEED MORE INFORMATION? TRY ANY OR ALL OF THE FOLLOWING

- For questions about this report, contact Ms. Valerie Walker, Water Program Manager, at (757) 444-2697 or e-mail: valerie.walker@navy.mil
- If you want to know how to participate in decisions that may affect the quality of your drinking water, please contact the City of Portsmouth, Water Quality Division: (757) 539-2201 x232
- State of Virginia Department of Health Website: www.vdh.virginia.gov/dw
- Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791
- Environmental Protection Agency Website: www.epa.gov/safewater