

Ongoing monitoring of Legionella in Flint in the wake of the drinking water crisis

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Credit: American Society for Microbiology

Research presented at the ASM Microbe meeting suggests that microbial water quality issues of Flint drinking water are improving, based on recent testing in March 2016, but that continued vigilance is in order.

The research, performed by the Flint Water Study team at Virginia Tech, found that levels of DNA markers for *Legionella* have decreased throughout Flint since October 2015 before the water change, but did confirm that pathogenic forms of the bacteria, including *L. pneumophila*, were culturable at some sampling points.

A decision made in April 2014 to change the [drinking water](#) source for Flint, MI, to the highly corrosive Flint River led to wide-spread corrosion and infrastructure damage throughout the water distribution system. In addition to increased incidence of elevated blood lead levels in children, two major clusters of Legionnaires' disease occurred in the summers following the water switch, with 91 reported cases and 12 confirmed deaths to date. Since October 2015, the drinking water distribution system has been returned to its original source (City of Detroit water) and a corrosion control plan is now in place, with water quality improving slowly but steadily. Residents are advised to continue using bottled water or a filter certified to remove lead when using water for drinking or cooking.

"Recent testing of Flint drinking water in March 2016 indicates that the [water quality](#) is improving, but low water usage, which increases the age (i.e., stagnation time) of water drawn at the tap, has made the recovery slower than we had hoped," said Otto Schwake, research scientist, Department of Civil and Environmental Engineering, Virginia Tech. "To help remedy this, a program that allowed free water to residents to clean out pipes by flushing was implemented in May, supported by the State of Michigan and EPA, which should have improved the situation further." [image: Samples of discolored tap water and a rusty water filter provided by Flint residents. Photograph: Virginia Tech/Jim Stroup]

"Our city-wide monitoring of *Legionella* DNA markers has indicated improvement, but in the latest analysis we were able to also culture *Legionella* and confirmed *L. pneumophila* Serogroup 1, the most

common culprit in Legionnaires' disease, to be viable at some sampling locations in large buildings. Since Legionnaires' disease is more common in warm seasons, it will be important to continue monitoring through summer and for the medical community to be vigilant in diagnosing pneumonia cases," said Dr. Schwake.

Three field samplings for this ongoing project have occurred to date, August 2015, October 2015 (immediately before the switch back to the City of Detroit Water), and March 2016. "We previously only targeted *Legionella* DNA, which, while highly accurate, fails to distinguish between live and dead cells. After processing water samples from March, we now have a large collection of cultured environmental samples and *Legionella* isolates from Flint, which could prove useful in tracking the transmission of Legionnaires' in the city," said Dr. Schwake. An additional trip is planned for summer 2016 to test the hypothesis that *Legionella* levels should not rise back to levels encountered during the 2015 outbreak, due to the change in [water](#) source, higher chlorine residuals, lower temperatures, and optimized corrosion control.

Provided by American Society for Microbiology

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