



A man talks on his phone as he looks through the haze at the George Washington Bridge in Fort Lee, NJ, Wednesday, June 7, 2023. Photo Credit: Seth Wenig, AP

Actionable Science for Solutions to the Problem of Wildfire Smoke

As the climate continues to warm, wildfires are expected to increase. People will experience more days with unhealthy air quality because of wildfire smoke, even those living far from the wildfires. Science that can inform effective, evidence-based solutions in public health and forest management is essential for reducing the harmful health effects of smoke. The *Western Fire & Forest Resilience Collaborative* is advancing our understanding of wildfire smoke production and dispersion, with the goal of protecting people.

Exposure to wildfire smoke has significant effects on respiratory health, and may worsen cardiovascular health, birth outcomes, and mental health. In 2023, asthma-related emergency room visits across the *entire* country spiked by 17% on the 19 smokiest days. States where smoke was most widespread experienced far larger increases. And not all people are equally exposed to smoke. For example, Indigenous people in California experience significantly higher exposure to wildfire smoke, whereas Hispanic populations are disproportionately exposed to smoke from prescribed burning and agricultural burning.

The *Western Fire & Forest Resilience Collaborative*, led by Cary Institute of Ecosystem Studies, is poised to **leverage cutting-edge satellite observations, models, and public health data, to provide scientific insights to inform policies and management that can reduce smoke exposure and keep people healthy.**



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Public health officials are working with limited funds to improve indoor air quality, develop early warning systems, and create public clean air shelters. The Fire Collaborative's research can provide data that helps target resources efficiently by mapping where people are most exposed to wildfire smoke.

Forest managers also play a critical role in the solutions. Forest management, including prescribed burning, reduces future wildfires and smoke emissions, but prescribed burning creates smoke too. Where will prescribed burning be most effective? Who is affected and who benefits? Forest managers need data on the tradeoffs between wildfire and prescribed fire to develop equitable and effective forest management interventions.

As fire and public health researchers, we are developing interdisciplinary science. Our modeling framework combines forest and fire models, with air-quality models, and population and epidemiological data. We produce maps of where people will be most exposed to wildfire smoke now and decades into the future. We are examining how smoke emissions and exposure from wildfires compare to prescribed burns, and assessing how effective forest management strategies are at reducing emissions, even as wildfires increase.

Developing scientific insights is just the beginning. To turn science into effective action, researchers and practitioners must collaborate to create customized tools and data visualizations that meet policy and management needs. Unfortunately, public funding often falls short. The Fire Collaborative is working with policymakers and forest managers and to develop actionable science. With your support, we can expand our partnerships to co-create customized resources that directly address their challenges.

Actionable science is essential for developing solutions to ensure all people remain healthy as we learn to live with wildfire in our warming world. With your help, we can develop cutting-edge science on wildfire smoke that informs solutions to protect communities nationwide from its far-reaching effects.



Workers in smoke.