



MEMORANDUM

LEGISLATIVE REFERENCE BUREAU

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To: Ald. James A. Bohl, Jr.
From: Tea Norfolk, Legislative Fiscal Analyst – Lead
Date: August 26, 2016
Subject: Lead-in-water Testing

This memo is in response to your request to provide the following information:

1. Is it true that the Milwaukee Water Works (MWW) only conducts lead testing once every 3 years, in only 50 homes, because MWW has been found to be compliant with some federal (EPA?) lead standards?
2. If the MWW did not meet the standard referenced in #1, how many homes would it be required to test?
3. What degree of lead-in-water testing is conducted by the municipal water utilities in the following communities: Washington, DC; Flint, MI; Durham, NC; Greenville, NC?
4. Does the MWW test the same 50 homes every 3 years?
5. Does MWW only conduct lead-in-water tests on homes that have lead City/MWW service lines? Or does it also conduct tests on homes served by non-lead lines?

Overview

The federal rule regulating monitoring requirements for lead and copper in tap water, 40 CFR 141.86, is overseen by the Environmental Protection Agency (EPA). The rule provides for two different types of monitoring: standard monitoring, which is conducted at six-month intervals, and reduced monitoring, which allows for less frequency and fewer sample locations depending upon certain qualifications. All systems are required to adhere to standard monitoring for initial monitoring. Afterward, follow-up monitoring is required until the system can meet requirements for reduced monitoring. If a system violates the requirements, it must institute treatment techniques to bring its levels back in compliance with the rule, and must go back to standard monitoring until it again meets the requirements for reduced monitoring. MWW has met the requirements for reduced monitoring on a triennial basis.

MWW started monitoring for lead in 1996. Its first few samples exceeded the EPA standard of 15 parts per billion (ppb). Because MWW was not in compliance, it had to monitor 100 homes twice per year. When MWW had been in compliance for a few cycles, it was allowed to go down to monitoring once per year to show that the corrosion

control was working very well. The 100 homes all had lead service lines and were randomly chosen. The reduced monitoring for which MWW now qualifies allows for testing of just 50 homes.

Milwaukee Water Works Superintendent Carrie Lewis described the lead monitoring that MWW conducts in compliance with the federal rule. The rule is not designed to test lead in every house. It is designed to demonstrate that the treatment techniques being used are working.

In order to properly conduct the test in a scientific manner, lead monitoring is carried out on the same 50 homes each time (i.e. to have a standard baseline for testing). This demonstrates whether the treatment technique is working. All of the houses being used have lead service lines because they are at the greatest risk of having the highest lead levels. This is the method MWW uses for regulatory compliance testing.

Sample collection is conducted by residents, who are left with the collection containers, instructions, and chain of custody form. Residents leave the samples on the porch, and MWW collects the samples and sends them to a contract lab. The rule has always required that the water sample being collected comes directly from the faucet after having been undisturbed for six hours. The water should be the first one liter that comes out of the tap. MWW has always complied with this requirement. However, prior to February 2016, MWW instructed residents to flush the water prior to the six-hour stagnation period. The EPA was silent on this pre-flushing until February 2016, when they recommended that this practice not be used, at which time MWW discontinued it.

There is no maximum contaminant level. Instead, the EPA uses what is called an "action level." The lead action level is 15 parts per billion (ppb) and is not a health standard. MWW is evaluated by the 90th percentile instead of a hard number. This means that MWW collects 50 sample results, and the 45th highest level is the 90th percentile; it must be less than 15 ppb. If the sample reaches that number, MWW must institute a treatment plan and go back to standard monitoring until the samples are brought back into compliance.

Ms. Lewis is on the advisory board for EPA, so she is part of a group that is providing advice to EPA on simplifying the rule. It is the board's advice that the new rule should have a maximum contaminant level and that if a water sample goes over that, the following should result: the utility will be referred to the local health department, it must conduct outreach to the residents, and it must institute corrosion-control measures. If the corrosion-control measures fail, the utility must replace lead service lines or provide outreach that will be such a hardship that the utility would rather replace the lines than conduct the outreach. This would require the utility to remove the entire lead service line and every inch of lead from the source to the meter. She does not know whether or how much of the board's advice will be incorporated by the EPA in revising the current rule.

As an aside, in February 2016, *The Guardian* published an article pertaining to Chicago's water collection methods following the controversy in Flint, Michigan,

regarding its water crisis. In Chicago, from 2003 to 2015, 40 of the 59 people identified in the city's water testing scheme were current or former city employees. The city developed two separate sets of instructions for sample water: one for city employees and one for the general public. The city provided as its reasoning that it used employees' homes because they knew city employees were required to live in the city, so they would be assured that the homes were inside the city limits. In Chicago, the city's water utility is overseen by EPA Region 5, the same EPA district that oversaw Flint's water. The head of that EPA region, Susan Hedman, resigned in January in connection with the crisis in Flint. Meanwhile, Miguel Del Toral, an EPA water expert who attempted to blow the whistle on Flint's tainted water months before the crisis became public, wrote in a study that when sequential water samples were taken from homes in Chicago, they found "maximum [lead] values more than four times higher than Chicago's regulatory compliance results using a first-draw sampling protocol."

Answers to your specific questions follow.

1. MWW conducts tests of 50 homes once every three years in compliance with EPA standards.

MWW has been found to be compliant with the rule, and thus qualifies for testing once every three years, and accordingly follows the protocol outlined above.

2. MWW is required to test 50 homes.

EPA only requires testing of 50 homes for triennial monitoring. If MWW were found not to be in compliance, it would like have to increase to monitoring 100 homes every six months until it could bring levels back in compliance and demonstrate that its treatment techniques were working.

3. Lead-in-water testing conducted in other municipalities

Washington, DC

DC Water, the water utility in Washington, D.C., complies with EPA's lead and copper rule. It conducts regulatory and voluntary lead testing of 100 single-family homes every six months and reports results to EPA Region III. The sample sites are randomly selected from households with lead service pipes.

In addition, DC Water offers free lead testing to help residents identify potential lead sources. Lead test kits are delivered to households for homeowners to collect water samples. Residents collect two water samples (first draw and second draw) to provide a snapshot of lead in household drinking water. The first draw sample measures lead release from household plumbing and fixtures, especially potential lead sources near the tap where the sample is collected. The second draw sample measures lead release from lead service pipes and

household plumbing. If the lead level is above 15 ppb, DC Water works closely with homeowners to identify sources of lead.

Flint, MI

Flint changed its water supply to the Flint River in April 2014. Problems with the drinking water in Flint immediately began to arise. The water was not treated for lead, and state and city officials ignored or dismissed warnings about the problem for more than a year before a state of emergency was declared. The city's water testing practices did not meet EPA standards, which require Flint to conduct testing in the same way as outlined in the overview section of this memo.

The EPA requires Flint to collect tap samples from sites that are more likely to have plumbing materials containing lead. If more than 10 percent of samples exceed 15 ppb, then water systems are required to take action, including steps to optimize corrosion control treatment. City water officials had filed documents with state regulators claiming the city conducted tests in compliance with the EPA rule. However, those reports were false. An arrest warrant for Michael Glasgow, Flint Utilities Administrator, stated that he admitted submitting information that falsely showed all of the water samples were taken from locations with lead service lines.

Water samples sent to state labs for testing in the first six months of 2015 were marked as having come from homes with lead service lines, but actually almost always came from homes at less risk of lead leaching – houses with underground plumbing made of copper, galvanized steel, or materials that could not be identified, according to city documents given to reporters at the Flint Journal through a Freedom of Information Act request. Flint Utilities Administrator Mike Glasgow stated the city was struggling to collect the number of samples that were required following the city's switch to the Flint River as its water source in April 2014.

Part of the problem stemmed from poor recordkeeping, which went back more than 20 years, when the EPA lead guidelines were put in place. At the time, water systems were required to develop inventories of the materials in distribution systems so they could identify sample sites for lead and copper testing. Flint never did this, according to Mr. Glasgow. Instead, Flint had a hodgepodge of scattered records, tens of thousands of which were individual, hand-written index cards. Some of the slips of paper had service line information, but typically, they did not.

Instead, the city's water collection samples came from a random distribution of 175 testing sites, without regard for whether the homes were at high risk for lead leaching. The city included every test kit that was returned in its results, regardless of what material the homes' service lines were made of. The city also

knowingly dropped at least two water test samples with very high lead levels in the 2015 tests.

Government tests in late 2014, seven months after the Flint River water supply was introduced, showed just two of the 100 homes tested had levels above 15 ppb. An additional 37 had non-detectable lead levels. Further independent testing, however, showed dramatically higher lead concentrations.

In contrast to the city of Flint's testing practices, the University of Michigan-Flint has been quarterly testing its water since the fall of 2014. Additionally, Virginia Tech has conducted an independent study of Flint's water. It sampled 252 homes, the results of which showed that Flint had been failing to meet the EPA lead and copper rule.

Durham, NC

Like Milwaukee, Durham tests for lead every three years. The city maintains a sampling pool of more than 200 homes built between 1983 and 1985 throughout the city for the tests. During a testing year, samples are collected from the volunteer pool and analyzed for compliance. A first draw sample is collected after the water has stood unused in the plumbing for at least 6 hours – usually overnight. Durham's last round of testing in 2013 found compliance with the EPA rule. Testing for 2016 started in June and the results will be available in October.

Lead service lines have not been used in decades. When, on rare occasion, a lead service line is discovered, it is replaced by city water and sewer maintenance staff.

In 2007, excessive levels of lead were found in Durham's water supply, meaning the city failed to meet safety standards. Durham tested water at older homes across the city after a child at a city housing project showed signs of lead poisoning. Out of 89 water samples, 18 showed lead contamination above federal safety guidelines. Following a state citation, an additional 97 test results were turned over and showed the city to be out of compliance with the federal drinking-water standard. Afterward, the city tested its water every six months until it was able to meet requirements to be put back on a triennial monitoring cycle.

Greenville, NC

Greenville qualifies for reduced (triennial) monitoring but elects to conduct testing annually. Greenville Utilities sends more than 100 kits each year, although they are only required to collect 30 samples.

In addition, Mike Hager, a North Carolina state legislator, proposed a bill to require testing at all schools and child care facilities.

4. MWW collects samples from the same 50 homes.

MWW tests the same 50 homes every three years and conducts the test in the same manner each time in order to have a standard sample collection site and technique. When conducting scientific studies, it is important to conduct tests with the same conditions each time in order to run an accurate comparison.

5. Testing is done on homes with lead service lines.

EPA requires MWW to conduct tests on homes at highest risk of lead exposure, which means homes with lead service lines, and MWW is in compliance with this requirement.

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