Study shows forever chemicals are a threat to drinking water in rural, predominantly Latinx communities

June 14 2024

Credit: CC0 Public Domain

Public water wells in communities of color might be disproportionately polluted by pesticides contaminated with harmful per and

polyfluoroalkyl substances, according to a new study led by a team of researchers from UC Berkeley School of Public Health.

The chemicals, commonly known as PFAS, have been widely used in industry and consumer products since the 1940s. They can pose significant health risks, including lower antibody response, change in liver enzymes, and other health effects, according to the CDC.

The Environmental Protection Agency adopted a maximum contaminant level for PFAS in drinking water in April.

The UC Berkeley study, published in *ACS ES&T Water*'s special May issue on emerging contaminants in agroecosystems, is the first to evaluate PFAS contamination from pesticides in California; and the first environmental justice study on the issue.

According to the researchers, current monitoring of PFAS in groundwater is limited, and fails to consider pesticides as a source of PFAS. To fill that gap, the team, led by Professor Rachel Morello-Frosch, developed a novel research plan.

"Given previous findings on the disproportionate exposure of communities of color to both pesticides and PFAS, we investigated disparities in PFAS-contaminated pesticide applications in California, based on community-level sociodemographic characteristics," the authors wrote.

They used statewide pesticide application data from the California Department of Pesticide Regulation and recently reported concentrations of PFAS chemicals detected in eight pesticide products to calculate the amount of PFAS applied within 1 kilometer of community water systems' supply wells.

Spatial regression analyses suggested that statewide, community water systems that serve a greater proportion of residents who are Latinx and non-Latinx people of color experience more PFAS application and greater likelihood of PFAS application near their supply wells.

"These results highlight agroecosystems as potentially important sources of PFAS in drinking water," they wrote, "and identify areas that may be at risk of PFAS contamination, and warrant additional PFAS monitoring and remediation."

Arianna Libenson, first author and a research data analyst at UC Berkeley's Water Equity Science Shop, known as WESS, said one limitation of the study is that the researchers didn't test the water, but instead made a prediction of where PFAS is likely to get into the groundwater, based on reports of how much of the pesticides were applied.

This research is part of WESS's work in partnership with the Community Water Center and the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA). The collaboration has developed an interactive web-based tool called the Drinking Water Tool, to support universal access to safe drinking water.

Clare E. Pace, a corresponding author and WESS assistant project scientist, said she is curious to see the results of PFAS monitoring efforts in rural communities.

"So far most of the monitoring has taken place in urban areas," Pace said. "That's logical based on what we know so far about PFAS sources, but that overlooks communities that have been historically marginalized, like predominantly Latinx communities that rely on small community water systems."

To that end, the WESS lab is conducting a related study that will test for PFAS in 100 households served by domestic wells and small community water systems. They are focusing on rural, agricultural areas in California's Central Coast and Central Valley.

More information: Arianna Libenson et al, PFAS-Contaminated Pesticides Applied near Public Supply Wells Disproportionately Impact Communities of Color in California, *ACS ES&T Water* (2024). DOI: 10.1021/acsestwater.3c00845

Provided by University of California - Berkeley