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Understanding the Transport and Chemistry of Indoor Air During Wildfire Smoke Events with Elliott Gall

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Welcome to PDXPLORES, a Portland State research podcast, featuring scholarship innovations and discoveries, pushing the boundaries of knowledge practice and what is possible for the benefit of our communities and the world.

My name is Elliot Gall. Wildfires driven by climate change are increasing in frequency and intensity. While these fires cause enormous damage in burn zones, they also threaten millions of Americans living well beyond their paths of destruction.

In the Western United States, thick blankets of smoke are now commonplace from late spring through the middle of fall. At elevated levels that smoke poses health risks to all of us. Those risks are significantly higher for individuals with pulmonary or cardiac disease, pregnant women, children, and others with sensitive medical conditions.

The US EPA advises reducing exposure by remaining indoors and filtering the air in your house during wildfire smoke events. But the level of protection indoor environments provide varies from building to building because of the many complex factors that dictate how much smoke enters a structure and how effectively it is removed.

For example, a central AC unit allows whole home filtration, but even operating in the fan only mode may increase outdoor air infiltration. Understanding the transport and chemistry of indoor air during wildfire smoke events is essential to informing how we design, build, operate, and modify buildings to improve indoor air quality and protect health.

We need to know what actions to take to reduce levels of wildfire smoke in our homes, schools, and workplaces. And we need a suite of solutions accessible to everyone. From using household items to create safe rooms and effective air filters, to more complex treatments at the structural level.

It's not likely that the Western US will soon see a decrease in the number of days during which levels of wildfire smoke pose health risks. That's why it's critical we learn what actions we can take to protect ourselves from smoke during increasingly long wildfire seasons.