To mitigate impact of wildfires on communities' water, report offers guidance to public drinking water system staff

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Credit: Vladyslav Dukhin from Pexels

Wildfires increasingly threaten public drinking water systems, but guidance on how to address damage to these systems from a wildfire has

been insufficient, conflicting or inaccurate.

A new publication offers the first comprehensive guidance for public drinking water system staff, outlining the decision-making process for testing and recovering water distribution systems after a wildfire. This guidance was authored by Purdue University engineers and published by The Water Research Foundation. Four water utilities in California also sponsored the publication.

Andrew Whelton, a Purdue professor of civil engineering and environmental and ecological engineering, led the development of this guidance. Whelton has traveled numerous times to the sites of wildfires in recent years and advised on how to respond to drinking water contamination.

The research papers Whelton and his team have published based on his testing of water samples at the sites of wildfires have become go-to resources for various groups handling the restoration of water distribution systems. The Water Research Foundation publication consolidates those key findings and lessons learned from previous wildfires.

"This new guidance shares frontline lessons from drinking water system professionals who have responded to wildfire disasters," Whelton said.

Recent wildfires have caused damage to water distribution networks, even when the sources and treatment facilities remained unaffected.

Andrew Whelton, Purdue University professor of civil engineering and environmental and ecological engineering, has built a network of community leaders and experts who have dealt with the environmental aftermath of wildfires on water systems. Credit: Purdue University /John Underwood

The information that drinking water system staff typically receive from supporting agencies during a wildfire emergency has led to issues such as failing to detect the full extent of chemical contamination and damage, delayed customer notifications regarding potential health risks from contaminated drinking water, postponed actions to restore pressure and remove contaminated water from the system, and struggles with communicating postfire drinking water safety issues to customers and support organizations.

Damage to infrastructure and buildings can lead to water leaks, lower pressure and affect water availability for residential, commercial and industrial users. Additionally, wildfire damage to pipes and tanks may become secondary sources of pollution that contaminate drinking water. Above-ground and below-ground components can sustain damage, and identifying contaminated infrastructure may take weeks or even years.

Repairing and restoring the affected infrastructure to ensure the delivery of safe drinking water may take a similar or longer timeframe. In such cases, restrictions on water use may need to remain in place for extended periods to protect customers from contaminated water.

This guidance could also assist other groups who help public water system staff respond to wildfires, such as public works managers, emergency management professionals, and agencies on the state and federal levels.

This publication is part of an overall project on postwildfire distribution water quality impacts and responses led by Whelton. This guidance is expected to be updated in the future as new information becomes available. The complete foundation report, containing all studies and data, will be released in the coming months.

Amisha Shah, a Purdue associate professor of civil engineering and environmental and ecological engineering, co-led the development of this publication with Whelton. Kristofer Isaacson, a Purdue alumnus who had been a graduate student in the Whelton and Shah labs, also contributed to the publication.

Whelton leads the Center for Plumbing Safety at Purdue, which offers additional resources on disaster response for water infrastructure.

More information: Concept of Operations (CONOPS) Plan for Water

Distribution System Testing and Recovery, www.waterrf.org/resource/conce … testing-and-recovery

Provided by Purdue University

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