

Smoke and Air Quality Health Advisory Information for Workers

New York State has issued an Air Quality Health Advisory... Why? What does that mean?

The current air quality health advisory has been issued due to smoke pollution from wildfires burning across Canada traveling south to New York (as well as New Jersey, Connecticut, Massachusetts, Pennsylvania, Vermont, and Virginia).

Wildfire smoke contains a combination of particulate matter and gases such as ozone, carbon monoxide, polycyclic aromatic hydrocarbons (PAHs), and nitrogen dioxide. Extensive wildfire smoke exposure has been associated with cardiovascular and cerebrovascular emergency department visits, particularly in adults over 65 years of age.¹

The health advisory is in place to alert New Yorkers to take appropriate precautions in response to the smoke pollution.

What is PM2.5 and why does it matter?

One of the major components of wildfire smoke is particulate matter, abbreviated PM. When considering the health effects of PM, the size of the particles plays a large role. PM2.5 refers to particulate matter that has a diameter of 2.5 microns or smaller (for comparison, a human hair is approximately 50-70 microns in diameter); these particles are small enough to travel deep into the lungs and damage the lining.

What is the Air Quality Index (AQI)? Should I be paying attention to it? How do I use it?

The AQI is a color-coded system developed by the Environmental Protection Agency (EPA) to communicate the cleanliness of the outdoor air. The data is gathered from over 1000 pollution monitors across the country.

The index scale is set from 0 to 500; the higher the number, the higher the level of pollution. Levels measuring 100 and lower are below the levels known to cause negative health effects; levels between 101 and 199 are safe for most adults, but older adults, children, and adults with heart and lung disease may be at greater risk. Levels over 200 are considered “very unhealthy.” At 4PM on June 7, 2023, New York City’s AQI was averaging 413. At 8AM on June 8, 2023, the levels are over 200.

The AQI is easy to use, free, and can be a good tool to help gauge when and what kind of precautions should be implemented. Visit airnow.gov for one interactive tool.

Who is at risk?

At the moment, many of the studies looking at cumulative effects of breathing in wildfire smoke have been among firefighters, so it is difficult to say how these translate into the general population. However, we can extrapolate that people who experience longer exposures and are exposed to denser smoke are likely to have a higher risk of negative health effects.

Additionally, older adults (over 65), pregnant people, children, and people with preexisting respiratory and heart conditions are at particularly high-risk.

People who work outdoors or are involved in strenuous outdoor activity are also at higher risk.

What are the symptoms associated with wildfire smoke exposure?

Symptoms can range from mild, such as eye, nose, and throat irritation, coughing, runny nose, headache, and fatigue, to severe, such as difficulty breathing, chest pain, increased heart rate, and exacerbation of asthma. One study² found an increase in influenza cases after a severe fire season. Additionally, the associated inflammatory response can exacerbate existing health conditions.

How can I protect myself?

- Local guidelines may be updated quickly as conditions change, so pay attention to local health reports, and keep an eye on the AQI.
- If guidelines recommend staying indoors and you are able to do so, please do. Keep windows and doors closed as much as possible. If it is too hot inside, run an air conditioner if you have one, but keep the fresh-air intake closed and filter clean so as not to bring the outdoor smoke inside. If it is too hot to stay inside with the windows closed and you

¹ Wettstein, Z. S., Hoshiko, S., Fahimi, J., Harrison, R. J., Cascio, W. E., & Rappold, A. G. (2018). Cardiovascular and cerebrovascular emergency department visits associated with wildfire smoke exposure in California in 2015. *Journal of the American Heart Association*, 7(8). <https://doi.org/10.1161/jaha.117.007492>

² Erin L. Landguth, Zachary A. Holden, Jonathan Graham, Benjamin Stark, Elham Bayat Mokhtari, Emily Kaleczyc, Stacey Anderson, Shawn Urbanski, Matt Jolly, Erin O. Semmens, Dyer A. Warren, Alan Swanson, Emily Stone, Curtis Noonan. (2020). The delayed effect of wildfire season particulate matter on subsequent influenza season in a mountain west region of the USA. *Environment International*, 139. <https://doi.org/10.1016/j.envint.2020.105668>.

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do not have an air conditioner, seek shelter elsewhere.³

- When outdoors, avoid strenuous activity as much as possible. Advocate with your employer (through your union or worker center) for modified/light duties.
- Use a freestanding air filter with particle removal (but without ionization). Follow manufacturer's recommendations on filter replacement and device location.
- Do not increase indoor air pollution by using anything that burns (e.g., candles, fireplaces, smoking tobacco or other products), or vacuuming (stirs up particles already inside your home).

What about respiratory protection?

N95 respirators, which are designed to protect the wearer from particulates, will offer some protection – a study found that they reduce hospitalizations from wildfire smoke by 30%⁴. It is important to reiterate that wildfire smoke is comprised of particulates *and* gases, and N95s are only designed to protect the wearer from particulate exposure, *not* gas. Higher levels of respiratory protection, such as half-face and full-face air purifying respirators, powered air purifying respirators (PAPR), and supplied air respirators (SAR), should be considered for extended exposure and/or strenuous work. Advocate with your employer (through your union or worker center) to determine the most appropriate respiratory protection for the work being done.

Cloth and paper masks, and other loose fitting face coverings will provide even less protection, though they will be better than no covering at all.

What if I feel sick?

In New York State's Paid Sick Leave Law (also enforced by New York City), in workplaces with 5 or more employees, employers must allow workers to take up to 40 hours of paid sick time if they are sick or if they need to take care of a close family member who is sick and cannot work. Employers with 100 or more employees must provide up

to 56 hours of paid leave each calendar year. Employers cannot retaliate (for example, fire, give fewer hours, or otherwise treat differently) against workers who are out sick or take time off to care for a sick family member. This law applies to outdoor workers as well as indoor workers and would apply during this Air Quality Health Advisory.

What should my employer be doing?/What should I, as an employer, do for my workers?

- Employers should use the AQI for PM2.5 to help determine what kinds of precautions they should use to ensure their workers' safety. CalOSHA recommends an AQI of below 151.⁵ However, with an AQI above 101, sensitive groups are still at heightened risk, and employers should work with their employees to provide safe working conditions for all workers.
- At AQI of 151 and above, employers should use additional measures to reduce potential exposure to workers. Measures can include engineering controls, such as providing enclosed structures or vehicles for outdoor workers where air is filtered, or providing additional air filtration units for indoor workers.
- Where engineering controls are not feasible, or do not sufficiently reduce the AQI, administrative controls, should be implemented when practicable; for example, changing the location where employees work, implementing modified or light duties, or changing work schedules.
- Employers should provide access to adequate respiratory protection equipment: N95s, or better (cloth coverings, paper masks, or other loose fitting face coverings are not sufficient) and encourage voluntary use of such equipment.
 - Note that voluntary use of filtering facepiece respirators requires employee completion of Appendix D.⁶

³ Centers for Disease Control and Prevention. (2013, December 27). *Wildfire smoke*. https://www.cdc.gov/disasters/wildfires/smoke.html?utm_source=substack&utm_medium=email#:~:text=Wildfire%20smoke%20can%20harm%20you,are%20exposed%20to%20wildfire%20smoke.

⁴ Kodros, J. K., O'Dell, K., Samet, J. M., L'Orange, C., Pierce, J. R., & Volckens, J. (2021). Quantifying the health benefits of face masks and respirators to mitigate exposure to severe air pollution. *GeoHealth*, 5(9). <https://doi.org/10.1029/2021gh000482>

⁵State of California Department of Industrial Relations. *Protecting Outdoor Workers Exposed to Smoke from Wildfires*. <https://www.dir.ca.gov/dosh/wildfire/worker-protection-from-wildfire-smoke.html>

⁶ 29 CFR 1910.134