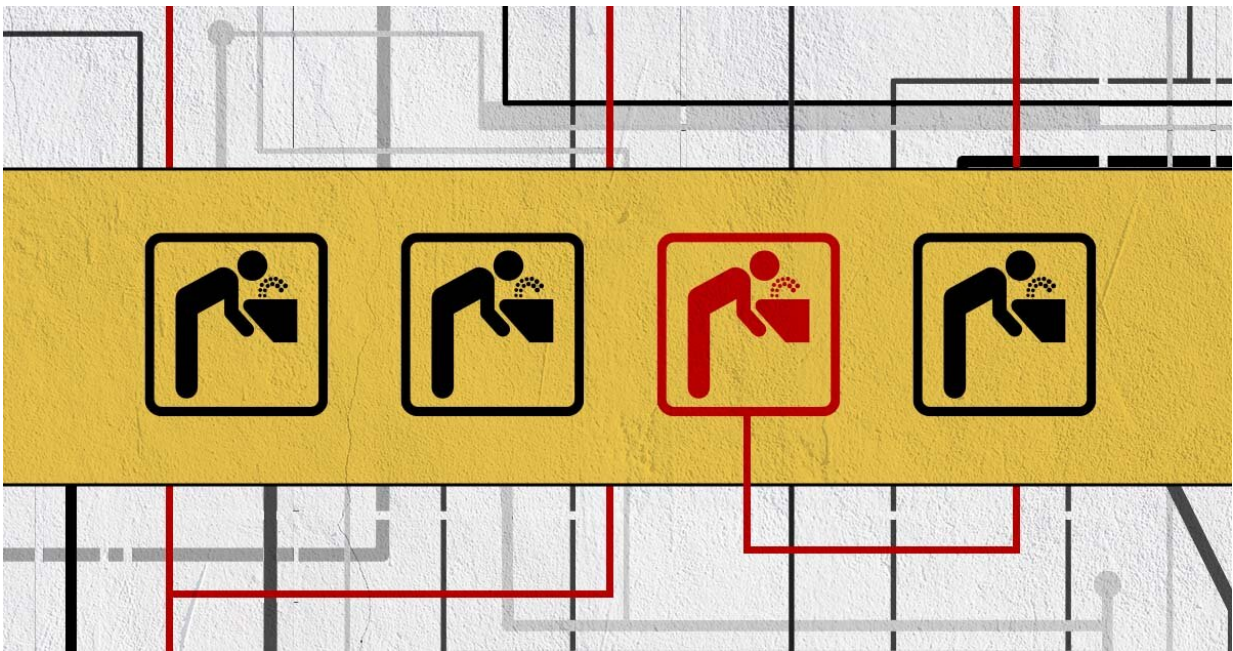


Lead remediation efforts show promise for safe drinking water in New York city public schools

October 20 2021



Lead Remediation Efforts Show Promise for Safe Drinking Water in New York City Public Schools. Credit: Egan Jimenez, Princeton University

Since the water crisis in Flint, Michigan, many states have passed legislation requiring public schools to assess and treat lead in their drinking water. Two Princeton University researchers examined the efforts by New York City, the largest school district in the country, to

determine the efficacy of its lead reduction strategies.

Lead is a potent neurotoxin that, if ingested, can affect nearly every organ system in the body and severely disrupt physical development in children. Federal regulations on lead in products like paint, gasoline, and plumbing have drastically reduced the incidence of lead exposure in the United States in the past few decades.

Still, lead poisoning continues to impact people—particularly those of color and low socioeconomic status. National estimates from 1999 to 2016 reveal that Black children between ages 1 and 5 had consistently higher levels of lead in their blood than white children. Additionally, people living in neighborhoods with large Black populations have reported significantly higher blood lead levels than people in predominantly white areas.

"The crisis in Flint, Michigan was a reminder that [lead poisoning](#) remains a severe threat to human health," said study co-author Jennifer L. Jennings, professor of sociology and public affairs at the Princeton School of Public and International Affairs. "We analyzed New York City school district's lead remediation efforts in hopes of determining how effective their strategies were, in the hopes of preventing another Flint-like situation."

Jennings conducted the study with Scott Latham, associate research scholar. Together, they gathered and analyzed data from the New York City Department of Education, which conducted drinking [water](#) assessments in every school building during the 2016 to 2017 school year.

Prior to lead remediation efforts, the average New York City student attended a school site where 8% of drinking fixtures—like water fountains and water bottle filling stations—tested at 15 parts of lead per

billion parts of water (ppb), the U.S. Environmental Agency's lead "action level." The researchers used school enrollment data to analyze lead exposure among racial groups and found that Black students attended schools with the greatest number of water fixtures with elevated lead levels.

Any water fixtures testing at the "action level" were immediately removed and returned only after measuring at safer levels. Other buildings with older water fixtures or at least one fixture with elevated levels underwent routine flushing, pipe replacements, or filter installations. Newer fixtures were monitored for future maintenance.

After New York City [public schools](#) were assessed and treated for lead, the percentage of water fixtures that were first tested at the "action level" significantly decreased. In 2018, the average student attended a school where 5.3% of water fixtures tested above the action level—a 2.7% decrease. On average, Black students saw the largest reduction in lead exposure than white, Hispanic, or Asian students.

Through its remediation efforts, the New York City Department of Education made immense progress in reducing lead levels in school drinking water. Today, however, most New York City students attend a school where at least 1 in 20 drinking fixtures still test above the action level.

Jennings and Latham theorize this may be due to the [city's](#) testing protocols. Lead levels in the same tap water can vary widely depending on the water's temperature, flow rate, length of stagnation, and the season of year. The metal is, therefore, extremely prone to false negatives.

Still, the progress made by New York City demonstrates that removing and treating water fixtures with high lead levels can be an effective

method of improving the safety of drinking water. The researchers emphasize the need for more documentation of lead exposure across schools and further research into additional remediation techniques.

"Rising water temperatures, greater seasonal variability in precipitation, and more extreme weather events across the country due to climate change all have the potential to worsen lead levels in drinking water. It's imperative that we continue to document and analyze exposure in schools, student subgroups, and communities," said Jennings.

The researchers hope that future policies targeting lead exposure and control involve repeated water testing under a variety of conditions. Reducing and eliminating lead in [drinking water](#) is essential to the health and safety of children, students, and racially and socially vulnerable populations across the country.

The paper, "Reducing lead exposure in [school](#) water: Evidence from remediation efforts in New York City public schools," was first published in the multi-disciplinary journal *Environmental Research* on July 28, 2021.

More information: Scott Latham et al, Reducing lead exposure in school water: Evidence from remediation efforts in New York City public schools, *Environmental Research* (2021). [DOI: 10.1016/j.envres.2021.111735](#)

Provided by Princeton School of Public and International Affairs

Citation: Lead remediation efforts show promise for safe drinking water in New York city public schools (2021, October 20) retrieved 19 April 2024 from <https://phys.org/news/2021-10-remediation-efforts-safe-york-city.html>

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