



Maine Health Care Coalition: Downeast Chapter

Wildfires Guide





ACKNOWLEDGMENTS

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Special thanks to

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INTRODUCTION

A wildfire is an unplanned fire that burns out of control in a wilderness area, like a forest, grassland, or prairie. Wildfires spread quickly consuming everything in their path from trees, bushes, vegetation, homes, and other structures. [1]

Wildfires can start from natural causes, such as lightning, but they are often caused by humans, such as campers or hikers who did not put out their campfire properly. They can also impact natural resources, such as soil, animals, forests, destroy homes, and put people's lives in danger.

Wildfires can happen anywhere and anytime. The chance of wildfires happening is higher when there is little or no rainfall (drought). This makes bushes, grass and trees dry and easier to burn, adding high winds to that making wildfires spread. [2]

BACKGROUND

Maine, is the most forested state in the U.S., with an average of 650 wildfires burning about 550 acres annually, mostly caused by humans.

Around 79% of homes in Maine are located within the Wildland Urban Interface (WUI is the zone of transition between unoccupied land and human development), providing unique challenges for structural and wildland firefighters [3]. Homes and camps in the Unorganized Territory (UT) and other rural areas face additional challenges with longer response times and fewer nearby firefighting resources than in urban areas. [4]

Historically, forest fires have been considered one of the most significant hazards in the State. [5] The State of Maine in 1947, suffered its largest forest fire disaster in modern history. Maine experienced over 90 consecutive days of record breaking high temperatures and drought. By mid-October, many small wildfires started and spread out of control. Statewide, these fires burned over 220,000 acres, burned 1,000 homes, left 2,500 people homeless and 16 people dead. The damages totaled over 11 million dollars at that time. [6]

Wildfires Response

MAINE FOREST SERVICE

The Bureau of Forestry, Division of Forest Protection, in the Department of Conservation (also known as the Maine Forest Service) has the active role in education, prevention, detection, and response to and the suppression of forest fires in the State of Maine. [5]

The Maine Forest Service- Division of Forest Protection's mission is to protect Maine's forest resources and homes from wildfire, respond to disasters and emergencies, and to enhance the safe, sound, and responsible management of the forest [4]. In the last 75 years, firefighting equipment, communication, training and fire prevention efforts have improved considerably. [6]

The Maine Forest Service (MFS) has been working with local communities and homeowners to help reduce the risk of wildfire since the early 2000s. The MFS is the sole fire suppression agency in many parts of the UT. Maine Forest Rangers have conducted hundreds of wildfire risk assessments and have used this data to develop nearly eighty Community Wildfire Protection Plans (CWPPs). [4]



[Local Forest Ranger](#)

Wildfires in Maine

The State of Maine has 17.5 million acres of woodlands used mostly for the production of paper products and lumber. The risk of forest fires is altered by seasonal variations, rapidly draining soil types, and unusually dry periods, even though rainfall normally reduces the risk.

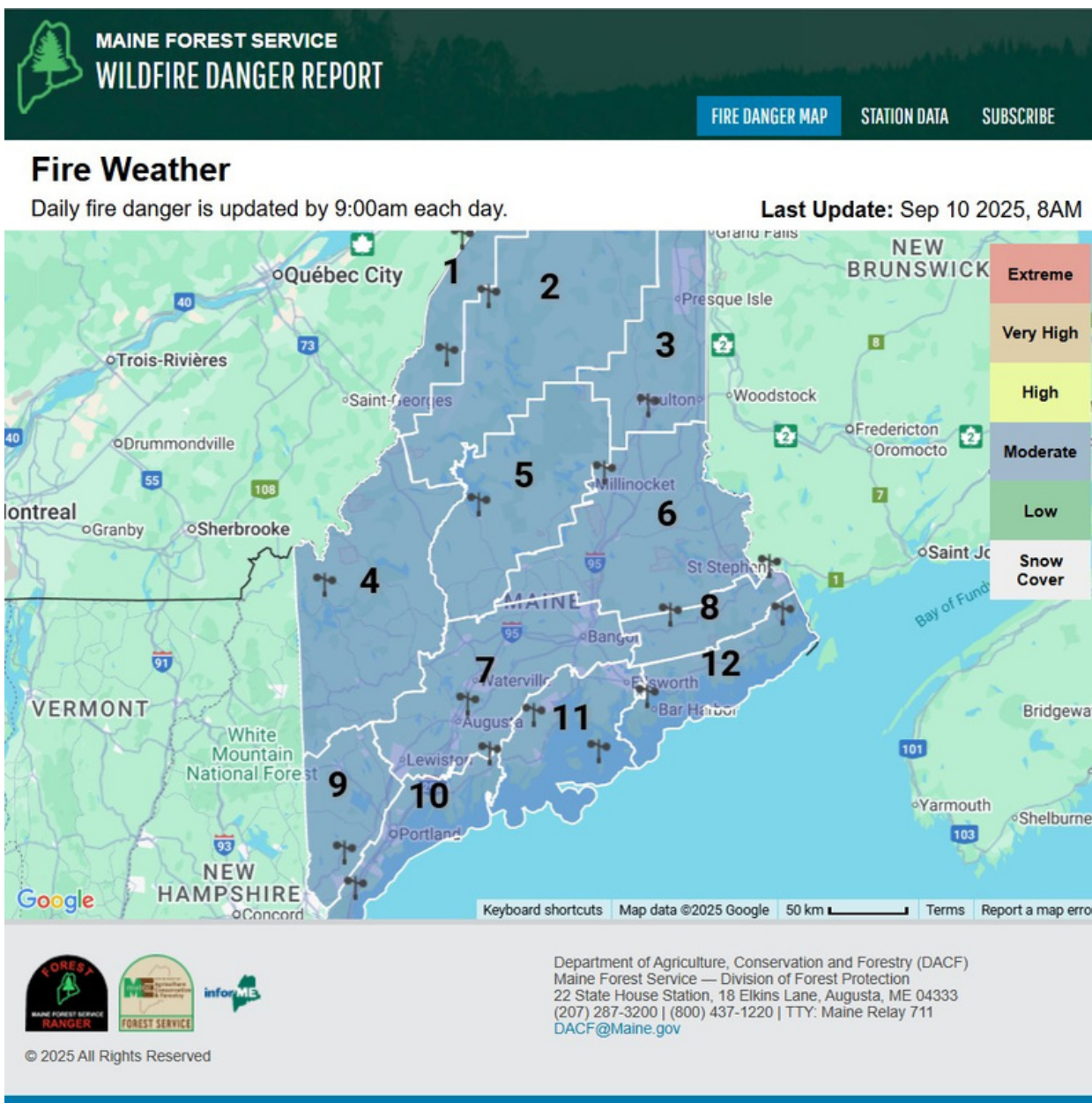
As the State's forest represent an enormous natural and economic resource, a major forest fire would have a long-term economical impact affecting industries, causing unemployment, serious erosion, loss of wildlife and agricultural land, and significantly impacting tourism.

Residential areas that border forest lands are at risk of fires if they cannot be controlled. Campers, vacationers, and backpackers in the woodlands are vulnerable as communications may not be possible and isolated access roads may be cut off. [5]

As 90% of all wildfires in Maine are caused by people, they are considered preventable, however only those caused by lightning cannot be prevented. Escaped debris burning continues to be the number one cause, with arson being second. Most wildfires in Maine are surface fires that creep along the ground, although torching of trees occurs occasionally, crown fires are rare. Maine's wildfire season usually begins in March in coastal and southern regions, gradually extending to central, western and northern areas. The wildfire season usually ends in late November. Majority of wildfires usually occur in April and May, when home owners are cleaning up from the winter months, and when the majority of vegetation is void of any moisture making them highly flammable. [7]



Wildfires Danger Report



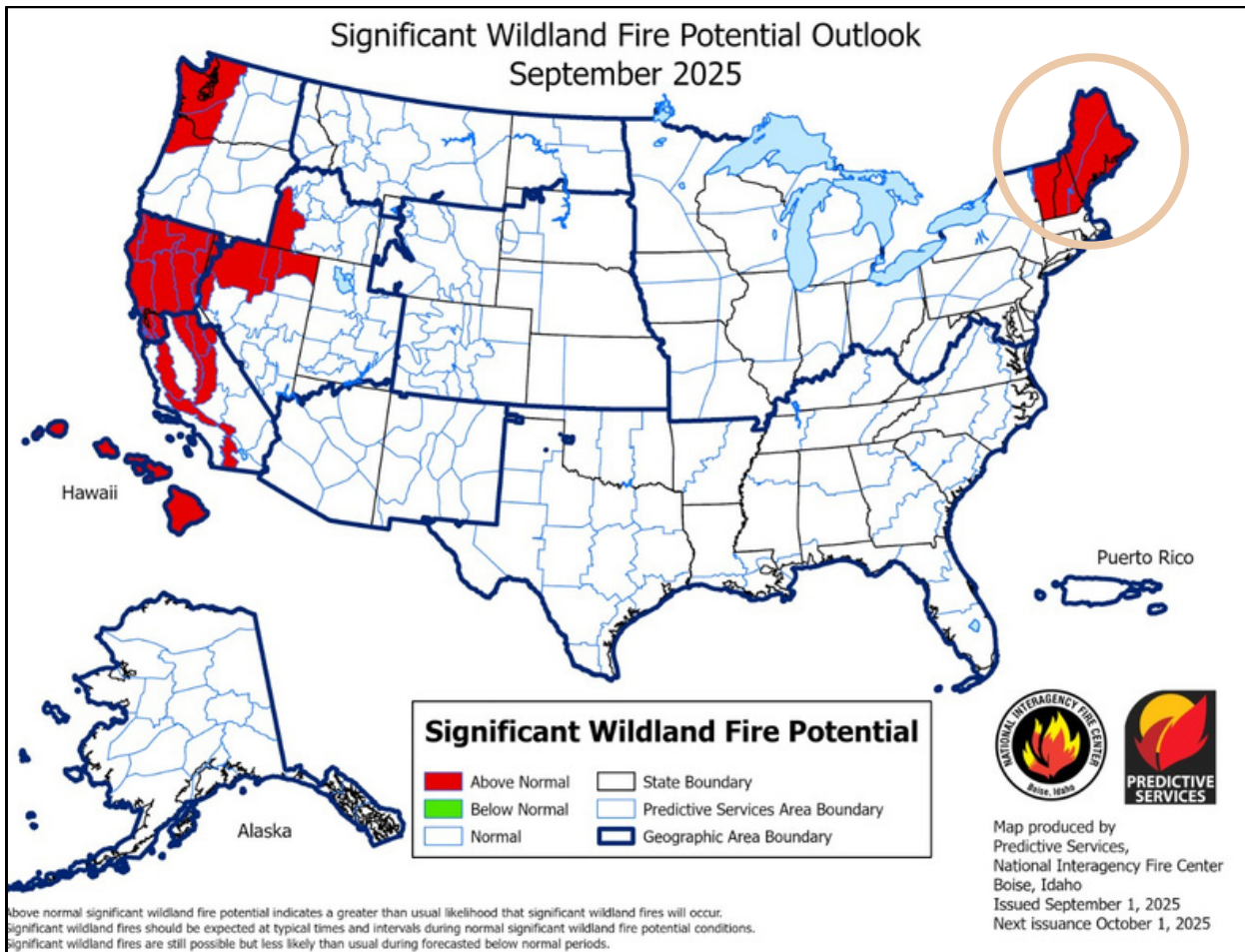
CLICK ON THE PHOTO FOR MORE RECENT UPDATE

<https://mainefireweather.org/>

National Fire
Danger
Rating
System
Description



National Wildland Fire Outlooks



CLICK ON THE PHOTO FOR MORE RECENT DATA

<https://www.nifc.gov/fire-information/maps>



Health Impacts of Wildfires

Wildfire smoke is a complex mixture that consists of other pollutants that leads to a variety of health effects. The health effects can range from relatively minor (e.g., eye and respiratory tract irritation) to more serious health effects (e.g., exacerbation of asthma and heart failure, and premature death). Fine particles are respiratory irritants, and exposures to high concentrations can cause persistent coughing, phlegm, wheezing, and difficulty breathing. Even in healthy people, exposures to fine particles can potentially lead to transient reductions in lung function, and pulmonary inflammation.

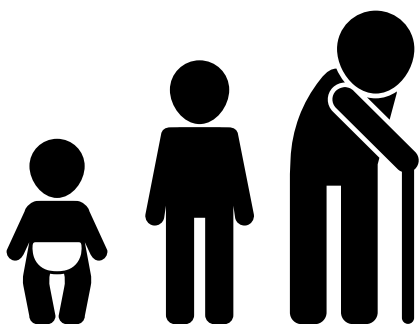
Effects of persistent short-term exposure to wildfire smoke has been limited to a few studies examining the cumulative effect of wildfire smoke exposure on the health of wildland firefighters. Initial evidence suggests continuous occupational exposure may have a cumulative effect on lung function, with some studies reporting a progressive decline during burn seasons. However, it's unclear if this decline persists across off-seasons. [8]

Health Effects Attributed to Wildfire Smoke Exposure	
Short-term exposures (i.e., over a few days)	Irritation of the eyes and respiratory tract
	Respiratory symptoms • Coughing • Phlegm • Wheezing • Difficulty breathing
	Respiratory effects • Bronchitis • Reduced lung function • Increased risk of asthma exacerbation and aggravation of other lung diseases • Increased risk of emergency room visits and hospital admissions
	Cardiovascular effects • Heart failure • Heart attack • Stroke • Increased risk of emergency room visits and hospital admissions
	Increased risk of premature death
Cumulative short-term exposures (i.e., over multiple days up to a few weeks)	Reduction in lung function*
Long-term exposures	----**
*Information only available from a study of wildland fire fighters.	
**Studies have not evaluated the health effects attributed to wildfire smoke exposure over multiple seasons.	

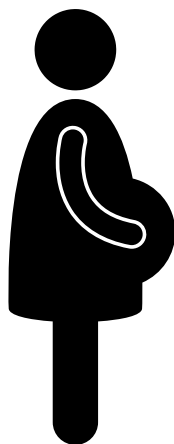
Vulnerable Populations

Wildfire smoke can reach far away from where fires burn and can make anyone sick, but some people have a higher risk of getting sick. [17]
Certain life stages and populations may be at greater risk of experiencing health effects due to wildfire smoke and may experience more severe effects. [9]

Risk is generally higher during childhood, lower in young adulthood, and greater in middle age through old age as the incidence of heart and lung disease, hypertension, and diabetes increases. Therefore, certain life stages (e.g., children, older adults) and populations (e.g., people with pre-existing respiratory and cardiovascular disease) should be particularly diligent about limiting exposure to wildfire smoke. [9]



Older adults and Children



Pregnant people



Outdoor workers

Vulnerable Population

At-risk Lifestage/Population	Rationale and Potential Health Effects from Wildfire Smoke Exposure
People with asthma and other respiratory diseases	Rationale: Underlying respiratory diseases result in compromised health status that can result in the triggering of severe respiratory responses by environmental irritants, such as wildfire smoke. Potential health effects: Breathing difficulties (e.g., coughing, wheezing, and chest tightness) and exacerbations of chronic lung diseases (e.g., asthma and COPD), leading to increased medication usage, emergency department visits, and hospital admissions.
People with cardiovascular disease	Rationale: Underlying circulatory diseases result in compromised health status that can result in the triggering of severe cardiovascular events by environmental irritants, such as wildfire smoke. Potential health effects: Triggering of ischemic events, such as angina pectoris, heart attacks, and stroke; worsening of heart failure; or abnormal heart rhythms could lead to emergency department visits, hospital admissions, and even death.
Children (< 18 years of age)	Rationale: Children's lungs are still developing, and there is a greater likelihood of increased exposure to wildfire smoke resulting from more time spent outdoors, engagement in more vigorous activity, and inhalation of more air per pound of body weight compared to adults. Potential health effects: Coughing, wheezing, difficulty breathing, chest tightness, decreased lung function in all children. In children with asthma, worsening of asthma symptoms or heightened risk of asthma attacks may occur.
Pregnant people	Rationale: Pregnancy-related physiologic changes (e.g., increased breathing rates) may increase vulnerability to environmental exposures, such as wildfire smoke. In addition, during critical development periods, the fetus may experience increased vulnerability to these exposures. Potential health effects: Limited evidence shows air pollution-related effects on pregnant women and the developing fetus, including low birth weight and preterm birth.
Older adults	Rationale: Higher prevalence of pre-existing lung and heart disease and decline of physiologic process, such as defense mechanisms. Potential health effects: Exacerbation of heart and lung diseases can lead to emergency department visits, hospital admissions, and even death.
People of low socio-economic status	Rationale: Less access to health care, could lead to higher likelihood of untreated or insufficient treatment of underlying health conditions (e.g., asthma, diabetes), and greater exposure to wildfire smoke resulting from less access to measures to reduce exposure (e.g., air conditioning). Potential health effects: Greater exposure to wildfire smoke resulting from less access to measures to reduce exposure, along with higher likelihood of untreated or insufficiently treated health conditions could lead to increased risks of experiencing the health effects described above.
Outdoor workers	Rationale: Extended periods of time exposed to high concentrations of wildfire smoke. Potential health effects: Greater exposure to wildfire smoke can lead to increased risks of experiencing the range of health effects described above.

<https://www.epa.gov/wildfire-smoke-course/which-populations-experience-greater-risks-adverse-health-effects-resulting>

Preparedness starts at
home

Tips for Individuals

BEFORE AN EVENT

- Build an emergency kit.
- Make a family communications plan.
- Know your evacuation route and practice going to these places.
- Make sure you have smoke alarms on every level of your home, especially in bedrooms, check them every month and change their batteries every year.
- If you don't have a smoke alarm, check with your local fire department about getting a free one. [11]

DURING AN EVENT

- Stay inside.
- Listen to emergency officials.
- Check local air quality alerts.
- Follow local emergency officials' orders.
- If you see a wildfire, call 9-1-1.
- If you need to go outside use N95 mask or a respirator.
- Keep smoke outside: close windows and doors.
- Set up portable air filters.
- Avoid burning anything inside: candles, propane, incense, wood, cigarettes, etc.
- Pay attention to health symptoms.
- Protect pets and other animals. [10]

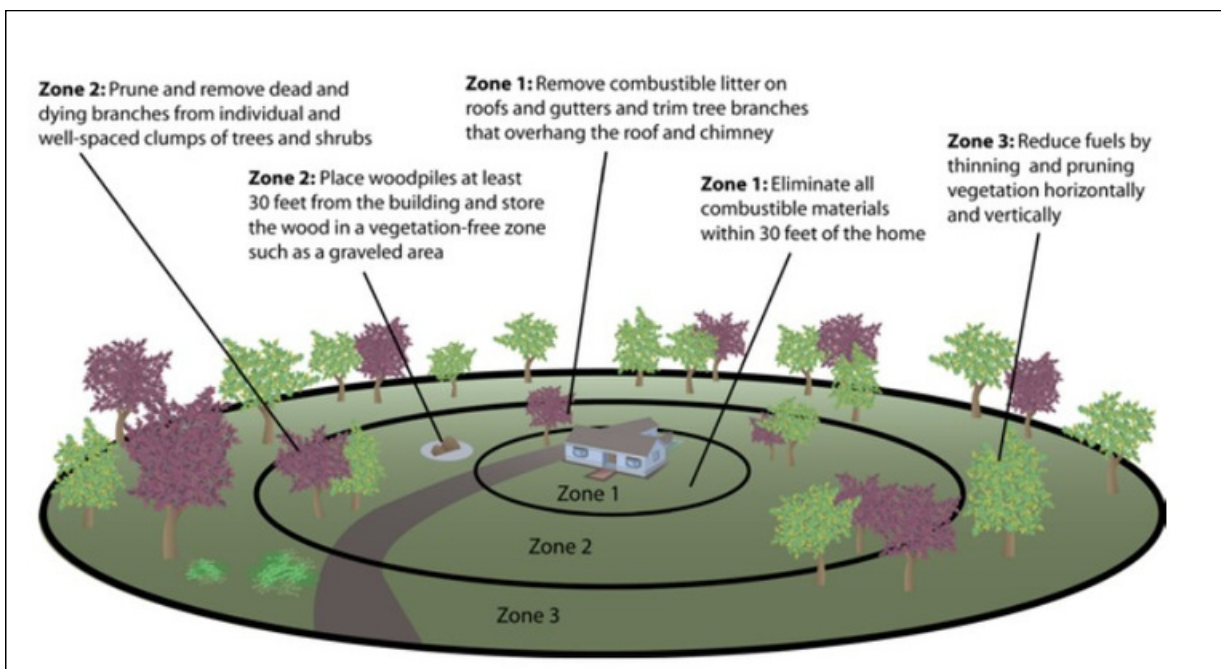
AFTER AN EVENT

- Cool and cover burns to reduce the chance of further injury or infection.
- If you are at home, look for smoke or sparks throughout the house.
- If you have evacuated, do not go home until safety officials say it's okay.
- Stay away from downed or dangling power lines.
- Avoid walking on hot/burning surfaces as the ground may contain heat pockets or hidden embers.
- Watch animals closely and keep them under your control, as hidden embers and hot spots could burn their paws or hooves.
- Do not use water from the faucet unless emergency officials say it's okay.
- Burned areas should be monitored for at least 12 hours to make sure the fire is out and danger has past.
- Wear protective equipment during clean-up activities and do not allow children to help adults with clean-up.
- Throw away food exposed to heat, smoke, or soot.
- Finding helpful ways to cope with feelings, and getting help when you need it, will help you, your family, and your community recover from a disaster.
- Use text or social media to communicate with your family and friends. [11, 12]

Tips for Homeowners

- Move your firewood pile out of your home's defensible space.
- Rake the lawn and get rid of leaves and twigs.
- Perform a Firewise USA assessment of your home.
- Clean your roof and gutters of leaves and pine needles (best done in October).
- Put a hose (at least 100' long) on a rack and attach it to an outside faucet.
- Trim all tree branches that overhang your house and within 20' from chimneys.
- Review your insurance policy.
- Follow local burning regulations.
- Clear dead wood and dense flammable vegetation from your home's defensible space.
- Install and check fire extinguishers.
- Relocate propane tanks inside the defensible space, put at least 10' from the house. Have non-flammable ground cover such as gravel around them. [13]

“Defensible space is an area around a building where vegetation and other fuels are reduced to slow the spread of wildfire and limit the risk of building ignition.” [14]



CLICK ON THE PHOTO TO LEARN MORE

<https://www.ready.gov/sites/default/files/2020-03/home-builder-guide-construction-defensible-space.pdf>

Healthcare Preparedness

- Develop and sustain a high-functioning emergency management program and business continuity plan.
- Understand the hospital's infrastructure and its ability to withstand wildfires and their effects on air quality and utility disruptions.
- Collaborate with facility staff to ensure roles and responsibilities are known during a potential or actual evacuation.
- Determine actions needed to ensure continuity of patient care during a potential or actual wildfire evacuation.
- Collaborate with clinical staff and hospital leadership to establish clear roles and responsibilities.
- Ensure adequate staff are trained and ready for their evacuation roles.
- Encourage staff's personal preparedness.
- Collaborate with HR and other hospital administrative staff to ensure evacuation roles and responsibilities are clear.
- Follow promising practices to protect the hospital's infrastructure, including regular maintenance and testing of plans and systems.
- Strengthen the hospital against wildfire threats. [15]



CLICK ON THE PHOTO TO LEARN MORE

<https://files.asprtracie.hhs.gov/documents/hospital-wildfire-evacuation-considerations.pdf>



CLICK ON THE PHOTO TO LEARN MORE

<https://ibhs.org/wp-content/uploads/Medical-Facilities-and-Wildfire-BC-Guidance.pdf>

Healthcare Preparedness: Wildfires Annex Template

I. Purpose

The purpose of this annex is to establish guidelines and procedures to minimize the impact of wildfire threats, including structural fire, smoke, and utility outages, on [Facility Name] and the patients and staff it serves.

II. Scope

This plan covers all staff, patients, and visitors within the [Facility Name] facilities. It applies to all phases of an incident, including prevention, mitigation, preparedness, response, and recovery.

III. Concept of operations

In the event of a wildfire, the facility will activate its Incident Command System (ICS) structure. This annex outlines specific actions for each section of the command structure for three phases of a wildfire event: pre-incident preparedness, during the incident, and post-incident recovery.

A. Pre-incident: Preparedness and mitigation

Incident Command/Leadership

- Conduct a risk assessment or hazard vulnerability analysis to understand the facility's specific wildfire risks.
- Form collaborative partnerships with local fire departments, emergency management, and other healthcare facilities within the healthcare coalition.
- Review and update the annex annually and after any major incident or drill.

Operations Section

- **Infrastructure hardening:** Collaborate with facilities staff to maintain a defensible space around the building by managing vegetation.
- **HVAC and air quality:**
 - Assess the HVAC system's ability to filter external air and install high-efficiency filters.
 - Procure and maintain portable air scrubbers or HEPA filters for critical areas.
- **Utility planning:**
 - Ensure backup generators are tested and maintained.
 - Confirm a reliable fuel source for generators and a refueling plan.
 - Establish a process to safely shut down utilities in a full evacuation.
- **Evacuation readiness:** Acquire and stage specialized patient evacuation equipment, such as stair chairs and med sleds.

CLICK ON THE PHOTO TO READ MORE

https://www.canva.com/design/DAGzufGIXIA/zzkGiTXzovxEGOAQ3HbxcQ/edit?utm_content=DAGzufGIXIA&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton

What can providers do?

- Teach your patients how to wear an N95 mask correctly on smoky days.
- Help your patients keep track of local air quality, through AirNow website and app.
- Encourage patients to stay indoors with a HEPA filter or air conditioner if the Air Quality Index exceeds 100.
- Teach your patients the importance of not adding to indoor air pollution through smoking, gas range stoves, vacuuming, and candle use.
- Consider offering patients handouts on how to make their own HEPA filter fan.
- Ask your clinic or hospital to offer a clean air space for the vulnerable populations in your community on unsafe days. They can also fly the EPA's Air Quality Flags to give your community an easy way to know when air quality is unsafe.
- Be a community advocate for policy decisions that protect air quality and reduce CO2 emissions. [16]



[DIY Box Fan Filter](#)



[EPA Air Quality Flags](#)

Information

Wildfire of 1947: <https://www.nps.gov/acad/learn/historyculture/fireof1947.htm>

Burn Permits: <https://apps1.web.maine.gov/burnpermit/public/index.html>

Campfire Permits:

https://www.maine.gov/DACF/mfs/forest_protection/programs_services.html#Campfire_Permits

Firewise USA:

https://www.maine.gov/DACF/mfs/forest_protection/firewise/communities.html

Wildfires and IAQ: <https://www.epa.gov/emergencies-iaq/wildfires-and-indoor-air-quality-iaq>

AirNow: <https://www.airnow.gov/wildfires/>

Wildfire protection for pets: <https://www.airnow.gov/sites/default/files/2021-06/protect-your-pets-from-wildfire-smoke.pdf>

Wildfire Guide Factsheets: <https://www.airnow.gov/wildfire-guide-factsheets/>

Wildfire Guide for Public Health Officials: <https://document.airnow.gov/wildfire-smoke-guide.pdf>

Northeast Wildfire Preparedness Resource Guide:

<https://www.northeasternwildfire.net/wp-content/uploads/2020/03/NE-Wildfire-Preparedness-Resource-Guide-March-2020-update.pdf>

CHA: Business Continuity Templates: <https://calhospital.org/hospital-business-continuity-templates/>

ASPR- The Exchange: <https://files.asprtracie.hhs.gov/documents/aspr-tracie-the-exchange-issue10-final-508.pdf>

Seasons of smoke and fire: preparing health systems for improved performance before, during, and after wildfires:

<https://www.sciencedirect.com/science/article/pii/S254251962400144X#cesec100>

Wildfire Smoke Risk Communication Efficacy: A Content Analysis of Washington State's 2018 Statewide Smoke Event Public Health Messaging

References

1. <https://www.weather.gov/abq/EmergencyPrepWildfire>
2. <https://www.ready.gov/kids/disaster-facts/wildfires>
3. <https://www.usfa.fema.gov/wui/what-is-the-wui/>
4. https://www.maine.gov/DACF/mfs/forest_protection/downloads/WildfireMFS.LUPC.pdf
5. <https://www.maine.gov/mema/hazards/natural-hazards/wildfires>
6. https://www.maine.gov/DACF/mfs/forest_protection/1947_fire.html
7. https://www.maine.gov/DACF/mfs/forest_protection/firewise/wildfire_facts.html
8. <https://www.epa.gov/wildfire-smoke-course/health-effects-attributed-wildfire-smoke>
9. <https://www.epa.gov/wildfire-smoke-course/which-populations-experience-greater-risks-adverse-health-effects-resulting>
10. <https://www.cdc.gov/wildfires/safety/how-to-safely-stay-safe-during-a-wildfire.html>
11. <https://www.ready.gov/kids/disaster-facts/wildfires>
12. <https://www.cdc.gov/wildfires/safety/how-to-safely-stay-safe-after-a-wildfire.html>
13. https://www.maine.gov/DACF/mfs/forest_protection/firewise/homeowners.html
14. https://www.maine.gov/DACF/mfs/forest_protection/downloads/WildfireMFS.LUPC.pdf
15. <https://files.asprtracie.hhs.gov/documents/hospital-wildfire-evacuation-considerations.pdf>
16. <https://www.montanahphc.org/wildfire-smoke.html>
17. <https://www.cdc.gov/wildfires/about/index.html>



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