

# Contaminated drinking water alerts cause up to 10% school absence rates in Jackson, Mississippi

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When a team led by researchers from Brown University's School of Public Health tried to gather data about the health effects of the

longstanding water contamination crisis in Jackson, Mississippi, little was available, even on the toxicity of the water supply.

So they turned to two sources that were accessible—school attendance records and public safety alerts that advised residents to boil [water](#) before use.

Now, the team's analysis of this information in a [study](#) published in *Nature Water* shows how boil water alerts significantly disrupted [student learning](#): Each time an alert was issued, unexcused absence rates in Jackson's public schools increased between 1% and 10%.

Chronic school absenteeism impacts not only a child's academic record, but also their health and well-being, said lead author Erica Walker, an assistant professor of epidemiology at Brown. Research shows that chronic absenteeism is associated with increased likelihood of poverty and decreases in mental and physical health.

"We're talking about much larger repercussions than gastrointestinal illness from drinking unsafe water," Walker said. "These findings show how chronic exposure to contaminated water over time can negatively affect the trajectory of a child's life."

The water crisis in Jackson has made global headlines as a major environmental catastrophe, impacting the health and well-being of residents. The researchers focused on the city's most vulnerable population: its children.

To conduct the study, the team used data on boil water alerts issued by the City of Jackson's Water and Sewer Business Administration Office between 2015 and 2021, daily school attendance data from Jackson's Public School District and demographic data from the U.S. Census Bureau's American Community Survey.

The data showed that each time a boil water alert was issued, unexcused absence rates increased by 1 to 10%.

They also showed decreases in unexcused absences in schools where much of the student body receives free and reduced lunches—likely, Walker said, because the water contamination disrupts at-home meal preparation, so families may instead count on schools to safely provide lunch for children that day.

As the director of the Community Noise Lab at Brown, Walker originally wanted to study the effects of noise pollution on [public health](#) in Jackson. However, when the community made clear that the [water contamination](#) was a more pressing concern, Walker shifted focus.

She organized a team, which included graduate students from Brown, to set up mobile laboratories across the city to test tap water quality—work that remains ongoing. Separately, Walker partnered with researchers from the University of Mississippi, Massachusetts Institute of Technology, Boston University and Salem State University to learn more about the effects of contaminated water on [community health](#). They recognized that the ubiquity of boil water alerts would make them an accessible metric that would be understandable to the public.

In the study, the researchers concluded that their analysis highlights the urgency of addressing the root causes of the poor water quality in Jackson. They provide suggestions for how municipalities can more effectively spread the word about contaminated water, including social media posts, voicemails or conducting door-to-door outreach when resources enable it. They also suggested that the Mississippi Department of Health publish a sample press release for local water systems that includes information about the cause of the boil water alert, the population and public schools impacted, and what precautions to take.

The team said the findings could benefit other cities struggling with poor water infrastructure and shed light on the many issues directly and indirectly caused by boil water alerts. Team members from MIT created a [data visualization](#) to engage the community both within Jackson and across the world about the research findings.

## **A personal connection to a community project**

This issue is personal for Walker, who grew up in Jackson. She said she does not remember hearing about boil water alerts when she was a child. Yet in 2020 alone, Walker said, the City of Jackson issued approximately 500 boil water advisories because of unsafe drinking water. These interruptions ranged from a few hours to weeks long.

In a [commentary](#) for *Nature Water* that accompanied the study, Walker imagined what it would be like to live with the [water crisis](#) in Jackson.

"When a boil water advisory is issued, families with school-aged children living in the impacted communities must boil their water before any consumption, making necessary school preparation chores that we normally take for granted like brushing teeth, taking medications, and preparing meals difficult, if not impossible," Walker wrote.

Walker's essay explored her nostalgia for the Jackson of her youth, and her feelings of survivor's guilt. She wrote, "Would I be who I am now if I lived in the Jackson that exists today?"

Walker said that the team helped train community members as well as students at the Piney Woods School, a historically Black co-educational private boarding [school](#) in Mississippi, how to test water for contaminants. As next steps, the team hopes to use the information from the mobile testing labs to examine the biological effects of contaminated water. They created an activity book for children and adults to explain

the current water situation in Jackson and how drinking water comes from its source—"so that the next time people get a boil water notice, they'll have a better understanding of what it means and how it affects them," Walker said.

"Hopefully," she said, "this community research partnership will lead to education, empowerment and advocacy around the issue of contaminated water and how it impacts public health."

**More information:** M. Kim et al, Boil water alerts and their impact on the unexcused absence rate in public schools in Jackson, Mississippi, *Nature Water* (2023). [DOI: 10.1038/s44221-023-00062-z](https://doi.org/10.1038/s44221-023-00062-z)

Provided by Brown University

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