

# CORROSION CONTROL AND WATER TESTING

*Responses to Frequently Asked Questions about Lead and Copper in Water*

## CORROSION CONTROL

### **1. How does orthophosphate prevent lead and copper from leaching out of pipes?**

Orthophosphate forms a protective layer on the inside of plumbing materials to prevent lead and other metals from dissolving in the water. This protective layer binds with internal metal surfaces of plumbing to prevent lead from leaching into the drinking water. Orthophosphate is a substance that is used in the food and beverage industry and is safe for human consumption. GLWA feeds a maintenance dose of 1.0 part per million (ppm) orthophosphate. This is the equivalent of four drops of orthophosphate in 55 gallons of water.

### **2. How long has GLWA been implementing a corrosion control program?**

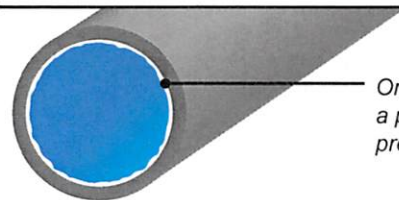
GLWA, formerly the Detroit Water and Sewerage Department, began using orthophosphate to control corrosion in 1996. Orthophosphate provides the best level of corrosion control protection based upon a corrosion control study performed in the 1990s.

### **3. How does GLWA determine the optimal amount of orthophosphate to add during treatment?**

The optimal amount of orthophosphate was determined based on a detailed corrosion control study conducted in the 1990s, which included a desktop study, a pipe loop study, and pilot distribution system testing, including water quality parameter testing. A minimum of 7.0 pH must be maintained at the treatment tap with no more than 9 days in a 6-month period in non-compliance. A minimum orthophosphate dosage of 0.9 mg/L must be maintained at each of the five water plants on a daily basis, and an orthophosphate residual leaving the water plant should not fall below 0.8 mg/L for more than 9 days in a 6-month period.



Orthophosphate dosing is continuously monitored at each GLWA water treatment plant with an online analyzer. The accuracy of the meter is verified by a chemist at least every 8 hours.



Orthophosphate forms a protective layer to prevent pipe corrosion.

## LEAD AND COPPER TESTING

### **4. How frequently does my community test for lead and copper in the drinking water?**

Communities that have successfully met the Lead and Copper Rule requirements are required to test every 3 years. Communities that have not met the requirements must follow USEPA guidelines to re-establish compliance and are required to conduct more frequent testing until compliance is demonstrated.

Communities must follow the testing schedule established in the Safe Drinking Water Act which is regular-





ly reviewed and subject to rule changes. The purpose of lead and copper testing is to confirm that the corrosion control method used at the water treatment plant is effective in the distribution system.

Testing is always conducted through a state certified Drinking Water Laboratory. A list of these laboratories can be found at [www.michigan.gov/deq/0,4561,7-135-3307\\_4131\\_4156-36940--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3307_4131_4156-36940--,00.html).

### 5. How does my community select homes to test for lead and copper?

Homes that are at the greatest risk of leaching lead and copper are targeted for the Lead and Copper Rule sampling program. This primarily includes single family homes with lead piping, lead goosenecks, lead service lines and/or copper piping installed with lead solder. Sampling kits are sent to the same homes each testing period as required by the Lead and Copper Rule. Often, kits are sent to more homes than required since not all residents choose to participate each sampling period.

### 6. Where can I find the most recent results for my community's lead and copper testing?

Communities must publish and distribute an annual Water Quality Report to all residents by July 1st of each year. This report contains information about your drinking and source water, any monitored contaminants found in the drinking water over the past 1 to 5 years, and if state and federal drinking water standards have been met. "Lead and Copper Monitoring at the Customers' Tap" is one of the detected contaminant tables provided in the report. Your community's website is the best place to check for the latest Water Quality Report. It is also important to note that the lead and copper results should provide a picture of lead and copper in the high risk homes tested in your community but do not reflect conditions in a specific household.

### 7. What is the 90th percentile of reported lead levels from sampling?

The purpose of lead and copper testing is to determine if the corrosion control program is effective. The 90th percentile of sampling results is used as the threshold to determine if corrosion control is performing as expected. To remain in compliance, at least 90% of the samples must be below the lead action

Sample	Lead Result
1	0 ppb
2	0 ppb
3	0 ppb
4	0 ppb
5	0 ppb
6	0 ppb
7	0 ppb
8	0 ppb
9	0 ppb
10	5.1 ppb



← 90th percentile

After all the samples have been analyzed from a community during a compliance period and test results verified in triplicate, the 90th percentile can be determined for the community.

level. This value is calculated by listing all sample results in order, from lowest to highest, and then selecting the result of the sample in the 90th percentile slot. For example, if there are 10 samples with values ranging from 0 parts per billion (ppb) to 5.1 ppb and the 9th highest value is 0 ppb, the reported 90th percentile value will be 0 ppb. The 0 ppb value would be compared against the 15 ppb action level to measure compliance. The 0 ppb would not exceed the action level of 15 ppb.

### 8. What is the action level for lead and what happens if a community exceeds it?

If the 90th percentile sample test result is higher than the action level of 15 ppb for lead, the community must inform the public about steps they should take to protect their health. The community must replace at least 7% of the lead service lines every year under their control until the lead level falls below the action level again. More frequent monitoring, informing the public about lead, and optimizing corrosion control treatment will also be required until Lead and Copper Rule requirements are met.

### 9. Where can I receive lead and copper sampling information/sample bottles, etc.?

You may contact any state of Michigan certified Drinking Water Chemistry Laboratory that performs lead and copper analysis ([www.michigan.gov/deq/0,4561,7-135-3307\\_4131\\_4156-36940--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3307_4131_4156-36940--,00.html)). You can also contact your County Environmental Health Department or the municipality you live in for further direction and information.