

Q&A: Smoke safety—what to know and how to keep safe with poor air quality

June 9 2023, by Kristina García



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The air is thick, a yellowish gray blanketing the mid-Atlantic region. Streets are empty and quiet; commuters and dog walkers hurry by in masks cupped around their noses and mouths. Eyes sting. Breathing

becomes labored. And suddenly, everyone's an amateur firefighter, monitoring the Air Quality Index (AQI) and warning their neighbors about not lighting the barbecue.

Smoke from Canadian wildfires drifting down the Northeast Corridor is causing experts to rethink fire risk and safety. The [particles](#) lingering in the air and belaboring the lungs are PM2.5, particulate matter that is 2.5 micrometers or smaller, says Olajumoke O. Fadugba, associate professor of clinical medicine at the Perelman School of Medicine and chief of the allergy and immunology section. You can't see or touch them, but they can cause irritation and inflammation of lungs and airway.

In a Q&A for Penn Today, Fadugba addresses why smoke irritates the body, why people with allergies and asthma are particularly affected, and how to stay safe.

What happens to the body when the air quality index is poor? How quickly does that accelerate as the AQI goes up?

Air quality is affected by things in the air/atmosphere including particulate matter, ozone, carbon monoxide and other pollutants. Air quality may be assessed in terms of particulate matter, ozone, and other pollutants. The website www.airnow.gov tracks and tells us how the [air quality](#) is. When the PM2.5 is too elevated (for example, in the red zone or above), that means there is too much particulate matter in the air and breathing this in is unsafe for people.

Particulate matter is tiny droplets of liquid or solid in the air. PM2.5 is particulate matter that is 2.5 micrometers or smaller in diameter. These particles are small enough to inhale, enter airway, and cause irritation and inflammation of lungs and airway. For people with asthma,

[obstructive lung disease](#), and other chronic respiratory issues, it can cause flares in respiratory symptoms. Symptoms can include cough, shortness of breath, chest tightness, and wheezing. It can also cause sneezing.

Why do my eyes burn and my throat feel dry?

Because the particulate matter in the air is so small and light, when it makes contact with mucosal surfaces, like the eyes and the throat upon inhalation, it can cause irritation.

How long is it safe to be outside without a mask when the AQI is in the red zone?

There is no prescribed amount of time one can spend outside without a mask safely, but one could probably walk [short distances](#), for example, a few blocks. Anything longer, one should wear a mask, preferably an N95 or KN95 mask, which is more effective at keeping out [tiny particles](#) than [surgical masks](#). It's best to try to minimize amount of time spent outside. And try not to do any strenuous outdoor activities.

Why are people with asthma and allergies particularly affected under these conditions?

People with asthma have airways that are hyperreactive and prone to irritation and inflammation. Inhaling [particulate matter](#) in the air can further irritate/inflame airways. People with allergies also have more irritable upper airways, meaning their nose and eyes.

What can people do to protect themselves and their pets?

My advice is to reduce or minimize time spent outside and to avoid strenuous outdoor activity. If you do go out, consider wearing an N95 or KN95 mask to reduce your exposure to pollutants. Surgical [masks](#) are OK but not as effective. Keep the doors and windows closed in your home and car and run fans and/or the air conditioning system on recirculate. If possible, run an air filter system indoors.

Provided by University of Pennsylvania

Citation: Q&A: Smoke safety—what to know and how to keep safe with poor air quality (2023, June 9) retrieved 19 April 2024 from <https://medicalxpress.com/news/2023-06-qa-safetywhat-safe-poor-air.html>

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