Shaping Tomorrow's Global Built Environment Today

# WILDFIRE SMOKE FROM WILDFIRES AND PRESCRIBED BURNS: IMPLICATIONS FOR INDOOR ENVIRONMENTAL HEALTH

## THE ISSUE

Wildfires are large-scale, uncontrolled fires that occur in forests, grasslands, and other landscapes. In recent years, the frequency and severity of wildfires have increased due to climate change. The smoke from these fires, along with that from prescribed burns, can cause significant air quality issues both outdoors and indoors. Wildfire smoke poses a risk to indoor air quality (IAQ) by introducing hazardous particles and gases into the air. These contaminants can enter buildings through open doors and windows, ventilation systems, or general air leakage. Once inside, they can remain airborne for long periods of time and lead to health symptoms such as eye irritation, coughing, difficulty breathing, headaches, nausea, and dizziness, as well as more severe health risks including heart attacks and strokes, especially among vulnerable populations. The health impacts caused by wildfire smoke make it essential for building owners/operators to take proactive steps towards reducing exposure among occupants wherever possible. While wildfires and prescribed burns are the driving issue, many of the concerns and much of the available knowledge and guidance have wider applicability to other smoke events.

## ASHRAE's ROLE

ASHRAE develops consensus standards and guidelines and offers technical resources for managing the effects of wildfires in both commercial and residential buildings. These resources include:

- ASHRAE Guideline 44-2024, *Protecting Building Occupants from Smoke During Wildfire and Prescribed Burn Events* – provides guidance on how to protect building occupants from smoke during wildfire and prescribed burn events. The aim of the guideline is to provide a series of actions to be taken to reduce the risk of smoke infiltration into a building, protect its occupants from smoke, and reduce the need for evacuation. The guideline addresses risk reduction, guidance on selecting appropriate smoke management strategies, and information on air filtration and air-conditioning systems for smoke control. The guideline also addresses building envelope design and construction, and testing and commissioning of smoke management systems.
- ASHRAE Planning Framework for Protecting Commercial Building Occupants from Smoke During Wildfire Events – provides recommended heating, ventilating, and air conditioning (HVAC) and building measures to minimize occupants' exposures and health impacts from smoke during wildfire and prescribed burns.
- ASHRAE Residential Issue Brief, "Wildfire Smoke Hazards for Dwelling Occupants," 2021 – provides evidence-based information and guidance to protect residential building occupants from smoke exposure and to help designers create residential buildings and systems to limit smoke entry.

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## ASHRAE's VIEW

ASHRAE's view is that building owners/operators should take proactive measures to reduce exposure to wildfire smoke to manage negative IAQ impacts. These include reducing outdoor air intake during high levels of wildfire smoke; installing effective filtration and cleaning systems; sealing cracks or gaps where outdoor air smoke can enter the building; monitoring IAQ conditions with reliable instruments; raising awareness among occupants about potential health effects of wildfire smoke exposure; using portable air filtration devices (HEPA or high MERV) when necessary; ensuring proper maintenance of HVAC systems; providing greater access to equipment such as respirators or masks when needed; consulting with local public health officials when necessary; and offering support services for those affected by poor IAQ conditions caused by wildfire smoke.