

# City of Portsmouth

*Department of Public Works*



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DATE: April 11, 2016

SUBJECT: Lead & Copper Corrosion Control Program Update

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The City of Portsmouth's Water Division is providing this update regarding our water system's continued compliance with the US EPA Lead & Copper Rule (LCR).

The City of Portsmouth implemented a Lead & Copper Corrosion Control Program in 2003 and has been in compliance requirements since its inception. The general purpose of the Lead & Copper Corrosion Control Program is to minimize the potential for water supplied by the City to leach potentially harmful metals such as lead and copper from pipes, fixtures and solder containing lead. The primary source of lead and copper in drinking water is plumbing systems in houses and other privately owned buildings. The City of Portsmouth water supply sources do not contain measureable quantities of lead or copper.

Health impacts due to the consumption of lead or copper via drinking water have been well documented. Lead exposure is known to cause internal organ damage, behavioral disorders, an increased risk of heart disease, and an interference with physical development of infants. Copper has the potential to cause gastrointestinal disturbance from short-term exposure and liver or kidney damage from long-term exposure. In response to these health impacts, the EPA set maximum levels to protect public health at 0.015 milligrams per liter (mg/L) for lead and 1.3 mg/L for copper.

### **Corrosion Control Inhibitor**

To reduce the potential for City water to leach lead and copper from plumbing systems, a corrosion control inhibitor is added to the water supply. The corrosion inhibitor used by the City of Portsmouth is an orthophosphate/polyphosphate blended chemical that is a National Sanitation Foundation (NSF) Standard 60 additive approved for drinking water. The inhibitor creates a coating on the walls of distribution pipes and house plumbing to minimize the potential for metals (including lead and copper) to leach from pipes into the drinking water. It adds no noticeable taste to water. The optimized concentration in the Portsmouth water distribution system is 1 mg/L – as orthophosphate.

## Ongoing Monitoring

Portsmouth Water Treatment Operators continuously monitor the concentration of orthophosphate in the system. Automated analyzers, field measurements and laboratory verification samples are analyzed to ensure optimized concentrations are maintained in the system. Water quality parameters that are factors in the corrosivity of water include alkalinity, hardness, dissolved solids, and pH. These parameters are monitored bi-weekly from the supply sources and selected locations throughout the distribution system.

## Compliance Sampling

As part of the Corrosion Control Program development, locations of representative residential household sampling sites were identified based on the three tier priority ranking defined by the New Hampshire Department of Environmental Services (NHDES). Of the 60 sites identified, routine sampling of 30 of these residential sites is required. The tiered priorities are based upon the following site characteristics:

1. Single-family structures containing copper pipes with lead solder installed after 1982 but before 1988, or containing lead pipes, or are served by lead service lines.
2. Buildings including multiple-family structures containing copper pipes with lead solder installed after 1982 but before 1988, or are service by lead service lines.
3. Single-family structures containing copper pipes with lead solder installed before 1983.

During the first two years of the Corrosion Control Program, lead and copper compliance samples were collected two times per year at the 30 selected sampling sites. Upon confirmation of the effectiveness of the Corrosion Control Program, sampling was reduced to annually from 2005 through 2007, and to every three years thereafter. The City of Portsmouth is scheduled to collect the next round of lead and copper samples during the fourth quarter (October – December) of 2016.

The following is a summary of the lead and copper compliance testing results and sampling schedule since the Corrosion Control Program has been in place. Note the EPA limits (maximum contaminant level (MCL)) are 0.015 mg/L and 1.300 mg/L for lead and copper, respectively at the 90<sup>th</sup> percentile of samples.

Date	Sampling Frequency	Lead 90 <sup>th</sup> percentile (mg/L)	Copper 90 <sup>th</sup> percentile (mg/L)
2013	Triennial (once every 3 yrs.)	0.001	0.110
2010	Triennial (once every 3 yrs.)	0.001	0.130
2007	Annual	0.005	0.185
2006	Annual	0.005	0.194
2005	Annual	0.013	0.239
July 2004	Semi-Annual	0.005	0.261
January 2004	Semi-Annual	0.013	0.291
July 2003	Semi-Annual	0.016	0.296
January 2003	Semi-Annual	0.012	0.252

## **Public Outreach**

All of the participants in the residential compliance sampling program receive results of the lead and copper analyses with an explanation. Lead and copper results are available on the NHDES OneStop website:

<http://des.nh.gov/onestop/index.htm>

Information about Portsmouth's Corrosion Control Program has been distributed annually since its inception. Lead and copper information is summarized on the Portsmouth Water Division Annual Water Quality Reports:

<http://cityofportsmouth.com/publicworks/waterqualityreports.htm>

Additional information about lead and copper corrosion control is available from the NHDES:

<http://des.nh.gov/organization/divisions/water/dwgb/lead-copper/index.htm>

And from the EPA:

<http://www.epa.gov/dwreginfo/lead-and-copper-rule#additional-resources>