

Indoor air quality in long-term care facilities during wildfires is worse than you'd think, says toxicologist

January 25 2024, by Kylie Mohr, KFF Health News



Credit: CC0 Public Domain

Every year, wildfires across the western U.S. and Canada send plumes of smoke into the sky. When that smoke blows into southwestern Idaho's Treasure Valley, it blankets Boise-area residents in dirty air.

They include seniors living in long-term care facilities, many of whom

are considered an at-risk population for smoke exposure because of respiratory or cardiac diseases.

"An astonishing amount of smoke gets inside these facilities," said Luke Montrose, an environmental toxicologist and researcher at Colorado State University. Data from monitors Montrose installed in four Idaho long-term care facilities in 2020 showed that large amounts of smoke pollution recorded outside during wildfire season seeped into the facilities.

One building let in 50% of the particulate matter outside; another, 100%. In some cases, Montrose said, "it was no better to be inside than to be outside during those smoke events."

That's why Montrose has spent the past few years installing more monitors in care facilities across Idaho and Montana. The study is expanding into Colorado this summer.

Understanding and addressing how wildfire smoke affects indoor air quality could help better treat the roughly 1.4 million seniors who live in more than 15,500 Medicare- and Medicaid-certified nursing homes nationwide and nearly a million more who live in assisted living facilities.

"It may be a game-changer for [quality of care](#)," said Robert Vande Merwe, executive director of the Idaho Health Care Association. Vande Merwe helped persuade facilities to join Montrose's study.

Although residents of the western U.S. have lived with smoky summers for decades, the fallout from wildfires is becoming a nationwide issue.

Smoke from blazes in eastern Canada barreled into the densely populated Northeast and Midwest last June, making the skies above

Toronto, New York, Chicago, and much of the Atlantic Coast glow an eerie orange. More than 120 million people were under air quality alerts. As wildfires increase in size, intensity, and duration, fueled by a combination of climate change and forest mismanagement, the smoke they generate will likely affect more people.

"We're going to see more and more smoke events that reach further across the U.S. and across the world," said Savannah D'Evelyn, a postdoctoral scholar at the University of Washington who studies wildfire smoke and its effects on health. She was not involved in Montrose's study.

Air pollution from wildfire smoke—a brew of pollutants, water vapor, and fine debris—is a growing public health problem. Tiny particles known as PM_{2.5} are small enough to embed deep into people's lungs and, sometimes, infiltrate their bloodstream. Research has shown PM_{2.5} can cause asthma and respiratory inflammation or jeopardize lung function, and the particles have been tied to some cancers. They are especially dangerous for children and people with preexisting heart or lung conditions—including seniors, the focus of Montrose's work.

"I think honing in on this particular community that is really quite impacted by [smoke exposure](#) on the health side of things is really great," D'Evelyn said. "It's a gap that needs to be addressed."

For years, public health officials have told people to go inside on bad air quality days, even though, without testing and filtration, indoor air quality often isn't much better than what's outside. Although skilled nursing facilities follow numerous federal regulations to participate in the Medicaid and Medicare programs—covering anything from building safety features, like fire sprinklers, to residents' rights—indoor air quality isn't addressed.

"There really aren't any regulatory standards for indoor air quality, broadly, in any country that I'm aware of," said Katherine Pruitt, national senior director for policy at the American Lung Association.

Without the few indoor air quality monitors in the study, long-term care facility managers or operators might check their local air quality index, or AQI, on their smartphone's weather app or by watching the news. But air quality monitors don't always provide accurate information about the air outside, let alone inside a building. Rural areas are particularly underserved by air quality monitors.

According to Montrose, 25% to 30% of skilled nursing facilities in the Mountain West are more than 30 miles from a regulatory-grade monitor. Indoor air quality monitoring is rare outside of studies like Montrose's.

That's why Montrose is on a quest to get more air quality monitors placed inside facilities. In 2019, he contacted more than 80 Boise-area nursing and assisted living facilities to gauge interest and concern about wildfire smoke.

In 2020, he collected data from indoor and outdoor air quality monitors at four nursing homes—two in the Boise area, others in northern and eastern Idaho. The monitors recorded particulate [air pollution](#) inside one facility nearly 17 times what's considered healthy.

In 2021, data collected from six facilities from July to October—four in Idaho and two in the Missoula, Montana, area—also showed that in some buildings indoor and outdoor air quality were almost identical on smoky days. Montrose repeated the monitoring at four other southern Idaho facilities last summer. The monitors fed real-time data to a dashboard that people running the nursing homes could see and respond to.

Protecting seniors from wildfire smoke is an important piece of wildfire

preparedness, yet Montrose acknowledged that conducting research in nursing homes and care facilities has challenges. Unique ethical considerations arise with dementia or Alzheimer's patients, who can't give informed consent.

Staff turnover makes it hard for researchers like Montrose to establish relationships with facility operators, and asking overburdened nurses or employees to do extra work, like understand and check air quality monitors, can be a nonstarter. Still, Montrose said, people living in [long-term care facilities](#) are particularly vulnerable. "If we can protect them, there's great benefit to our communities," he said.

Some facilities in Idaho have made changes because of the research. Those include a pre-fire season facility checklist to make sure filtering systems are in good shape and that doors and windows are properly sealed. They also share the area's AQI as part of their daily morning safety meetings.

Mark Troen, regional maintenance director for 10 Edgewood Healthcare facilities in the Boise area, four of which had monitors last summer, laid out a litany of things he does when the indoor air quality rises past healthy levels: changing air filters to a higher level that traps more particulates, turning off outdoor air intake, and alerting staff to keep doors and windows closed. "Anything I can do to keep the residents safe, I'm all for," Troen said.

Clinical staff members also have identified which residents have respiratory problems or are immunocompromised. In an intense smoke event, those people may get portable air filtration in their rooms for extra protection.

Troen plans to install air quality monitors from his own budget once the study's monitors need to be replaced due to age. "To actually see in real

time what your indoor air quality is is huge," he said. "It helps us mitigate some of those problems, rather than waiting until it's bad."

Anyone can take steps to improve the air they're breathing during wildfire season. "It's pretty easy to clean indoor air," D'Evelyn said. HEPA air filters are the gold standard but can cost upward of \$100; creating a box fan filter is a cheaper alternative. According to D'Evelyn, making even one room in a building a "clean air space" can make a difference during a wildfire.

The American Lung Association's Pruitt said starting policy conversations about regulating [indoor air quality](#) faces many barriers, including perceptions of federal overreach. In the absence of federal regulations, Pruitt believes, the most effective actions would likely come from state or local building codes and ventilation standards.

"Policymakers should be looking at the steps that need to be taken to protect people from exposure to hazardous levels of smoke or other outdoor pollutants," she said.

Montrose is recruiting more nursing homes to install air quality monitors this summer, including additional facilities in Idaho, Colorado, and Montana. Vande Merwe, of the Idaho Health Care Association, said other places in the region—like his hometown, Salt Lake City, which is situated where smoke and other pollutants accumulate—should take note.

Breathing in the best possible air could make a big difference for residents' health and quality of life as they age, he said.

2024 KFF Health News. Distributed by Tribune Content Agency, LLC.

Citation: Indoor air quality in long-term care facilities during wildfires is worse than you'd think,

says toxicologist (2024, January 25) retrieved 27 April 2024 from
<https://medicalxpress.com/news/2024-01-indoor-air-quality-term-facilities.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.