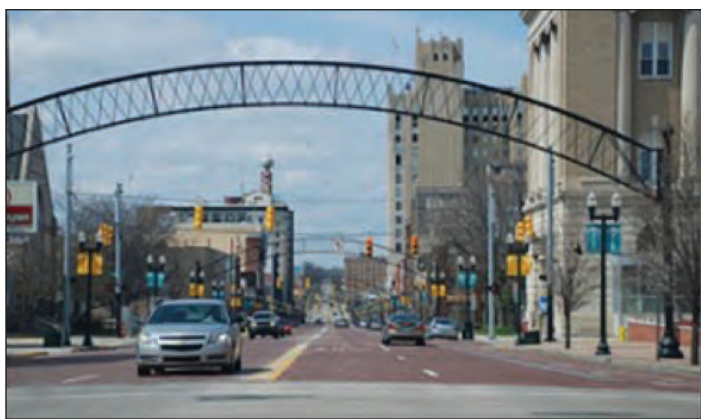




WHAT WENT WRONG IN FLINT?

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A public health emergency declared late last year brought mainstream attention to an overlooked switch in water supply for Flint, MI. The new source brought corrosive water through outdated service lines, tainting it with lead as it traveled to faucets in the city. Among many, the question that proved most confounding was how the tainted water could have possibly made its way through extensive regulatory checkpoints, including federally-mandated quality testing, and into the homes of residents.



Since then, there has been no end to scrutiny over what went wrong, who is to blame, and what can be done to ensure residents' safety moving forward. While it took a series of egregious bumbles on several different levels to plunge Flint into the crisis, perhaps the most unforgivable lapse has been government officials' negligent water testing.

The EPA's Lead and Copper Rule (LCR) dictates that "any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line."

It wasn't possible for Flint to meet that requirement, as the Department of Public Works kept the data of which homes have lead service on about 45,000 separate index cards. Instead, city utility manager Michael Glasgow e-mailed his work colleagues to see who might offer up their home tap water for testing, according to the Natural Resources Defense Council.

If that wasn't bad enough, Glasgow confessed to Michigan Radio that the state's Department of Environmental Quality (DEQ) told him to drop two samples that would have put the city above the federally mandated action level of 15 ppb. The DEQ explained that those samples were collected in a way that went against

protocol.

It's unclear how this level of testing was found to be sufficient by the federal government. The EPA chose not to comment on that for this article, citing its policy not to do so in the case of pending investigations.

Despite the incredulity coming from officials, residents were concerned about their noticeably discolored water. To help them investigate the issue on their own, a team of Virginia Tech University researchers led by Dr. Marc Edwards sent three bottle testing kits directly to Flint homes in the summer of 2015.

Those tests found that in 271 volunteering homes, 10 percent of samples exceeded 25 ppb, well above the action level.

"Residents' unprecedented independent sampling of their water proved the water was unsafe by any measure," Edwards said.

Following a Hurley Medical Center study on blood-lead levels in Flint children, the Department of Health and Human Services declared a public health emergency. Flint switched back to Detroit's water system in October and began adding more phosphates to reduce corrosion in December.

In late January, following an emergency declaration from President Obama, the EPA took over water testing in the city. On March 1, the agency announced an \$80,000 grant for Virginia Tech to fund additional sampling. Researchers will collect samples from the 271 Flint residences that volunteered last summer to quantify any progress in lead reduction and after six weeks of analysis, will determine whether or not the water is safe.

"By sampling the exact same homes, Flint residents can test a hypothesis that the lead levels are probably three times lower now than during the height of the Flint water crisis," said Edwards.

Until those tests are carried out and can confirm the safety of consumers, residents are using bottled water and home filters. Regardless of the results, many of them will have difficulty putting their faith back into a system that has failed them so drastically and in such a comprehensive manner.

"Despite outsiders pointing out all the cheating and false statements in Flint — to this date even as the National Guard walk the streets and distribute bottled water and filters and the blood-lead levels of children spiked in Flint neighborhoods — Flint has not [officially] failed the LCR," Edwards said. "This shows what a sick joke the agencies have allowed the rule to become. Hence the legitimate loss of public trust."

When asked how it would reassure residents who have been wronged, the EPA's Public Information Office in Flint issued a commitment to winning their trust back.

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"EPA will be in Flint as long as it takes to make sure the water is safe to drink," a representative of the office said. "EPA is working to get Flint's corrosion control in place and make sure the city can operate its water system appropriately. We're doing that through our enforcement order, through the national experts on our task force, and through boots on the ground science."

Of course the corrective efforts are critical, but they won't erase the mistakes that were made. The damage that's been done will continue to live in the minds and run through the blood of Flint's residents. Hopefully it serves as a lesson that none of us forget.

In a three-bottle test kit, the first sample consists of a one-liter draw of water from the faucet, the same test that's prescribed by the EPA. A second draw is designed to collect the most contaminated sample possible by drawing water that's sitting in the lead service line. The third draw collects water after it's been running for three minutes, to check if normal flushing is capable of clearing out contaminated water. The Virginia Tech test kits use inductively coupled plasma mass spectrometry (ICP-MS) to detect lead.

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