



Nov. 2025

Communicating the Health Risks of Wildland Fire Smoke

Kerry Wyss, Director, Environmental Health, *ASTHO*

Ali Aslam, Assistant Director, Environmental Health, *ASTHO*

This report was supported through EPA Assistance Agreement Number 84018201. The findings and conclusions in this document are those of the authors and do not necessarily represent the official position of EPA or the other organizations involved, nor does the mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government. ASTHO would like to thank the many EPA and STHA staff for their feedback into this document.

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Communicating the Health Risks of Wildland Fire Smoke

Introduction

Smoke from wildland fires (i.e., wildfire and prescribed fire) can pose serious health risks to communities, particularly for sensitive or vulnerable populations such as children, older adults, and those with existing respiratory or cardiovascular conditions. Wildfire smoke can [spread rapidly over long distances](#), so timely and accurate risk communication is essential during wildfire events to help communities understand the dangers of smoke exposure and take protective actions.

ASTHO hosted a wildland fire focus group in January 2025 to talk through lessons learned by state and territorial health and environmental agencies. The group identified information and resource needs as agencies work to protect community health from wildland fire smoke through health risk communication, disseminating information, and developing programs to support public health action (i.e., exposure reduction). Seventeen jurisdictions participated in this session, with most of the participants representing state health agencies, departments of environmental quality, or departments of natural resources.

Messaging Strategies

Several states have implemented strategic messaging efforts to ensure timely and accurate information about the impact of wildland fire smoke exposure on at-risk populations. This includes outreach well in advance of every wildfire season as well as during smoke events.

In Massachusetts, the Department of Public Health (DPH) has successfully leveraged their Health and Homeland Alert Network to disseminate wildfire smoke alerts and provide rapid updates to health care providers and emergency responders. The Massachusetts Department of Environmental Protection monitors air quality in Massachusetts through [MassAir Online](#) and issues air quality alerts to the public, including alerts related to wildfire smoke.

The Montana Department of Public Health and Human Services (DPHHS) partners with [Climate Smart Missoula](#) and the Missoula City-County Health Department to target wildfire smoke messaging for a week in mid-July (prior to wildfire smoke season). Each day, they boost social media posts to provide education and resources to community members. The Montana DPHHS website also provides [flyers for at-risk groups](#), including checklists for caregivers regarding how to prepare for a wildfire smoke event and what actions to take during a smoke event.

Idaho Department of Environmental Quality starts messaging around wildland fire smoke prior to known or expected major events (for example wildfire smoke “season” or planned upcoming prescribed burns) so the public knows where to find that information. They do this through social media campaigns with preseason meetings with agency partners.

Other states used health data to target outreach efforts to specific populations. Connecticut DPH used syndromic surveillance data to identify a direct correlation between emergency department visits for children under age five and wildfire smoke events. This effort supported the development of locally targeted messaging tailored for young children and daycare facilities. Similarly, [California Air Resources Board](#) (CARB) employs a collaborative approach by working with research institutions, state agencies, local air districts, and community organizations to distribute information.

More broadly, state agencies are prioritizing outreach to at-risk populations, including homeless shelters and non-English-speaking communities. For instance, the Massachusetts DPH developed factsheets for [wildfire smoke events](#) and [poor outdoor air quality](#), which are available in 15 different languages to ensure accessibility. During smoke events, Massachusetts DPH disseminates the factsheets to local public health officials and health care providers through the Health and Homeland Alert Network.

To maximize public reach, agencies noted a range of dissemination methods, including social media, press releases, local news outlets, factsheets, and targeted outreach efforts. For example, the Oregon Health Authority offers a wide array of [wildfire and smoke education information resources](#) for the public and [crisis and emergency risk communication resources](#) for county and Tribal public health departments. Oregon developed these materials based on state experience and drawing on resources developed by CDC, EPA, and other state health departments.

One of the key challenges reported across state agencies is difficulty providing clear guidance when air quality conditions are rapidly changing, including support with decision-making about when to cancel outdoor activities. Western states like Washington, Oregon, and California have developed air quality and outdoor activities guidance for schools and athletic organizations.

In summary, states have implemented various approaches and — in some cases — coordinated efforts to communicate health risks from wildfire smoke, focusing on timely, accurate outreach with an emphasis on targeting at-risk populations. These strategies include interagency collaboration, tailored messaging for specific populations, multilingual resources, and diverse communication platforms such as social media and local alerts.

Guidance Resources

Several states have developed tools that serve as models for other agencies. Oregon, California, and Washington offer widely referenced outdoor activity guidance through resources like:

- [Washington State Department of Health's Children and Youth Activities Guide for Air Quality.](#)
- [Oregon Health Authority's Air Quality and Outdoor Activities Guidance for Infants, Children, and Youth.](#)
- [CARB's Smoke Ready website.](#)
- [California Department of Public Health's Wildfire Smoke: Considerations for California's Public Health Officials document.](#)
- [Washington Department of Ecology and Department of Health's Wildfire Smoke: Guidance for Canceling Outdoor Activities and Closing Schools.](#)

CARB has developed extensive [materials](#) on wildfire smoke's health impacts, air cleaner selection, and links to resources from EPA and the [California Department of Public Health](#) (CDPH). In response to the Canadian wildfires, the New York Division of Homeland Security and Emergency Services has expanded its air quality resources to improve accessibility and refine [messaging around air quality forecasting](#) prior to wildfire events. Similarly, Connecticut launched its "Reach for the Sky" program, which now includes more comprehensive air quality guidance.

The Montana DPHHS [Smoke from Fires](#) website houses Wildfire Smoke Response toolkits for health care and emergency personnel, schools, and preschools and daycares. These toolkits have press releases, email templates, outdoor activity guidelines, information about the harmful impacts of wildfire smoke on the public and at-risk populations, and social media templates available for rebranding and reposting. Additionally, a [Clean Air Center Resource Guide](#) details how communities can establish clean air centers. In developing messaging strategies and guidance resources, Montana DPHHS referenced guidance documents from EPA, California, and Washington, alongside peer-reviewed research from state universities and local tribes and communities.

While states were split about whether they think wildfire smoke information is readily accessible, they suggested that most people in their jurisdictions look to state health department webpages to find information during wildfire smoke events. States are also leveraging social media to enhance public outreach. For example, Utah Department of Health and Human Services created a [social media toolkit](#) on air quality and wildfire smoke in order to distribute content through Instagram and Facebook to support local health departments. North Dakota Department of Emergency Services developed a [joint information system](#) to coordinate efforts with state agencies and the National Weather Service. As part of this initiative, they are preparing smoke alert news release templates and increasing engagement with local media outlets such as radio and television to reach older adults who may not use social media.

CDPH is working to strengthen cross-agency collaboration and expand public guidance by providing nuanced recommendations for wearing high-efficiency respirators (such as N95 or P100 respirators), maximizing indoor air quality, and dealing with wildfire ash. Additionally, CDPH is working to improve accessibility for populations without internet access by exploring options like text message alerts.

In summary, states have developed a variety of tools and resources to guide public health response to wildfire smoke, many of which serve as models for other states. These resources include outdoor activity guidelines, health impact toolkits, social media templates, and clean air center resources. Agencies are increasingly focusing on accessibility, cross-agency collaboration, and reaching diverse populations through social media and traditional media outlets.

Challenges and Considerations

One significant challenge for some jurisdictions is the lack of environmental health tracking to assess wildfire smoke-related health impacts. For example, North Dakota recognizes the need for tracking to better assess public health risks, but the state does not currently require hospitals to report visits linked to wildfire smoke exposure. Environmental health tracking would allow state agencies to identify and target at-risk populations through risk communication and prevention efforts. In Montana, the biggest challenge is the lack of awareness surrounding the health impacts of wildfire smoke and the risks from particulates in indoor air as well as outdoor air. In order to provide education to school athletics, the Montana High School Association works closely with Montana Department of Environmental Quality in scheduling outdoor events around wildfire smoke whenever possible. EPA's outdoor activity guidelines have been adapted in Montana and have proven sufficient when continuously used.

Additionally, many communities struggle with sorting through the vast amount of information that can be found online. State agencies work to ensure that critical information reaches these communities through channels beyond online platforms, such as text alerts, local media, and news releases.

Agencies also face difficult questions from the public that they may not always be able to answer, such as determining a safe distance from wildfire ash. Regional factors may also impact the effectiveness of risk communication, and it can be helpful to tailor messaging to outdoor activities that are common in certain communities, such as hunting and harvesting crops.

In summary, some states lack environmental health tracking to assess wildfire smoke-related health impacts, limiting the ability to identify and protect at-risk populations. Other challenges include low public awareness of indoor air risks, difficulty navigating overwhelming online information, and the need to tailor messaging to regional activities and concerns. Some states are addressing these gaps by using alternative communication methods and adapting outdoor activity guidance to local contexts.

Future Needs

Participants voiced a need to develop enhanced resources to support decision-making on canceling or rescheduling outdoor activities. Many agencies are in need of standardized guidance resources that can be adapted for use by state and local jurisdictions during wildfire smoke events.

States are also interested in expanding risk communication efforts, particularly to reach individuals without internet access. Expanding messaging through text alerts, radio broadcasts, and community networks will be essential for populations to receive timely and actionable information. Additionally, stronger coordination between state agencies, local health departments, and media outlets is needed to improve information dissemination and ensure consistent messaging across jurisdictions.

Another priority is creating standardized public health guidance tailored to different levels of air quality. This would provide clearer recommendations for protective actions — such as wearing a respirator during outdoor activities or cancelling activities altogether — in order to help communities and decision-makers respond effectively.

Many agencies emphasize the importance of integrating wildfire smoke and air quality education into school curricula. By enhancing air quality literacy from an early age, future generations will be better equipped to understand and respond to wildfire smoke risks.

In summary, states highlighted the need for enhanced and standardized resources to guide decisions about outdoor activity cancellations during wildfire smoke events. Priorities include expanding risk communication to reach those without internet access, improving coordination among agencies and media, and developing clear public health guidance based on air quality levels. Finally, integrating air quality education into school curricula is seen as a key step toward building long-term public awareness and preparedness.



Appendix 1: Polling Questions

1. How does your agency inform the public on the health risks of smoke exposure and actions they can take to protect themselves?
2. Where do people in your jurisdiction go for information during wildland fire smoke events?
3. Do you feel it's easy for people in your jurisdiction to find information/resources on wildland fire smoke?
4. What would improve your risk communication efforts around wildland fire smoke?

Appendix 2: Discussion Questions

1. Does your agency have risk communication resources on wildland fire (i.e., wildfire and prescribed fire) smoke?
2. For those agencies that have not often experienced wildfire smoke, did you know where to go for resources around risk communication and public health action during smoke events (e.g., Canadian wildfire smoke episodes)?
3. What messaging strategies have been successful for alerting the public about the health risk of wildland fire smoke in your state?
4. Do you target any at-risk populations in these resources or try to engage with at-risk populations through targeted communication?
5. How have you disseminated materials to the public that communicate the health risks of smoke exposure and actions to reduce smoke exposure and protect health?
6. Have you received questions from the public you didn't know how to answer? What were they?
7. What other needs do you have that would enhance your ability to communicate risks and corresponding public health actions during smoke episodes?

Appendix 3: Participating Jurisdictions

California	Idaho	Mississippi	Utah
Connecticut	Massachusetts	New York	Washington
District of Columbia	Maryland	Ohio	Wyoming
	Michigan	Pennsylvania	