

Wildland Fire Smoke, Air Quality, and Health

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Wildland fire smoke is a [complex mixture](#) of gases and fine particles produced by burning materials during wildland fire events that temporarily degrades air quality over long distances, creating [health concerns](#) and decreasing visibility. Wildland fire smoke affects the public and [fire personnel](#), and may impose a [disproportionate risk](#) on sensitive populations such as children, older adults, and those with certain chronic conditions. During [2023](#) and [2026](#), weather conditions transported [Canadian wildfire smoke](#) hundreds of miles into the United States, driving responses from the [public](#) and some Members of Congress.

Wildland Fire Smoke and Health

[Particulate matter](#) is the principal pollutant of concern from [wildland fire smoke](#). Wildland fire smoke, including smoke from prescribed burns (planned fires burning under supervision) and wildfires (unplanned fires and escaped prescribed burns), releases [fine particles](#) (less than 2.5 microns, or “PM2.5”). The U.S. Environmental Protection Agency’s (EPA’s) [National Emissions Inventory](#) identifies wildland fires as a major contributor of these fine particles and other pollutants. Fine particles can penetrate deeply into the lungs and may [contribute to a range of health effects](#), including [eye irritation](#), [sore throat](#), [coughing](#), [breathing difficulties](#), [worsening of preexisting heart and lung disease](#), and [increased premature mortality](#).

Wildland fire smoke also includes [carbon monoxide](#), [hazardous air pollutants](#), and emissions that contribute to the formation of [ground-level ozone](#), a lung and airway [irritant](#). The [chemical composition of smoke depends on various factors](#), including burn conditions (e.g., fire temperature) and type of materials burned (e.g., vegetation or structures).

Research links wildland fire smoke exposure to health complications, including [respiratory](#), [cardiovascular](#), and potential [pregnancy](#) impacts; [reduced lung function in subsequent years](#); and increased risk of [respiratory infections in exposed infants](#) and [influenza across age groups](#). While smoke may affect the health of any exposed individual, sensitive populations—[children](#), [people who have chronic conditions](#), [pregnant women](#), and [the elderly](#)—are more vulnerable.

[Wildland firefighters](#) are regularly [exposed](#) to pollutants in wildland fire smoke, [including carcinogens](#). Less is known about [cumulative](#) and [long-term exposure to wildland fire smoke](#). In 2026, the [U.S. Forest Service](#) within the U.S. Department of Agriculture and the [U.S. Wildland Fire Service](#) within the U.S.

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Department of the Interior updated policies in an effort to reduce smoke exposure for wildland fire personnel.

Air Quality Requirements and Wildland Fires

The [Clean Air Act \(CAA\)](#) is the principal statute addressing air quality concerns. The [CAA](#) requires EPA to establish minimum national air quality standards to protect health. EPA has set and periodically revised national ambient air quality standards (NAAQS) for [six “criteria” air pollutants](#), including some that are in wildland fire smoke. Under the CAA, states have primary responsibility for assuring compliance with NAAQS and establishing state implementation plans intended to meet these standards. Measurements from a national network of [air quality monitoring stations](#), in combination with modeling analyses, inform NAAQS compliance determinations.

The national monitoring network may detect smoke from wildland fires, sometimes exceeding the NAAQS. The CAA allows EPA to exclude air quality data from regulatory decisions if air quality is demonstratively influenced by “[exceptional events](#),” such as wildland fires and certain natural events ([42 U.S.C. §7619\(b\)](#)). To exclude prescribed burn-impacted air quality data from regulatory decisions, individuals and agencies that conduct prescribed burns [must adhere to the exceptional events rule](#) by [demonstrating](#) appropriate smoke management [procedures](#).

Wildland Fire Smoke Response

Wildland fire smoke response strategies include [air quality monitoring](#), [smoke forecasting](#), [timely communication](#) of air quality conditions and [related health risks](#), and [measures to avoid smoke](#). [Federal, tribal, state, and local](#) agencies contribute to these tasks.

EPA and other agencies have developed tools to measure air quality conditions and alert the public. For example, EPA manages [AirNow](#), a [multiagency](#) website that reports air quality based on monitoring data received on a regular basis from state, local, and federal agencies. AirNow reports air quality information using the color-coded [Air Quality Index \(AQI\)](#), a nationally uniform index. EPA calculates the AQI for a criteria pollutant based on the ambient concentration of that pollutant. The higher the AQI, the greater the pollution level. EPA’s [AirNow mobile app](#) can send phone alerts when AQI exceeds a user-chosen threshold, and its [EnviroFlash](#) service provides email alerts. The National Weather Service issues [air quality alerts](#) when the AQI is [unhealthy](#). States and local agencies may share alert information with local media outlets.

To help protect health near wildland fires, the Forest Service’s [Interagency Wildland Fire Air Quality Response Program \(IWFAQRP\)](#) may deploy trained specialists called [Air Resource Advisors \(ARAs\)](#) to monitor and forecast local air quality conditions and help develop smoke management strategies. ARAs also use computer [modeling](#) to estimate pollution levels. The [IWFAQRP](#) and [EPA](#) lend smoke particulate monitoring kits to ARAs and firefighting agencies to monitor wildland fire emissions. In 2026, the program had [more than 70 ARA deployments](#). EPA also lends [supplemental and educational air quality monitors](#).

The federal government provides other resources to help individuals and local officials who encounter wildland fire smoke. For example, EPA publishes [resources online](#), including a [guide for public health officials](#). EPA collaborated with the [American Society of Heating, Refrigerating, and Air-Conditioning Engineers \(ASHRAE\)](#) to develop [guidelines and best practices](#) for building design and operation to reduce smoke impacts. EPA also provides assistance to certain nonfederal entities for projects that seek to improve public health protection during wildland fire smoke events through its [Wildfire Smoke Preparedness in Community Buildings](#) grant program.

Issues for Congress

The federal government currently engages in measures to protect the public from wildland fire smoke through air quality monitoring, public communications, financial and technical assistance, and other means. Congress may consider options for maintaining or improving air quality monitoring networks, smoke models, and public communications to help inform smoke management and public health responses. Congress could clarify the eligibility of prescribed burns as exceptional events and reduce the burden and cost to demonstrate an event. Congress may also consider supporting research into fields related to smoke and health, such as respiratory protection devices, building technologies, medical research, or other topics.

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