Washington State Department of Health

Updated: July 16, 2021

DOH 821-144

Recommendations for wildfire smoke and COVID-19 during the 2021 wildfire season

The 2020 wildfire season was especially challenging as we continued to respond to the COVID-19 pandemic, and we will continue to have similar challenges this year. There is concern about wildfire smoke overlapping with COVID-19 and increasing the health impacts. COVID-19 restrictions may limit current public health recommendations to reduce exposure to wildfire smoke and could complicate our public health response.

This guidance will help air quality and public health officials in Washington state respond to wildfire smoke events during these unique circumstances. Initially developed in 2020, these recommendations have been updated to reflect the current COVID-19 recommendations for the 2021 wildfire season. COVID-19 public health guidance may vary by region, and this guidance can be adapted to fit local needs.

Overlapping Health Impacts of Wildfire Smoke and COVID-19

Breathing in wildfire smoke by itself can produce harmful health effects. These range from minor symptoms, such as eye, nose, and throat irritation or headaches, to more severe symptoms like shortness of breath, chest tightness, asthma attacks, and worsening existing chronic conditions. Some of these respiratory symptoms, including dry cough, sore throat, and difficulty breathing, are also common to COVID-19.

Both COVID-19 and wildfire smoke exposures adversely impact the respiratory and immune systems, and early evidence suggests experiencing both can lead to worse health outcomes. Past research indicates wildfire smoke exposures can make people more susceptible to respiratory infections like pneumonia and bronchitis, and early evidence indicates this likely includes COVID-19. Recent studies also indicate that poor air quality can make symptoms and health outcomes in people with COVID-19 more severe. This suggests that people with COVID-19 have greater risk of negative health effects from wildfire smoke exposure.

Populations sensitive to wildfire smoke exposures include people with heart and lung diseases, people with respiratory infections, people with diabetes, stroke survivors, infants, children, pregnant people, and people over 65 years of age. Some of these groups are also those most at risk for COVID-19.

Additional COVID-19 Guidance: Seek medical attention when experiencing severe symptoms, such as chest pain or difficulty breathing, including during wildfire smoke events. If you have a fever, cough, or shortness of breath, treat it like it could be COVID-19. Protect others by following current COVID-19 public health recommendations and get a COVID-19 vaccine. If you

are concerned about your health, call your health care provider to discuss COVID-19 testing and other possible reasons for your illness.

Reducing Exposure to Wildfire Smoke during COVID-19

The following identifies normal recommendations to reduce exposure to wildfire smoke and provides additional guidance for this year, since recommendations may be impacted by COVID-19 related restrictions. Additional information on how to protect yourself from wildfire smoke is available on DOH's Smoke from Fires webpage.

Stay indoors and keep indoor air clean

When the air quality is poor from wildfire smoke, reduce outdoor physical activity. As the air quality worsens you will need to go indoors and take additional steps to keep smoke out of your home and improve air filtration to keep indoor air clean.

Additional COVID-19 Guidance: With additional limitations due to COVID-19, this is the best way to protect yourself from exposure to wildfire smoke.

Resources:

- EPA's information on wildfires and indoor air quality
- EPA's information on creating a clean room
- EPA's Indoor Air Filtration Factsheet

Reduce intake of smoke into your home

To keep indoor air clean and wildfire smoke from entering your home:

- Close windows and doors when it is smoky outside. Track the air quality and open your windows for fresh air when the air quality improves.
- Pay attention to heat and take steps to keep it cool indoors by closing curtains during daylight, using an air conditioner or fans. If it's still too hot inside, open windows when it is coolest and if possible, take steps to filter indoor air (see below).
    - WA DOH's information on Hot Weather Safety
- Set HVAC system fans and window air conditioning units on recirculate to prevent intake of outside smoky air.
- Turn off fans that vent to the outside, like the one in your bathroom or kitchen. Exhaust fans pull outside air in through cracks around windows and doors.

Additional COVID-19 Guidance: Opening your windows for fresh air when the air quality improves will also help reduce the viral load of SARS CoV-2 in the air, but this alone is not enough to protect you from COVID-19. Continue with current public health recommendations for COVID-19.

Avoid activities that create indoor air pollution

Do not add to indoor air pollution during wildfire smoke events. Avoid the following activities: burning candles or incense, smoking cigarettes, diffusing essential oils, broiling or frying food, and vacuuming (unless your vacuum has a HEPA filter).

Additional COVID-19 Guidance: None

Improve indoor air filtration

Filtration of air in your home will improve the indoor air quality and reduce your exposure to smoke during wildfire smoke events. There are three ways to improve indoor air filtration of smoke particles in your home: 1) increase heating, ventilation, and/or air conditioning (HVAC) filtration, 2) use a portable air cleaner with HEPA filter, and 3) use a DIY box fan filter. There are different technical considerations, equipment, and supplies with each of these options. Buy necessary materials before wildfire season as supplies will sell quickly once wildfire smoke hits. If you cannot keep the air clean throughout your home with an HVAC system, consider establishing a cleaner air room with the use of either a portable air cleaner with a HEPA filter or a DIY box fan filter where you spend more time.

1. Increase HVAC filtration

An HVAC system is the best way to reduce fine particles (PM2.5) from wildfire smoke throughout your home, rather than only a single room or designated space.

- Consult your HVAC manual or with an HVAC professional before making improvements.
- Increase the filtration in your home HVAC system to a MERV 13 rated filter or the highest rated filter your system will handle. Select a filter with the deepest pleat your system can accommodate to prevent excess strain on the system. The filter must fit tightly.
- Set the system fan to recirculate and a continuous running fan mode, such as “on” instead of “auto”.
- Close the air intake to keep wildfire smoke out.
- Change the filter when dirty or as indicated by the manufacturer’s instructions or an HVAC professional.

Resources:

- EPA’s Indoor Air Filtration Factsheet
- EPA’s info on “Can running the HVAC system in my home help protect me from COVID-19?”

2. Use a portable air cleaner with a HEPA filter

Using a portable air cleaner with a HEPA filter can reduce fine particles (PM2.5) from wildfire smoke in a single room or designated space.

- Select a portable air cleaner with a true HEPA filter. Beware of portable air cleaners that claim to have “Near HEPA”, “HEPA like”, or “HEPA Type” filters.

- Select a portable air cleaner that is rated for the size of room or space where you plan to use it. The clean air delivery rate (CADR) is a rating given to the portable air cleaner based on its fan speed and filter efficiency. The smoke CADR should be equal to the square footage of the intended room of use.
- Consider the noise rating, as some can be quite loud. Choosing one rated for a larger size room and then running it at a lower control setting can reduce the noise.
- Do not use ozone generators, personal air purifiers, electrostatic precipitators or ionizers because they can produce harmful by-products. Check that it has been certified to not produce little or no ozone through the California Certified Air Cleaning Devices portal.
- A portable air cleaner with charcoal filtration can help remove some volatile organic chemicals.
- Place it in a room where you spend time, with the windows and doors closed. When starting up the portable air cleaner, or if you choose to change the room where you use the portable air cleaner, be aware that it will take some time for the fine particles to decline.
- Change the filter when dirty or indicated by the manufacturer's instructions.

Resources:

- California Air Resources Board Air Cleaner Information for Consumers
- California Certified Air Cleaning Devices
- California's Air Cleaning Devices for the Home Factsheet
- EPA's info on "Will an air cleaner or air purifier help protect me and my family from COVID-19 in my home?"

3. Use a DIY box fan filter

Making your own box fan filters can be a less expensive option to reduce fine particles (PM2.5) from wildfire smoke in a single room or designated space. When building your own box fan filter, it is important to understand their limitations and the potential risks. Box fans are not designed to operate with a filter attached, and there is limited research on their effectiveness, safety, and operation.

- Select a standard box fan and a filter with a MERV 13 rating of the same dimensions.
    - Use a box fan with multiple speed settings and a safety fuse.
    - It's helpful to select a fan where the control settings and power cord are located on the exterior rim of the fan so that they are accessible after the filter has been attached.
- There are different designs to consider, such as the filter is attached by bungee cord, the filter is screwed on with brackets, or two filters that attach to create a triangle shape.
    - A design with multiple filters can reduce the burden on the fan motor.
- Place the constructed DIY box fan filter in the room where plan to spend most of your time with and where it is at least a foot away from a wall, furniture, or other objects so that the air flow of the fan is not blocked.

- Keep windows and doors closed.
- When starting up the DIY box fan filter, or you choose to change the room where you use the portable air cleaner, be aware that it will take some time for the fine particles to decline.
- Do not run the fan on high speed.
- Do not run unattended and monitor for overheating to reduce the risk of fire.
- Change the filter when dirty.

Resources:

- WA Department of Ecology's video on how to make your own clean air fan
- Puget Sound Clean Air Agency's info on DIY air filters
- Coleville Tribes Air Quality Program box fan filter a DIY users guide
- BC Centre for Disease Control's factsheet on Home-made Box Fan Air Filters

Additional COVID-19 Guidance: Increased dilution, ventilation, and filtration are a part of reducing transmission of COVID-19 (WA DOH's Ventilation and Air Quality for Reducing Transmission of COVID-19). While running an HVAC system and using a HEPA portable air cleaner or DIY box fan filters can also reduce your exposure to smoke, they alone are not enough to protect you from COVID-19. Continue with current public health recommendations for COVID-19. When outside air needs to be reduced because of high levels of smoke, increase filtration of indoor air and bring in outside air when air quality improves.

Seeking Cleaner & Cooler Air Elsewhere

Going to clean air shelters, public clean air spaces, a friend's or relative's place with cleaner indoor air and air conditioning can provide relief from wildfire smoke and heat when you cannot keep the air clean or cool inside your own home.

Additional COVID-19 Guidance: It might not be safe or as accessible for people to go to public spaces to seek cleaner and cooler indoor air away from home depending on local COVID-19 restrictions. With the congregation of people at these settings, there is a risk of transmission of SARS CoV-2, the virus that causes COVID-19. Check in advance to see if these places are open and be prepared for lower capacity, to physically distance, or wear a cloth face covering.

If you decide to leave the area and visit friends or relatives, consider COVID-19 restrictions in the county you are traveling to and with the people you are visiting, including vaccination status. This is important if either they or you are more sensitive to COVID-19 and should be especially cautious about exposures. Get a COVID-19 vaccine to be able to reduce exposure to smoke together with friends or relatives and follow local guidance on indoor gatherings.

Resources:

- CDC's Recommendations for Cleaner Air Shelters and Cleaner Air Spaces and COVID-19
- CDC's Recommendations for Cooling Centers and COVID-19

Respirators and Face Coverings

Respirators, also referred to as face masks, are not typically recommended as the best option for the general public to reduce exposure to wildfire smoke, as it is better to stay indoors and keep indoor air clean. If there is a need to use a face mask for limited duration outside by the general public, an N95 or other NIOSH respirator rated for fine particulates is usually recommended with several necessary steps to ensure it is worn correctly to achieve a proper fit and seal. If improperly worn, it may not provide the protection expected. Following guidance on how to wear one can improve proper fit, and thus protection from wildfire smoke. N95 respirators are not an option for everyone, as there are concerns about use by children in part due to fit, they are not as effective with facial hair, and those with pre-existing conditions should first consult with a healthcare provider.

Additional COVID-19 Guidance: While the supply and availability of N95 and other NIOSH-approved respirators has improved, NIOSH-approved respirators have been one of the toughest items to source for COVID-19 activities, especially small-sized N95 respirators. The market can be unpredictable, and if they are in short supply in your area, they should be reserved for those required to wear them for work. NIOSH-approved respirators may be available in smaller quantities in local hardware stores for purchase but purchasing respirators in bulk or wholesale may compete with procurement for COVID-19 activities and is not recommended. N95 respirators with exhalation valves can provide protection from wildfire smoke, but they might not prevent the spread of COVID-19. KN95 masks or masks approved in other countries may not provide the same protection as NIOSH-approved respirators because they are not regulated in the United States. If using a KN95 mask, look for ones that meet requirements similar to NIOSH-approved respirators. Cloth face coverings, surgical masks, and masks with filter inserts generally do not provide much protection from the fine particles in smoke. If you have to go outside, using the best mask available and wearing it properly can be a helpful option for some people for a limited time. Continue to follow local COVID-19 guidance on face coverings.

Resources:

- More information on COVID-19 and face coverings is available at coronarvirus.wa.gov/masks and www.doh.wa.gov/masks.

Guidance for Outdoor Testing and Vaccination Clinics

Wildfire smoke may pose a health threat where local public health officers may need to consider cancelling or moving outdoor events and activities. During the COVID-19 pandemic, this could include outdoor testing and vaccination clinics. WA DOH & ECY's "Guidance on cancelling events or activities, and closing schools" can help situation in decisions by local public health officers to protect public health during periods of poor air quality due to wildfire smoke.

When the outdoor 24-hour forecast or NowCast PM2.5 concentrations:

- Equal or exceed 80.5 µg/m^3 (WAQA value 201/AQI value 164) consider recommending cancelling outdoor public events and activities.
- Equal or exceed 150.5 µg/m^3 (WAQA value 301/AQI value 201) recommend cancelling outdoor public events and activities.

In addition to the action levels, other factors and issues specific to your area should be considered when making decisions about closures and cancellations to protect health and welfare of the public. One factor to consider is duration of exposure (for others see the detailed guidance). In the case of outdoor testing and vaccination clinics, exposures may be shorter for the public when visiting than for the employees or volunteers working there for an entire shift. For concerns related to employees and wildfire smoke exposure, please visit WA Labor and Industries (L&I) website for more information.

If testing and vaccination clinics are moved indoors due to smoke, follow best practices to improve indoor air quality in commercial buildings.

- Improving Ventilation and Indoor Air Quality during Wildfire Smoke Events
- EPA's Wildfires and Indoor Air Quality in Schools and Commercial Buildings
- ASHEAE's Planning Framework for Protecting Commercial Building Occupants from Smoke During Wildfire Events

Messaging for This Season

COVID-19 creates challenges during wildfire smoke season for how we can reduce exposure to wildfire smoke. It is especially important to encourage staying home and keeping indoor air clean by improving indoor air filtration. Due to impacts on the supply chain, it may take longer to receive supplies from retailers, so encourage people to prepare at home early before the smoke hits.

Air quality and public health officials will need to be flexible and adaptable as messaging and recommendations will change based on local COVID-19 restrictions.

The WA State Department of Health Smoke from Fires webpage can be used as an example of how to incorporate the above information into messaging for the general public.

Examples of wildfire smoke and COVID-19 messaging:

- WA Smoke Blog: Wildfire Smoke During COVID-19
- Public Health Connection: Wildfire Season and COVID-19
- Public Health Insider: Wildfire Smoke Preparedness During the COVID-19 Pandemic
- WA Smoke Blog: Wildfire Smoke & COVID-19: A Bad Combination for Health
- BC Center for Disease Control: Wildfire Smoke and COVID-19

More Wildfire Smoke Information and Resources

For more information on the health impacts of wildfire smoke and answers to frequently asked questions, visit the WA State Department of Health Smoke from Fires webpage and your local health jurisdiction. Updates on wildfire status can be found on the WA Smoke Blog. Additional information on air quality during wildfires can be found on the WA State Department of Ecology and your regional clean air agency.

Additional resources related to wildfire Smoke and COVID-19:

- CDC's Wildfire Smoke and COVID-19
- CDC's Wildfire Smoke and COVID-19: Frequently Asked Questions and Resources for Air Resource Advisors and Other Environmental Health Professionals
- EPA's COVID-19, Wildfires, and Indoor Air Quality
- EPA's Wildfire Smoke: A Guide for Public Health Officials

More COVID-19 Information and Resources

Stay up-to-date on the current COVID-19 situation in Washington, Governor Inslee's proclamations, symptoms, how it spreads, and how and when people should get tested. See our Frequently Asked Questions for more information.

A person's race/ethnicity or nationality does not, itself, put them at greater risk of COVID-19. However, data are revealing that communities of color are being disproportionately impacted by COVID-19- this is due to the effects of racism, and in particular, structural racism, that leaves some groups with fewer opportunities to protect themselves and their communities. Stigma will not help to fight the illness. Share accurate information with others to keep rumors and misinformation from spreading.

- WA State Department of Health 2019 Novel Coronavirus Outbreak (COVID-19)
- WA State Coronavirus Response (COVID-19)
- Find Your Local Health Department or District
- CDC Coronavirus (COVID-19)
- Stigma Reduction Resources

Have more questions about COVID-19? Call our hotline: **1-800-525-0127**, Monday 6 a.m. to 10 p.m., Tuesday – Sunday: 6 a.m. to 6 p.m. For interpretative services, **press #** when they answer and **say your language**.

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov