American Lung Association.

Wildfire Smoke & Public Health

Public Policy Strategies to Reduce Exposure and Strengthen Resilience

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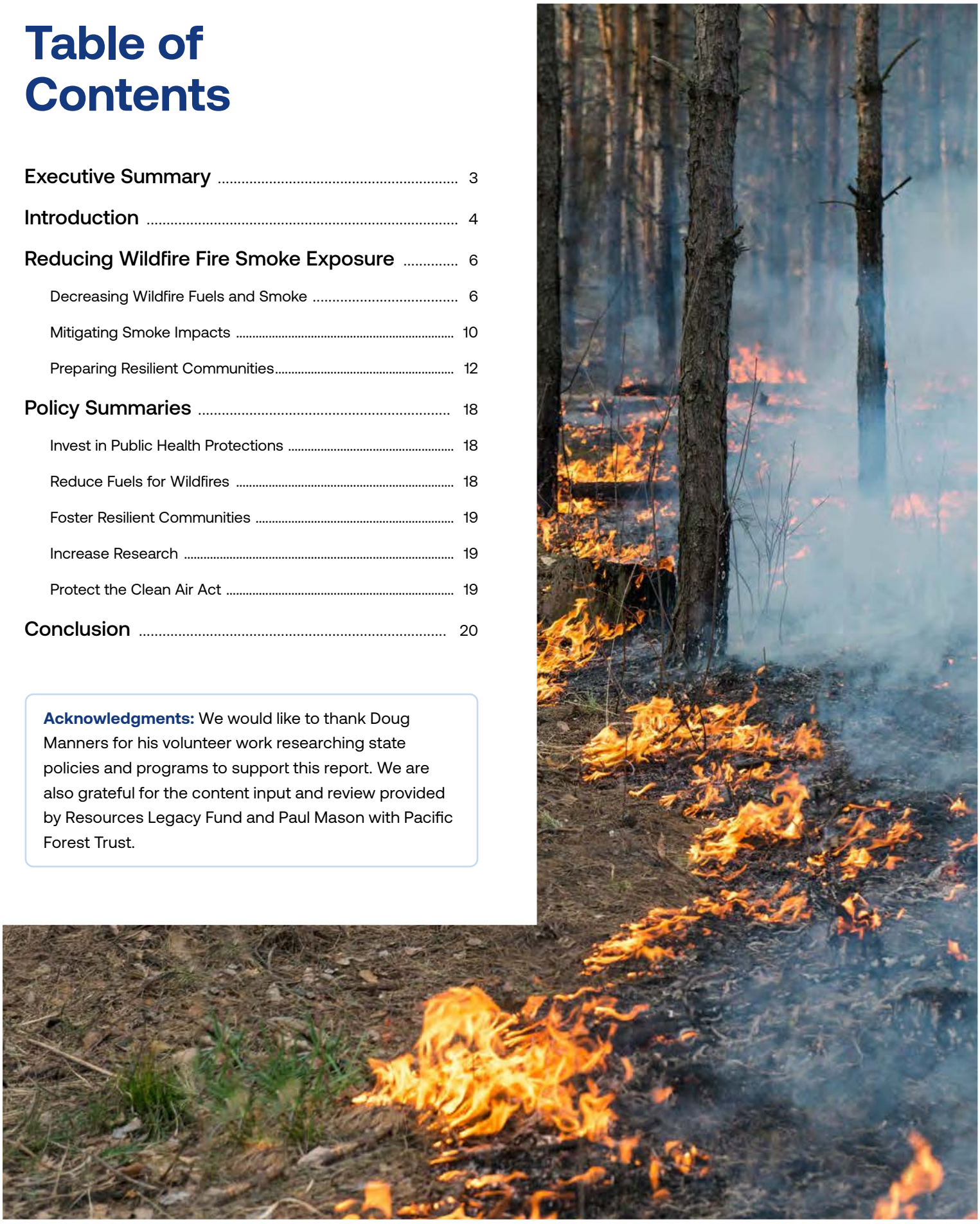


Executive Summary

Uncontrolled wildland fires can produce life-threatening levels of air pollution with their smoke. While low-intensity fires serve important ecological and cultural roles and have shaped the nation's natural lands and systems, the U.S. government's approach to fire suppression in recent decades inadvertently created wildland areas primed with dangerous amounts of fuel waiting for a spark.

Symptoms of human-caused climate change, such as droughts and heatwaves, make conditions on the ground even more likely to produce catastrophic wildland fires. Several prominent episodes in recent years have transported smoke from large fires hundreds or thousands of miles across the country, exposing millions of people in the United State to dangerous air pollution levels near and far from the original fires, demonstrating how wildland fires can impact health both locally and nationally.

This briefing paper has been created for advocates, public health professionals and organizations, policymakers at every level and everyone else who is interested in learning more about policy approaches decision makers can take to protect health against wildland fire smoke. This document includes a high-level overview of some of the public policy-focused approaches available for proactively reducing the severity of future fires and ensuring communities are better prepared for days when smoke is polluting the air. In addition, it includes a summary of those policies currently recommended by the Lung Association.

Several approaches and solutions are noted where health should be incorporated with fire responses, land management and community preparedness. Throughout this briefing paper, solutions deployed in California, Colorado, Montana and Washington are provided to showcase examples of the concepts in action.

> **"Several prominent episodes in recent years have transported smoke from large fires hundreds or thousands of miles across the country — demonstrating how wildland fires can impact health both locally and nationally."**

Overall, the approaches to reducing exposure to wildland fire smoke are grouped into three sections:

- Restoring the roles of low-intensity fires to better control when and where smoke occurs and to reduce hazardous fuels that can feed catastrophic fires;
- Mitigating exposure to smoke when it is present; and
- Preparing more resilient communities.

To protect human health and restore more fire resilient landscapes, efforts are needed at local, state, and federal levels to better respond before, during and after wildland fires occur.

Introduction

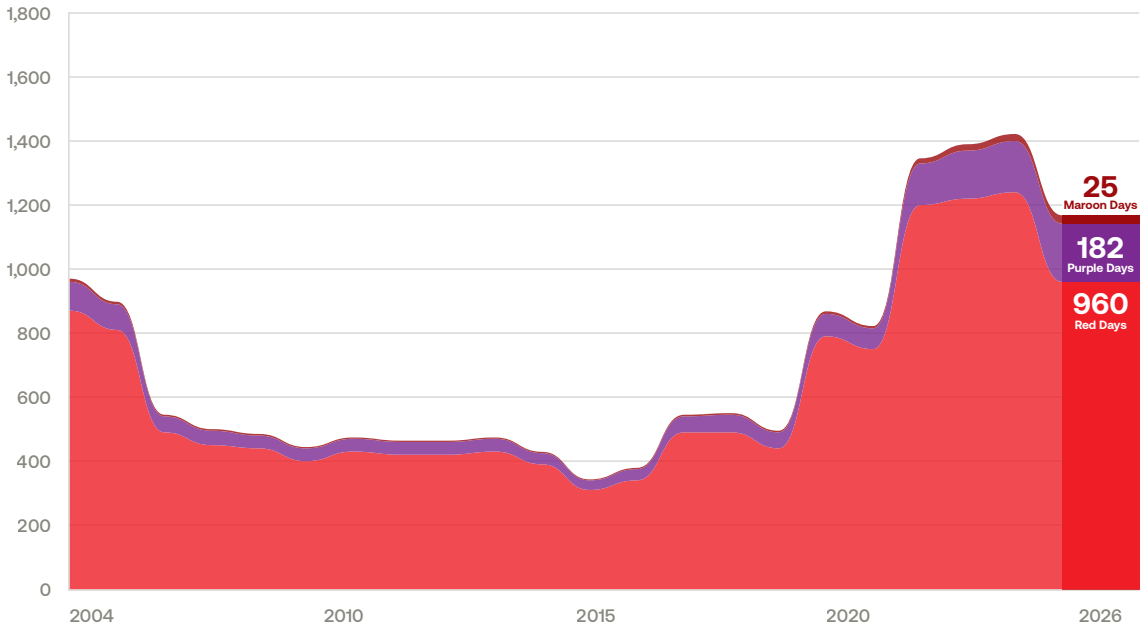
Exposure to smoke from wildland fire is an increasingly urgent public health concern in the United States. In recent years, longer fire seasons, more frequent extreme heat events, and expanding development in fire-prone areas have contributed to increased human health interaction with larger and more destructive wildfires. As a result, more communities are experiencing repeated and prolonged exposure to wildland fire smoke, sometimes hundreds or even thousands of miles away from the fire itself. These smoke events can severely degrade air quality and pose significant risks to health and overall wellbeing.

Unhealthy Particle Pollution Days

"State of the Air" Report: Showing Exceedances of Air Quality Standards at Monitoring Stations

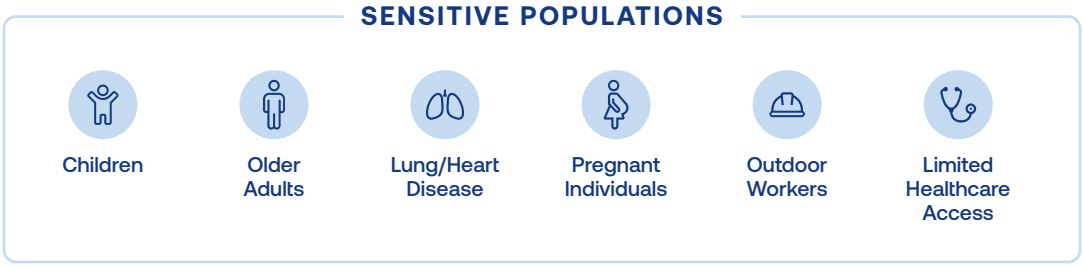
Health Level Identifier

- **Hazardous** (Maroon Days)
- **Very Unhealthy** (Purple Days)
- **Unhealthy** (Red Days)



Wildland fire smoke contains a complex mix of pollutants, including fine particulate matter (PM2.5) ozone, and other harmful gases. This can be further exacerbated with fires in the wildland-urban interface that are more likely to burn homes, vehicles and other structures,

which contain plastics, chemicals and other potential toxins. Exposure to these pollutants can irritate airways, worsen asthma and COPD, trigger heart attacks and strokes, increase the risk of respiratory infections and, in severe cases, cause premature death. Short-term exposure can cause coughing, wheezing, shortness of breath, and eye irritation, while repeated or long-term exposure may contribute to chronic respiratory and cardiovascular disease, among other health harms. Sensitive populations, including children, older adults, people with lung or heart disease, pregnant people, outdoor workers and communities with limited access to healthcare or clean indoor air, face especially high risks.



Low-intensity fire is a natural and required part of many ecosystems across the country. Because wildfire smoke will never be fully eliminated, a comprehensive public health approach is needed to reduce exposure and protect communities; this includes actions to manage wildfire fuels and fire behavior, limit harmful smoke when fires occur, and strengthen community preparedness and resilience. The following sections outline strategies to reduce wildland fire before it occurs, protect against exposure to smoke while it happens, and develop policies that protect health both now and for decades to come.

Reducing Wildland Fire Smoke Exposure

Within This Section

Decreasing Wildfire Fuels and Smoke

Many of the nation's forests and other natural ecosystems developed while experiencing periodic, lower-intensity fires. These fires have been generated from both natural ignitions like lightning and from Indigenous cultural burning practices. The ecosystems adapted with the recurrence of fires, which shaped the health of the natural landscape and ensured combustible materials were regularly reduced. However, for much of the last century in the U.S., the approach was to suppress all fires quickly, which had unintended consequences. Without regular cycles of burning, this approach inadvertently allowed these natural fire-adapted ecosystems to over-accumulate highly combustible fuels that can lead to larger, harder-to-control wildfires.

As demonstrated in a 2022 research report for the Lung Association, rather than reducing air quality impacts, this approach to fire suppression ultimately postpones when areas burn and can lead to more intense fires that release greater amounts of air pollutants than would have been released by several smaller fires. Simultaneously, human-caused climate change results in severe droughts, intense heatwaves and other consequences that can further compound the risks and frequency of disastrous wildfires.

Prescribed fire is the careful burning of vulnerable areas under safe, controlled conditions to prevent dangerous buildup of fuels that could escalate a smaller wildland fire into a catastrophic one. Prescribed fire can reduce the frequency and severity of wildfires and lower harmful air quality and health impacts when wildland fires do occur. For this to occur, fire must be implemented under the right conditions, including favorable meteorological conditions and wind patterns that allow smoke to move away from sensitive areas (e.g., populated areas, hospitals, schools).

In addition to prescribed fires, there is the potential for reducing hazardous fuel loads by managing some naturally ignited wildland fires after they start. Being prepared for the possibility of managing a fire includes identifying the appropriate conditions, times and places where natural fire events may be allowed to safely continue burning. Careful mapping and pre-planning are crucial to ensuring these outcomes are achieved.

Prescribed fires should only be implemented in appropriate ecosystems under planned, predictable circumstances to limit harmful smoke exposure. For the American Lung Association, this approach does not refer to forest thinning, the use of thinned biomass for energy production, and other forms of intentional fire used for purposes other than fire management (e.g., agricultural burning). Again, careful planning and collaboration among experts at fire response, land management, health and air quality agencies are key to successful outcomes.

Barriers to Prescribed Fires

The successful use of prescribed fires requires careful planning, coordination and resources. Prescribed burning is needed on both public and private lands, which adds complexity. To foster additional use of prescribed fires and best protect public health, several barriers need to be addressed.

A. Capacity and funding for local and state agencies

Resources for prescribed burning programs can vary widely between states – for those that have programs at all – and may have limited engagement with public health agencies. It takes adequate staffing to properly review and monitor prescribed burn applications. Land management agencies need resources to plan and implement prescribed burns on their land. Adequate resources must be identified and maintained to ensure air quality agency expertise in forecasting favorable or unfavorable weather conditions for locations where burns are planned.

In addition to adequate staffing, the development of proactive prescribed burning programs requires resources to set safety criteria, develop data-driven goals, foster collaboration between key stakeholders, train people to perform burns and other needs.

Spotlight

In 2021, the Washington State Legislature passed the Wildfire Response, Forest Restoration, and Community Resilience Account. **This law created an eight-year, $500 million plan to invest in prescribed fire, forest health, and community wildfire risk reductions.** To date, funding has been used for hosting training events, procuring equipment, planning and implementing prescribed burns, and formally forming locally led collaborations known as Prescribed Burn Associations (PBAs). However, its ongoing success is dependent on the legislature appropriating the $125 million each biennium to fully implement the law.

Training for state air agencies may also help address questions on the potential impacts of prescribed burn smoke and compliance with the federal Clean Air Act. The “exceptional events” process creates a pathway for local regulators to use if a prescribed fire may cause an exceedance of a national air quality standard. This is a process already in place and needs no changes to federal laws. Ensuring state staff are familiar with the process as it relates to prescribed burning may help alleviate potential concerns that fuel reduction efforts could impact compliance with federal air quality standards.

B. Coordination across federal, state and local agencies

Federal agencies responsible for wildland firefighting have included the U.S. Forest Service, within the U.S. Department of Agriculture, and several agencies within the U.S. Department of Interior, such as Bureau of Indian Affairs, Bureau of Land Management and National Park Service. In January 2026, the Interior Department created the U.S. Wildland Fire Service to consolidate wildland fire management within the department. To protect public health, health agencies and organizations need to be engaged in each step of the process for developing or expanding prescribed burning programs and implementing planned burns. This cross collaboration will help ensure that approaches for reducing exposure to smoke are incorporated at every opportunity. Federal land management agencies need to be working with agencies that can provide guidance on protecting health, such as the U.S. Environmental Protection Agency, Centers for Disease Control and Prevention, Indian Health Services and National Institutes of Health. Similarly, on a state and local level, land management and emergency fire response departments need to be in close coordination with state, county and Tribal health departments. To accomplish this, resources are needed to expand the capacity of health agencies, including both funding and training.

The collaboration between land managers implementing prescribed burns and health agencies needs to include communication efforts to reach people and businesses in areas potentially impacted by smoke from fires. Communities that may see elevated levels of smoke need to be made aware that a burn is planned for the area and how to best prepare. Hospitals, health agencies and health professionals also need to be notified and prepared for potentially responding to smoke exposure.

Air quality management agencies can also provide guidance on when weather conditions may be favorable or unfavorable for safely executing prescribed burns. For example, the California Air Resources Board provides smoke forecasting and monitoring to identify days burning can be permitted or avoided, with the local air district providing final approval on the day of the burn. A burn manager can begin requesting forecast data starting four days prior to a planned burn and work with the local air district up to the day of ignition.

C. Pre-fire planning

To successfully plan and safely implement a single prescribed burn requires many elements to be addressed. Burn plans need to be developed that take into account factors such as the condition of the fuels, site terrain, weather, staff and equipment needs, contingency plans and more. Burn manager certification or training programs can provide a foundation of knowledge to support fire planning. Some areas also have Prescribed Burn Associations to offer additional support for planning, which can include providing guidance, training or other resources.

Spotlight

In addition to permits for a prescribed burn, California also requires the approval of a smoke management plan. This plan factors in fuel types and conditions, meteorological information, the burn plan, nearby communities, potential alternatives to burning and other factors. The smoke management plan for each burn must be approved by the local air district as part of the authorization process.

D. Liability concerns

Though it is uncommon for a well-planned prescribed fire to become out of control, concerns over liability for accidental damage can limit the use of this tool. To address that, some communities and states have worked to provide liability protection and/or establish liability funds that can cover potential damage. This often includes a certification process to ensure that people leading a prescribed burn (sometimes referred to as a "burn boss") are well qualified and prepared to maximize safety and minimize the chance of planned fires getting out of control.

"Though it is uncommon for a well-planned prescribed fire to become out of control, concerns over liability for accidental damage can limit the use of this tool."

For example, a 2025 law in Montana (Chapter #635) established a prescribed fire manager certification program. A participant receives training that includes topics such as safety planning, weather, fire behavior, smoke management, prescribed fire planning requirements and permitting and public notifications. The legislation limits a certified prescribed fire manager's liability for injuries or property damage, except when it can be demonstrated that the manager failed to properly carry out their responsibilities.

To address the challenge of obtaining affordable private insurance for prescribed burning, in 2022 California lawmakers established a $20 million pilot Prescribed Fire Liability Claims Fund. To qualify, an applicant needs to enroll, receive pre-approval of their plan, and have the fire conducted or supervised by a certified burn boss or qualified Cultural Fire Practitioner for Cultural Burns involving Native American tribes, organizations, or members. The fund provides up to $2 million in coverage for an approved prescribed fire or Cultural Burn.

Guidance on Managing Wildfires

The use of prescribed fire alone may not be enough to address the full scale of need for reducing fuels in areas at high risk for wildfires. Managing naturally occurring wildfires under the right conditions and in the right places can enable more acres of wildlands to be treated while preventing or limiting large, uncontrolled wildfires in the future. As with prescribed fires, it is critical that this be done in such a way as to limit harmful smoke exposure and ensure public safety. For this to be safe and effective, fire response agencies need to be well prepared and have access to all necessary information and resources for determining when it is appropriate to manage a specific fire for fuel reduction purposes.

To safely determine when a naturally occurring fire should be allowed to burn in a managed way requires strong coordination at federal, state, and local levels between public health, emergency and land management agencies. Landscape planning is needed to predetermine areas that meet criteria that may allow for a managed wildfire. In addition, a final decision for each fire needs to be based on current and forecast conditions that can influence the behavior of the fire. For example, prior to the start of a fire, management plans should build or compile datasets to identify areas that may be lower risk for letting burns continue, based on factors such as potential fire breaks, distance between homes or other structures, and other considerations. During a fire event, additional factors need to be considered in the moment, such as forecasted weather that could influence fire intensity and smoke dispersion. Thorough planning is required to ensure decision makers will have the plan, process and information they need in critical moments to determine which wildfires to extinguish immediately and which may be managed to continue burning in a safe manner.

Mitigating Smoke Impacts

Wildland fire activity is predicted to increase in the decades ahead and smoke will continue to threaten health. Local communities and health leaders need support to prepare for the ongoing threat of large wildfires and smoke episodes and to be better prepared for protecting area residents and workers, as well as treating firefighters and others exposed to smoke. Support for these efforts should include federal and state agencies providing assistance such as information and resources that can build local capacity and improve the efficiency and effectiveness of preparations and responses.

Funding for Reducing Exposure

During wildland fire smoke events, people need access to clean air. It is vital to ensure indoor air quality is healthy. Protection is also needed while outdoors. Policymakers and community leaders can prepare for poor air quality days by ensuring that everyone has access to resources that reduce exposure to air pollution, regardless of their economic situation, work or housing conditions. Examples of this include:

- Local agencies providing air filters and air cleaners for use by those in need at home and for public buildings;
- Businesses or organizations supplying protective masks for use outdoors, including businesses providing protective equipment to outdoor workers as part of a comprehensive and enforceable policy approach for safeguarding workers; and
- Local agencies designating community clean air centers that are accessible to the public during bad air quality days, similar to designating cooling centers during extreme heat events.

Distribution efforts can include utilizing existing programs that already engage with people who are more vulnerable to the impacts of smoke, such as asthma control programs.

Spotlight

In 2019 California lawmakers created a $5 million pilot program to upgrade ventilation systems and provide portable air cleaners for places residents could turn to when displaced by wildfires or smoke (Assembly Bill 836, 2019). Today a wide network of libraries, community centers, and other temporary or permanent clean air centers are available.

Educational Campaigns

Preparation is key to protecting people against the harms of smoke exposure. Local and state public health officials can be trusted voices and are experienced with sharing information in their community. Educational efforts are necessary to make people aware of the tools and resources offered by national, state, and local agencies and organizations. These efforts should help people better understand the risks from smoke, how to plan and prepare prior to the arrival of smoke and what steps should be taken during and after periods of high air pollution to mitigate its impacts.

Spotlight

Smoke Ready Gorge is one example of building educational campaigns with impacted community members. **Working on both sides of the Columbia River, the effort deployed a network of local air monitoring stations to provide information, including the placement of both indoor and outdoor air monitors at some K-12 schools.**

Project leaders used a regional survey, listening sessions, stakeholder meetings and other methods to engage community members and inform the development of their educational efforts. They then used a variety of methods to shape communications pathways and promote resources that reflected community input.

Air Quality Alerts

Air monitoring agencies are experienced with communicating information about current and forecasted air quality conditions. Resources are necessary for these agencies to effectively communicate with the public before and during fires to ensure people are well prepared for smoke events and how to best protect themselves during times of high pollution levels.

Because pollution levels due to wildland fire smoke may vary widely across small areas, this can make it more challenging to inform people when their health is at risk. This underscores the importance of land managers, emergency response agencies, and public health officials working closely together. Local and state agencies have been working to identify effective and innovative ways to reach community members that may be impacted by smoke from wildfires or prescribed burning. In some communities, residents and air agencies have coordinated on local-level monitoring and data sharing to better inform smoke response (see monitoring section, below for more information).

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Blogs dedicated to providing updated information on wildland fire smoke is one method that several states are utilizing. Examples of this include California (CaliforniaSmokeInfo.blogspot.com) and Colorado (ColoSmokeOutlook.blogspot.com). In Washington, the state operates both a smoke blog and their Burn Portal. The Burn Portal centralizes information on prescribed burns, smoke, and other related topics, and allows people to register to receive email or text notifications when burns are planned within a specific distance of a submitted location.

Addressing Risks to Sensitive Populations

Exposure to wildland fire smoke is harmful to everyone. This harm can be particularly severe for people who may be more susceptible to its impacts. This heightened vulnerability includes people who work outdoors; are under age 18 or over age 65; are pregnant; or have asthma, COPD or other lung diseases, chronic heart disease or diabetes. A lack of access to healthcare can be an additional risk factor or exacerbate other vulnerabilities. Sensitive populations need to discuss exposure to wildfire smoke with their healthcare provider and come up with an individualized plan of action, including when to seek emergency care.

The added risks for these community members should be a focus throughout the development of programs to plan for and respond to wildland fires and smoke. It is also important that these community members are well informed about these risks and how to best plan for periods of smoke. Educational efforts should help people create plans and prepare before smoke events occur, make informed choices on what to do while pollution levels are high, and how to protect themselves during cleanup afterward. Examples of this type of planning are available at Lung.org/wildfire.

Spotlight

Partnering with organizations that already have established relationships with vulnerable populations can be an efficient way of providing support. For example, earlier this decade in California, the Bay Area Air Quality Management District worked with Regional Asthma Management & Prevention to identify seven community organizations to provide education and distribute air cleaners. This initiative complemented the existing work of the community organizations providing home-based outreach and reducing asthma triggers.

Preparing Resilient Communities

Work to protect community members from wildland fire smoke begins long before the polluted air rolls in. The buildings and communities where people live affect how they may cope with fires and be exposed to smoke, and should be designed with that in mind. Governments, schools, employers and hospitals need to have response plans ready to deploy. Communities must prepare now for the next time smoke fills the sky and the years of wildland fires to come.

Housing Codes and Indoor Air Quality

Wildland fires are not isolated to remote, undeveloped areas. In recent years, some of the most devastating fires have occurred in the wildland-urban interface (WUI) where wildfires destroyed homes and entire neighborhoods burned down. Many people have an affinity for living close to nature, but development in formerly wild areas increases the likelihood that wildfires will spread to homes and the risk of human-caused ignitions.

To address this, some communities have begun to require actions designed to limit the spread of fire around homes. This may include minimum requirements of defensible space with limited vegetation around a home and/or the use of certain building materials and

designs that decrease the susceptibility of a structure to igniting when embers are raining down from a nearby fire. As more and more homes are built in the WUI and climate change exacerbates the conditions that fuel large fires, decision-makers need to respond with more protective policies. More broadly, decision-makers can consider high-efficiency filtration standards for new construction building codes.

Spotlight

In 2023, state lawmakers required the development of the Colorado Wildfire Resiliency Code. The building codes apply to new construction and major home renovations in designated areas of wildland-urban interface. The codes set various standards for structure hardening and defensible space. These are designed both to prevent the intrusion of wildfire into homes and to prevent structure fires from spurring wildfires.

Houses, apartments, and other dwellings that are drafty or cannot be adequately closed to prevent smokey outside air from infiltrating living and work spaces will likely experience unhealthy levels of indoor air quality during times of high pollution levels outside. Similarly, people who rely on window fans or portable AC units and cannot afford other methods of cooling are at risk of concentrating high levels of pollution inside their home.

Programs designed for weatherization and energy efficiency efforts may aid in sealing up leaky doors and windows, installing more efficient heating and cooling equipment, or addressing other structural issues. In addition, asthma control or similar intervention programs may be able to provide HEPA air cleaners or MERV 13 air filters to reduce smoke indoors. It is important that home programs be well funded, made available to both owners and renters, and prioritize limited-income households and others who would benefit most from assistance.

While these types of programs may not be designed with the intent of preventing wildland fire smoke infiltration, creating more efficient and comfortable homes has the co-benefit of helping protect against outdoor air pollution challenges posed by increasing fire conditions. Similarly, programs for heating and cooling equipment and energy efficiency at schools or workplaces can also improve or protect indoor air quality. For all programs involving air filtration, it is important to ensure the use of high efficiency filters designed to reduce smoke and other fine particulate pollutants.

Planning

In addition to having emergency response plans to implement during wildfires, additional types of planning will help reduce risks of wildfire and predetermine the best ways to take action to protect health during times when smoke is elevating pollution levels.

A. Community Wildfire Protection Plans

Developing a Community Wildfire Protection Plan (CWPP) is designed to be a locally led collaboration of community representatives and stakeholders. Plans are developed to identify and prioritize potential areas at risk from fire and sources of hazardous fuels that should be

reduced. Participants determine the exact focus and scope of their local plan. Components of plans can include wildfire response, reducing fuels, community preparedness and protecting structures. Plans are intended to be created with the involvement of an array of community stakeholders, including local and federal agencies, tribal representatives, land managers, schools, fire departments and other emergency response managers. Air quality agencies and health departments should also be included at this planning stage.

Spotlight

To see examples, the Montana Department of National Resources & Conservation posts CWPPs from around the state on their website. The agency also has grant funding to support communities developing or updating local plans.

As an example, Multnomah County, Oregon included several health and safety representatives on the subcommittee developing a smoke chapter for their CWPP. A guide for creating a CWPP is available from the U.S. Fire Administration, which is available in English and Spanish.

B. Resources and training for care providers

Local public health officials, air agencies, health care providers and others striving to protect people impacted by wildland fire smoke need training and access to resources that support their work. Some of this can be common resources shared nationally, other pieces should be reflective of unique local needs and resources. For example:

- The California Department of Public Health has a wildfire health plan initiative. As part of this, they developed a five-part smoke education toolkit to provide training for community health and other outreach workers. Each module is available in both English and Spanish. California also developed an air quality guidance for schools to determine appropriate school activity levels during periods of smoky air.
- The Montana Department of Health and Human Services has also created a series of resources related to wildfire smoke response. These include a general response toolkit and guide for Clean Air Centers, as well as targeted toolkits for schools, preschools and daycares.

C. Wildfire Smoke Preparedness Plans

To better prepare for days with elevated levels of wildland fire smoke, some state and local leaders have been developing smoke preparedness plans. For example, in Colorado state health officials used funding from U.S. EPA to develop a set of resources to assist communities with outreach, education, and training. The intent is for these resources to support schools and communities in developing their own wildfire smoke preparedness plans and creating Clean Air Centers. The overall intent of the federal grant program has been to support communities impacted by wildfire smoke to plan and prepare for future fires, including determining how public buildings can provide potential safe spaces.

Worker Health and Safety

When air pollution levels from wildfire smoke rise, the best health advice is to stay indoors and take steps to ensure the indoor air is clean. For people who work outdoors, they may

face a difficult choice between protecting their health and losing their income. Farmworkers, for example, are often paid by the number of items they harvest, so less time in the field means less pay. Other industries often outdoors include construction, landscaping, public safety and delivery drivers. Many jobs outdoors are also low-wage, which can add compounding risk to workers' health if they have limited access to medical care and health insurance. Respirator masks like N95s can reduce exposure to smoke, but may also interfere with some types of work and do not provide protection in all situations.

Spotlight

Some states have taken steps toward protecting against smoke exposure with outdoor workers. Through the California Department of Industrial Relations, the state requires employers to take certain actions when workers will be outdoors for more than an hour and the air quality index (AQI) for fine particulate matter (PM2.5) exceeds 151 (the red range). Employers are required to monitor AQI levels, provide information and training to workers, and take steps to reduce exposure to wildfire smoke. Examples of actions that employers can take include:

Providing N95 Respirator Masks

Increasing Breaks

Shifting When, Where and/or at What Pace Work is Done

Providing a Space with Filtered Air

The California Department of Public Health has created a bilingual training designed to educate employers and employees about the requirements and to ensure workers know their rights and how to report violations. Efforts are ongoing to improve health protections for outdoor workers and address employer compliance with the law. Worker advocates note that an AQI threshold of 101 would be more appropriate and a need for earlier and recurring educational trainings.

Wildland firefighters do not have access to personal protective equipment the same way that structural firefighters do with masks and oxygen tanks. Wildfires are often in remote locations that fire crews need to carry equipment into, and efforts to fight a fire may last weeks. Wildland firefighters also need to ensure that any masks used would not limit their access to air during extended strenuous activities or impede their ability to fully function and respond in life-threatening situations. Solutions for this are quickly needed. Collaboration is needed across federal agencies, in partnership with a wide variety of stakeholders, to reduce the personal health impacts wildland firefighters are experiencing while protecting communities.

"Solutions for this are quickly needed. Collaboration is needed across federal agencies, in partnership with a wide variety of stakeholders, to reduce the personal health impacts wildland firefighters are experiencing while protecting communities."

State and federal agencies that work on occupational safety and health protections have key roles in helping protect outdoor workers, firefighters, prescribed burn managers, and others

whose work may expose them to wildfire smoke. The agencies should provide guidance on worker protections, ensure health and safety are represented in all policy development processes and help inform and disseminate best practices that will reduce smoke exposure or help protect worker health while on the job.

Research and Monitoring

Protecting people from the impacts of wildfire smoke needs to be informed by the best available science and information. To improve efforts to prevent and mitigate wildfire smoke, research efforts need to be continued and expanded across a variety of topic areas.

A. Long-term health effects of wildland fire smoke exposure

The health impacts of fire, in both the short- and long-term, are influenced by what the fire is burning (e.g. structures, vehicles, natural vegetation, etc.), length of exposure, and other factors. More information is needed to better understand the health consequences of both acute and chronic exposure. Firefighters, and those who live and work in fire-prone areas, may be breathing high levels of pollutants over multiple days and weeks in a year, potentially year after year, which can future expand the risks. Further research would help us better understand how these factors, along with compounding factors such as the combined impact of heat and access to healthcare and treatment, impact people's health.

"Firefighters, and those who live and work in fire-prone areas, **may be breathing high levels of pollutants over multiple days and weeks in a year, potentially year after year, which can further expand the risks.**"

B. Occupational health impacts on wildland firefighters and outdoor workers

More research is needed to address and improve the physical, mental, and emotional impacts to firefighter health and safety before, during and following firefighting activities. This includes more examination of how these areas of health may differ for firefighters between structural, wildland, and combined types of fire at the wildland-urban interface.

Additional human health risk assessments are also needed for workers exposed to wildland fire smoke. For firefighters, this information should help inform the creation or improvement of best management practices meant to mitigate the impacts of exposures that occur with fire responses, including cumulative, high-intensity and long-duration exposures. Outdoor workers can also be exposed to high levels of pollutants for long periods of time. This exposure can cause both short-term and long-term impacts. When applicable, both acute and cumulative exposure to smoke should be included in research and evaluations.

C. Improvements to federal and community air quality monitoring

The national network of air quality monitoring stations used for federal regulatory compliance is vital, but many areas of the country are far from the nearest monitoring station. This can create gaps in important information needed to protect people when smoke fills the air. In addition to expanding the number of regulatory monitoring stations, the use of lower cost, smaller air pollution monitors can empower communities to track pollution locally. These local monitors can assist with tracking pollution trends in the moment and help decision-makers and community members know when to take protective actions. Many parts of the community can contribute to the monitoring

and dissemination of air quality data. For example, Montana has worked with schools throughout the state as trusted partners to be locations where monitoring is occurring and providing air quality information and action steps with their communities.

Spotlight

In March 2026, the American Lung Association released a new report on community air monitoring, "Something in the Air: How Communities Are Tracking the Air They Breathe." **Community led efforts in Montana and Washington demonstrate the value of using local air monitoring to protect against wildfire smoke.** Details on these local projects and the full report are available at: Lung.org/something-in-the-air.

D. Effective health communications

Effectively communicating public health messages can be a challenge as traditional methods seem to reach fewer people and there is more competition for attention across a broad array of platforms. Research into effective approaches and interventions, particularly to reach the most vulnerable populations with culturally appropriate methods, would assist with ensuring people are well prepared for periods of elevated smoke levels.

Policy Summaries

Within This Section

The Lung Association supports and defends federal, state and local policies that protect lung health from the impacts of wildland fires. As discussed above, efforts are needed at all levels of government to respond before, during and after wildland fires to protect health.

Invest in Public Health Protections

Invest in public health protections, especially for at-risk populations, including:

- Access to health protective equipment, indoor air filtration and clean air spaces during smoke events.
- Increase monitoring of air quality through both the broader deployment of stationary equipment and monitors that are mobile or can be made available for local short-term needs.
- Public outreach and communications, including sending alerts and notifications during smoke events and educating communities and vulnerable populations on how to prepare before air pollution events occur.
- Emergency planning, including for high-risk individuals and ensuring their needs are addressed while planning for potential actions, such as public safety power shutoffs during extreme winds or other dangerous weather events.

Spotlight

Vulnerable Populations:
Breathing wildland fire smoke is unhealthy for everyone, but some are more vulnerable, including those with lung or heart disease, older adults, children, pregnant people and outdoor workers.

Reduce Fuels for Wildfires

Reduce fuels for wildfires, including through the use of prescribed fire under the right circumstances to protect public health.

- Expand implementation of prescribed fire under certain conditions where it is identified as a tool to reduce wildfire risk.

- Conduct prescribed fires only under planned, predictable conditions where additional measures can be taken to minimize harmful smoke exposures, in accordance with local and national rules, including the national air quality standards.
- Improve coordination between federal, state and local public health, emergency and land management agencies to implement additional measures to minimize the public health impacts associated with prescribed fires or managed wildfires allowed to continue burning.
- Prepare for the eventuality of wildland fires by predetermining where and when managing a wildfire may help reduce fuels safely. This requires careful mapping and pre-planning and strong collaboration between firefighters, land managers, health agencies and others.
- Invest in state and local capacity to understand the exceptional events pathway, in accordance with existing processes in the Clean Air Act.

Foster Resilient Communities

Foster resilient communities through design, planning and policy.

- Set national and state smoke standards to protect workers, including monitoring AQI, provision of personal protective equipment, and tailored guidance and training for workers.
- Seek opportunities to coordinate with indoor air quality and energy efficiency efforts to ensure community residents have access to healthy inside spaces.
- Utilize planning processes to identify potential fire risks in the community, prepare for the eventuality of smoke, and ensure health care providers have a prepared response plan and access to necessary training.

Increase Research and Monitoring

Increase research and monitoring of wildfire and prescribed fire smoke impacts, including:

- Long-term health impacts of both acute and cumulative exposure to wildland fire smoke.
- Health impacts of smoke exposure and fires on firefighters and outdoor workers. This should include efforts to address and improve the physical, mental, and emotional impacts to firefighter health and safety before, during and following firefighting activities.
- Improvements to federal and community air monitoring.
- Effective communications approaches for both preparing communities and reaching people during periods of elevated pollution levels, particularly vulnerable populations.

Protect the Clean Air Act

Protect the Clean Air Act against attempts to weaken current provisions and oppose all forms of preemption of local clean air and climate authority.

Conclusion

Low-intensity burns in wildlands can have important ecological and cultural value while reducing dangerous fuel loads. The use of prescribed and carefully managed fires can help decrease uncontrolled wildland fires and reduce overall smoke production and exposure. In addition, resources and approaches are available to better prepare for periods of smoke pollution and identify opportunities for expanding resilience to the impacts of wildland fires. Wildfire smoke will be an ongoing health factor in many areas, but working together, communities can take actions to reduce risks and protect health.

For more about wildfire health protections, visit Lung.org/wildfire.