Study identifies disparities in testing and treating well water among low-income, BIPOC households in NC

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North Carolina leads the nation for most households relying on private wells as a primary source of drinking water, with one in four households

on private wells. These wells are not regulated by the Safe Drinking Water Act, and most are not tested for contaminants, especially in low-income areas.

A new study published in *Environmental Justice* by researchers at the University of North Carolina at Chapel Hill found that private well testing and treatment levels were significantly predicted by race and income, even though high levels of contamination were equally distributed across the research areas.

"Although we found alarming levels of well water contamination in our study, what's most troubling is that not everyone was equally aware of the problem," said lead author Andrew George, community engagement coordinator in the Center for Public Engagement UNC's Institute for the Environment.

"You cannot see, taste or smell toxic metals in drinking water, so only households who are testing their private wells will be able to identify and address any problems. However, we found significant differences in levels of testing and treatment between income and racial groups."

The research team assessed contamination levels of metals in private wells and analyzed differences in water quality and well stewardship among demographic groups. More than 67% of wells tested in the study exceeded a federal or state drinking water standard. Researchers also found white, affluent households had 10 times greater odds of testing their wells and four times greater odds of treating their water than low-income, Black, Indigenous and other People of Color (BIPOC) households.

This lack of testing and treatment may lead to low-income, BIPOC households experiencing a disproportionate burden of exposure to dangerous contaminants. Over time, consuming contaminated water can

harm health and has been associated with cancer, cardiovascular disease, preeclampsia, neurological disorders, elevated blood lead levels and higher instances of waterborne illness.

The team focused their study on regions impacted by the 2018 Hurricanes Florence and Michael and began sampling after the storms in Robeson, Northampton, Chatham and New Hanover counties. With the widespread flooding that accompanied the hurricanes, many communities were concerned about coal ash and other waste contaminating their water supplies.

Enlisting the help of community-based organizations and neighborhood leaders, the research team employed Community Engaged Research (CEnR) Strategies to improve recruitment of participants in Environmental Justice (EJ) communities—those communities who experience disproportionate levels of pollution.

CEnR strategies are collaborative and involve community members in all stages of the research process, which helps establish a mutual trust between researchers and the people. Report back of research results, another hallmark of CEnR, ensures that researchers share the results with study participants. This approach helps the participants better understand results and can inform subsequent action to protect health while also strengthening trust between the community and researchers.

"In working with N.C. communities to address well water quality, our overarching goal is to prevent or reduce exposure to contaminants," said Kathleen Gray, a co-author of the study and research associate professor in the UNC institute for the Environment. "These results suggest a need for strategic efforts to increase well testing and improve treatment efforts in communities that rely on private wells for drinking water."

"Without engaging EJ communities, research into private wells will

continue to exclude the most marginalized, underserved populations," added George. "We hope our findings can inform efforts to direct policy interventions and community resources where they are needed most."

More information: Andrew George et al, Drinking Water Disparities in North Carolina Communities Served by Private Wells, *Environmental Justice* (2023). DOI: 10.1089/env.2022.0100

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