

Wildfire Smoke and Your Health

Frequently Asked Questions about Wildfire Smoke and Public Health

Q: Why is wildfire smoke bad for my health?

A: Wildfire smoke is a mixture of gases and fine particles from burning trees and other plant material. Gases released by wildfires, such as carbon monoxide, are mainly a risk to people (like firefighters) who work near smoldering areas. Fine particles, which are in smoke, can irritate your eyes and your respiratory system, and worsen chronic heart and lung diseases.

The amount and length of smoke exposure, as well as a person's age and overall health, play a role in determining if you will experience smoke-related health problems.

If you are experiencing serious medical problems for any reason, seek medical attention immediately.



Q: Why is everyone talking about particulate matter?

A: The particulate matter (also called "PM") in wildfire smoke poses the biggest risk to the public's health. The potential health effects vary based on the type of plants burning, atmospheric conditions and, most importantly, the size of the particles. Particles larger than 10 micrometers usually irritate only the eyes, nose and throat. Fine particles 2.5 micrometers or smaller (PM_{2.5}) can be inhaled into the deepest part of the lungs, and may cause symptoms such as coughing or may worsen existing heart and lung conditions.

Health Effects of Wildfire Smoke

Q: Who is most likely to have health effects from wildfire smoke exposure?

A: Wildfire smoke affects people differently. People who have pre-existing health conditions and those who are particularly sensitive to air pollution are at risk of worsened symptoms from smoke exposure.

At risk groups include:

- people with existing respiratory conditions such as lung cancer, asthma or chronic obstructive pulmonary disease (COPD), including chronic bronchitis and emphysema;
- people with existing heart conditions including angina, previous heart attack, congestive heart failure or irregular heartbeat;
- infants, and children 7 years old and younger;
- people over 65 years of age;
- pregnant women;
- smokers, especially those who have smoked for several years.

Q: How can I tell if wildfire smoke is affecting me or my family?

A: Smoke can hurt your eyes, irritate your respiratory system, and worsen chronic heart and lung diseases. Some of the common symptoms include:

- watery or dry eyes;
- persistent cough, phlegm, wheeze, scratchy throat or irritated sinuses
- headaches;
- shortness of breath, asthma attack or lung irritation;
- irregular heartbeat, chest pain or fatigue.

Q: What should I do if I am having a health problem from smoke?

A: If you have a medical emergency from smoke, such as chest pain or severe difficulties breathing, you should call 911 if available, or get help to go to the hospital emergency room immediately.

Your healthcare provider can provide advice on how to manage symptoms and maintain your health. You may also call HealthLink at 811 for further health-related information.

Strategies to Reduce Smoke Exposure

Q: *How can I protect myself and my family from the harmful effects of smoke?*

A: Limit your exposure to the smoke:

- Stay indoors whenever possible with the doors and windows closed;
- Reduce other sources of indoor air pollution such as smoke from tobacco, wood-burning stoves and burning candles;
- Use high-efficiency (HEPA) air-cleaning filters, if available;
- Avoid vacuuming, which can stir up dust;
- When driving in a vehicle, keep windows closed with air conditioning set to recirculate;
- Drink plenty of water to help reduce symptoms of scratchy throat and coughing.

Leaving the area of thick smoke may be best if you or a family member has health conditions that put you at higher risk for illness from wildfire smoke

Q: *What can I do to deal with eye irritation from wildfire smoke?*

A: Wildfire smoke can cause burning, redness and tearing in the eyes. To relieve the symptoms, you can use over-the-counter artificial tear drops and drink enough water. Running a humidifier may also provide relief. Consult with a healthcare provider if symptoms last longer than several days. If you are in an area where there is a lot of ash or fine dust, consider wearing goggles.

Q: *Should I wear a N95 mask?*

A: In general, wearing a mask is not the best way to protect your health during a smoke event. In fact, masks may lead to a false sense of security, which may encourage increased physical activity and time spent outdoors, meaning increased exposure to smoke. They can also make breathing more difficult.

N95 masks are filter masks that fit over the nose and mouth. When properly fitted, an N95 mask can filter 95 per cent of smoke particles. However, N95 masks do not filter toxic gases and vapors.

Most people will find it difficult to correctly use N95 masks. It is important that the mask fits properly and air does not leak around the sides. If it does not fit properly, the mask will provide little if any protection, and may offer a false sense of security. Proper fit testing requires special equipment and training.

N95 masks can make breathing more strenuous and lead to increased breathing and heart rates. Mask use by those with heart and respiratory diseases should only be done under a healthcare provider's supervision.

Even healthy adults may find that the increased effort required for breathing makes it uncomfortable to wear a mask for long periods of time. Decisions on whether to use masks as personal protection should be made on a case-by-case, day-to-day basis.

Look for “NIOSH 95” on the package. N95 means the mask blocks about 95% of particles that are 0.3 microns in size or larger.

Q: *How do I know if my N95 mask is fitting me properly?*

Always read and follow the manufacturer's directions when using a mask.

The mask must cover both the nose and mouth to keep you from breathing in dust and ash. If the mask does not have a snug fit, it will not work properly. Correct fit of the mask requires contact with smooth skin. Masks will not work properly for people with beards or facial hair.

Always use both straps on the mask to hold it in place to keep air from leaking around the mask.

Do a user seal check, including both positive and negative pressure checks, to verify that you have correctly put on the mask and adjusted it to fit properly.

- Negative pressure check - Place both hands completely over the mask and inhale sharply. Be careful not to disturb the position of the mask. The mask should pull into your face. If air leaks around your face or eyes, adjust the nosepiece and straps and repeat the positive pressure check.
- Positive pressure check - Put your hands over the mask and breathe out sharply. If your mask has an exhalation valve be sure to cover the exhalation valve when you exhale. No air should leak out of the mask if the mask fits properly. If air leaks out, re-adjust the nosepiece and straps and repeat the negative pressure check.

Q: *What is the difference between an N95 mask and a dust mask?*

A: N95 masks are tested and certified by the National Institute for Occupational Safety and Health (NIOSH) for use in certain work places. N95 masks are tested to ensure they filter at least 95% of airborne particles. If an employer requires an employee to wear a mask, the employee must be trained and fitted to wear a NIOSH-approved mask.

Dust masks and surgical masks that are not NIOSH certified are not tested for filtration effectiveness and may not offer a consistent level of protection from particles. This means that they may offer little protection from smoke.

Q: *Will a wet towel or bandana provide any help?*

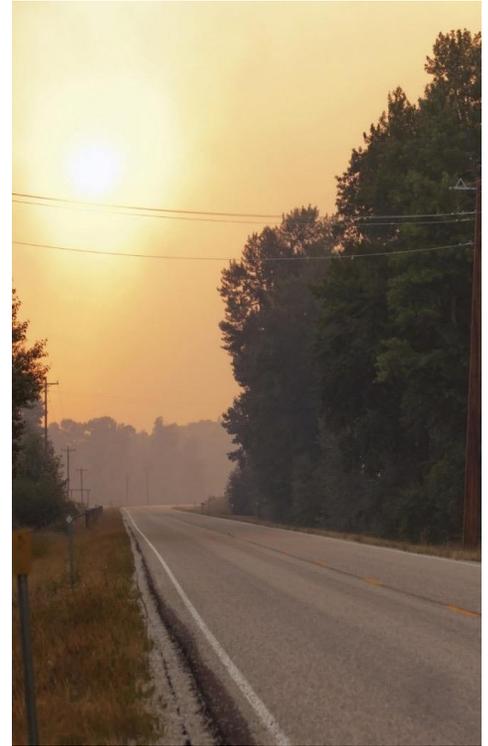
A: Probably not. A wet towel or bandana may stop large particles, but not the fine, small ones that can get down into the lungs. They will likely provide little protection.

Q: *What should I do about closing up my house when it is so hot in there?*

A: Make sure you don't get overheated if you live without air conditioning and have the doors and windows closed. Consider visiting family members, neighbours or public buildings that have air conditioning and air filtration. Leaving the area of thick smoke may be best if you have health conditions that put you at higher risk for illness

Q: *I'll probably need to go out some time. Is there a time of day when smoke is less of a problem?*

A: This varies depending on the fire and the weather conditions. Check the Alberta Environment and Parks Air Quality Health Index. If there is an air quality monitor near you, the website can give you information about when the smoke impact is the lowest. The AQHI can be found on the AEP website:
<http://www.environment.alberta.ca/apps/aqhi/aqhi.aspx>



Q: *What should I do if I must drive to work?*

A: You can reduce smoke exposure by keeping the windows closed and using the air conditioner on the recirculate setting. This can reduce exposure to particles, but not to the gases in wildfire smoke.

Q: *Do air-purifying machines help remove smoke particles inside buildings?*

A: Portable air cleaners with HEPA filters and/or electrostatic precipitators (ESP) can reduce indoor particle levels, but most are not effective at removing gases and odours. Air cleaners using ozone will not remove particles unless they also use HEPA filters and/or ESP technology. Also, humidifiers or dehumidifiers are not air cleaners and will not do much to reduce the amount of particles in the air during a smoke event.

Q: *I operate a non-residential building with outside air intakes. Should I close the outside air intakes during a wildfire smoke event?*

A. Every non-residential building has a uniquely designed ventilation system, and any changes, even temporary ones, can affect building occupants and indoor air quality. If your building is strictly an office environment, it may be wise to cut back or eliminate outside intake into the building during a wildfire smoke event. If the building has labs or special ventilation systems, it may not be wise to reduce outside air flow if ventilation is needed to prevent the build-up of chemicals in the building. We recommend you consult with a heating, ventilation and air- conditioning professional or someone who knows your special ventilation needs for guidance on this issue.

More Information

Q. *Where can I find information about ongoing wildfires in Alberta?*

A. The Government of Alberta has more information about current wildfires status in Alberta: <http://wildfire.alberta.ca/wildfire-status/default.aspx>

Q: *Where can I find information about air quality in my community?*

A. Check the local Air Quality Health Index (AQHI) on the Alberta Environment and Parks website: <http://www.environment.alberta.ca/apps/aqhi/aqhi.aspx>
Check the active Air Quality Health Advisories on the Alberta Health Services website: <http://www.albertahealthservices.ca/news/air.aspx>

Q: *I am an evacuee from the wildfire impacted area. How do I know if I am ready to re-enter the area after the evacuation order is lifted?*

A: If you or your family member belong to one of the at-risk groups listed below, you may want to delay your return until the air quality is regularly improved.

At risk groups include:

- Individuals with respiratory conditions (such as COPD and asthma)
- Individuals with existing cardiovascular conditions (such as angina, previous heart attack)
- Pregnant women
- Children 7 years old and younger; and
- Seniors (>65 years of age)

You know your health condition(s) best. If you have pre-existing heart or lung conditions, check with your health provider to make sure that you are on all required medications, and ensure that you have at least a one month supply on hand.

If your condition(s) is not stable, or is severe, your decision to return should also be based upon how far away you might be from medical services you might need.

- Healthy adults can re-enter when the AQHI is 6 or less, and favorable wind and weather conditions exist that minimize smoke entering the community.
- At risk individuals may want to delay re-entry until the AQHI is regularly 3 or less.

Q: *How does wildfire smoke affect pets and livestock?*

A. The effects of smoke are similar for humans and animals. High levels of smoke may irritate your animal's eyes and respiratory tract. Strategies to reduce animals' exposure to smoke are also similar to those for humans: reduce the time spent in smoky areas, provide animals with plenty of water, limit activities that will increase breathing and reduce exposure to dust or other air pollutants. If your pet or livestock is coughing or having difficulty breathing, contact your veterinarian.

Q. *How can wildfires affect drinking water quality?*

A. Wildfires destroy plants that stabilize soil. By burning ground cover, fires also release chemicals such as nitrates and phosphates that affect water quality. Erosion and release of these chemicals into surface water can decrease the quality of drinking water. Nitrates and phosphates can also promote growth of harmful algae. Flame retardants used by firefighters may find a way to drinking water sources. Water suppliers can monitor the drinking water source upstream of the intake to determine if unhealthy chemicals are in the raw water. Public drinking water systems can take steps to protect drinking water quality by applying post-fire erosion control techniques in the watershed.

Alberta Air Quality Index Table

Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population	General Population
Low Risk	1 – 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
Moderate Risk	4 – 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
High Risk	7 – 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
Very High Risk	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

VISIT: airquality.alberta.ca
DOWNLOAD: AQHI Canada app



For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
 Calgary Main Office
 Lethbridge Main Office

780-735-1800
 403-943-2288
 403-388-6689

Grande Prairie Main Office
 Red Deer Main Office
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 403-356-6366

FIRE-16-011
 Created: May/16
 Revised: 20Jul/17