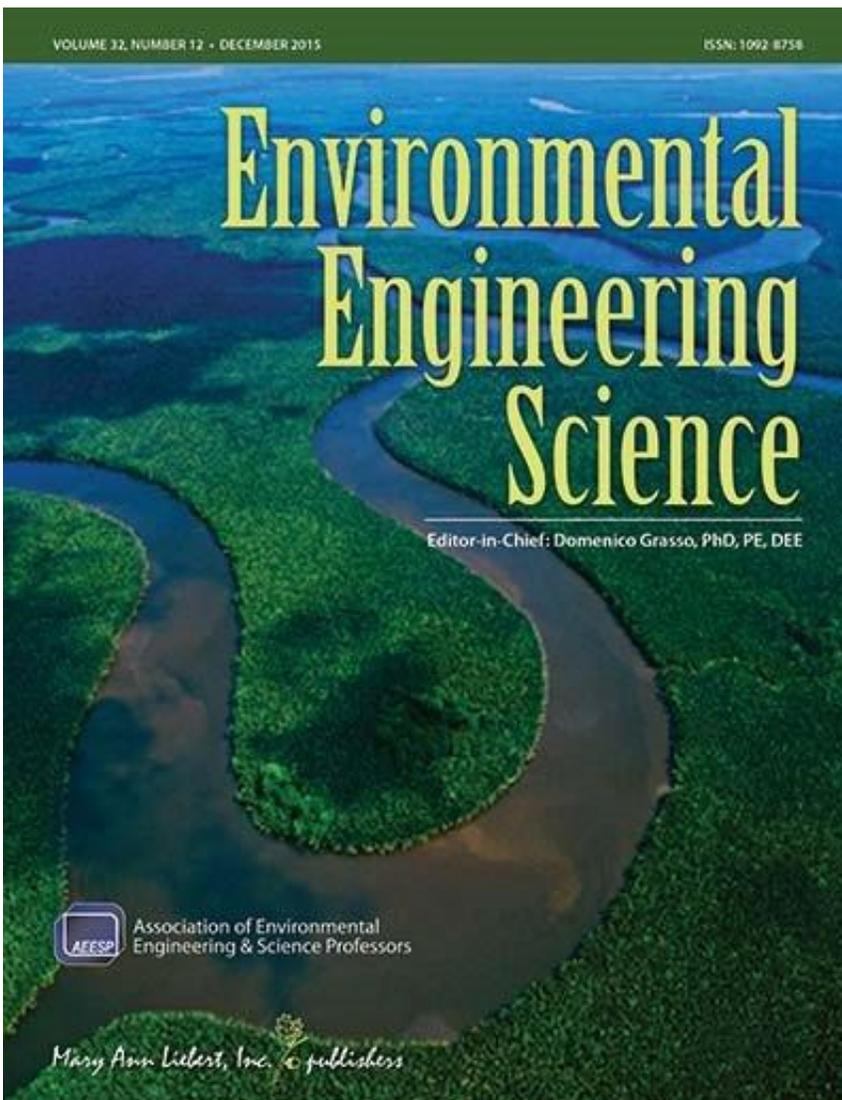


# New study identifies lead exposure risk of water pipe replacement

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Credit: Mary Ann Liebert, Inc., publishers

A new long-term simulation study confirms that partial replacement of lead pipes with copper, has caused serious problems in Flint, MI and Washington, DC, and more than doubles the lead released into the water supply. A partial lead and copper pipe approach to service line replacement may increase the risk of lead exposure to harmful levels, as described in the study published in *Environmental Engineering Science*.

In "Long-Term Behavior of [Simulated Partial Lead Service Line Replacements](#)," Justin St. Clair, Simoni Triantafyllidou, Brandi Clark, and Marc Edwards of Virginia Tech, Blacksburg, and Clement Cartier of Claro, Inc., Montreal, Canada reported the results of a 4-year study designed to assess the impacts of three different [water](#) service line replacement configurations: using 100% lead throughout; the conventional strategy in use for partial replacement comprising 50% [copper](#) upstream of 50% lead pipe; and 50% lead pipe upstream of 50% copper.

Elevated lead from corrosion worsened over time for the 50% copper configurations, with 140% more lead release demonstrated at 14 months. At high flow rates, 100% of the samples collected from the conventional partial configurations exceeded health safety thresholds, compared to 0% risk for samples collected from 100% lead pipe.

"This research demonstrates conclusively that if pipe replacements are to be conducted in response to water lead contamination events such as those that occurred in Washington, DC in 2001-2004 or Flint, MI in 2014-2015, half measures can create a worse problem than doing nothing," says Marc Edwards, coauthor and international water quality expert. "Specifically, replacing only the publicly owned portion of the lead pipe with copper can sometimes create an acute health risk due to corrosion arising between the copper and [lead](#). Utilities and the US Environmental Protection Agency (EPA) should allow only full replacements or, if partial replacements cannot be avoided, require use

of plastic pipes instead of copper."

"The expectation in the United States is that when we turn on the faucets in our homes, the water that pours out is safe to consume," says Domenico Grasso, PhD, Editor-in-Chief of Environmental Engineering Science and Provost, University of Delaware, Newark. "This critically important paper has uncovered an important health risk that is being involuntarily assumed by many Americans as a result of historical water line maintenance practices."

**More information:** The article is available to download for free on the [Environmental Engineering Science](#) website.

Provided by Mary Ann Liebert, Inc

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