

Preliminary Data Findings: Indoor Air Quality (PM_{2.5}) in 1048 homes across LA, Before and During January 2025 Wildfires

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Key Takeaways:

- **LA Wildfires led to elevated PM_{2.5} levels in homes.** Homes located throughout Los Angeles saw an increase in indoor PM_{2.5} correlated with elevated outdoor levels at the time of the LA fires.
- **LA Wildfires impacted home air quality in areas away from the burn zone.** The impact of the wildfires extended to homes located more than two miles from the burn area.
- **In-home air monitors are useful for wildfire response.** Indoor air quality sensors worked well at detecting changes in home PM_{2.5} concentrations in real time during the wildfires. Monitoring indoor air quality and taking informed precautions (such as wearing N-95 masks, using air filters, closing windows, etc.) are vital to protect health during wildfires and other events that increase outdoor particulate matter.

What's in this report?

The Harvard Healthy Buildings team worked with Airthings—a technology company that specializes in indoor air quality monitors for homes, workplaces, and schools—to study how the LA wildfires affected indoor air quality in nearby homes, using real-time data from 1,578 Airthings monitors installed in 1,048 homes across Los Angeles. The data shows how the air quality inside of homes was impacted by episodes of high outdoor PM concentrations during the wildfires.

What's next?

Indoor air quality data are available from up to one year before, during, and after the wildfires, in five-minute time intervals. The year-long measurements will be further analyzed to assess how short-term peaks in

What's next? (continued)

outdoor air pollution may have impacted homes, and to better understand the relationship between indoor and outdoor concentrations during periods of high outdoor air pollution, including that from PM_{1.0}, PM_{2.5}, PM₁₀, and volatile organic compounds (VOCs).

The geographic coverage of the indoor measurements will allow for the analysis to examine how different building characteristics (year built, construction materials used, etc.) and geographical locations may impact indoor air quality during times of poor outdoor air quality. In other words, this research will look at how many contaminants may have entered homes during the fires, and which types of buildings allowed the most contaminants to enter. This can help inform building decisions to prevent exposures in the future.



DATA SET 1: INDOOR AIR QUALITY

Preliminary Data Findings: Indoor Air Quality (PM_{2.5}) in 1048 homes across LA

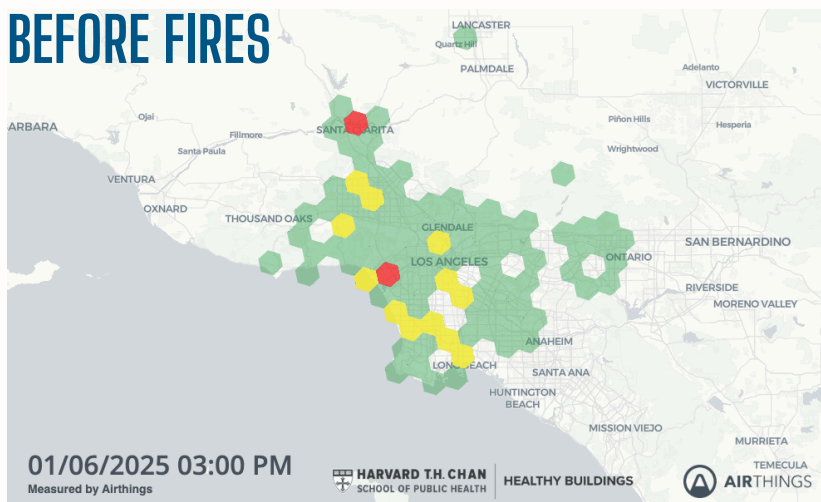
Data Type: Air Monitoring

Location: Los Angeles

Key Takeaways:

- The figure shows the hourly average (mean) indoor PM_{2.5} concentration before and after the 2025 January wildfires in homes. The map suggests outdoor events from wildfires and other episodes of high outdoor air pollution can affect the indoor environment.
- In-home air monitoring devices are useful to pick up these increases and allow people to take informed precautions. Such measures can be vital to protect health during wildfires and other events that increase outdoor particulate matter.

BEFORE FIRES



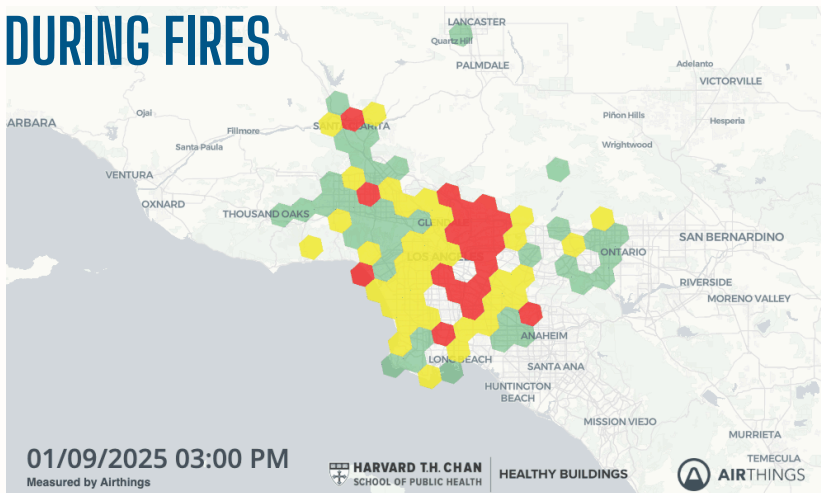
PM_{2.5} (µg/m³)

≤ 9

> 9 & ≤ 35

> 35

DURING FIRES

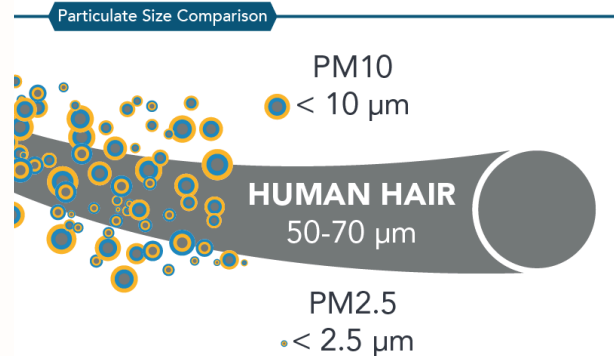


µg/m³ is a unit of measurement that indicates the concentration of an air pollutant in micrograms per cubic meter of air. It's used to measure the amount of pollutants like ozone and particulate matter in the air.

WHAT IS PM_{2.5} AND WHY DOES IT MATTER?

Air pollution is often measured by measuring the number of tiny particles in the air. These particles, called **particulate matter (PM)** are made up of a mixture of many different chemicals. PM varies widely in size, shape and chemical composition, and may contain manmade chemicals, metals, organic compounds, carbon, and many other compounds.

Particles are defined by their size for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM₁₀) are inhalable into the lungs and can induce adverse health effects. For comparison, a human hair is 50-70 microns in diameter.



Source: CA Air Resources Board

Fine particulate matter is defined as particles that are 2.5 microns or less in diameter (PM_{2.5}). PM_{2.5} is more likely to travel into and deposit on the surface of the deeper parts of the lung. PM_{1.0} is a subset of PM_{2.5} and contains even smaller particles.

WHAT ARE THE EPA LIMITS FOR PM_{2.5} ?

The EPA and CA Air Resources Board have both set limits for exposure to particulate matter in air. These limits are based on scientific studies that show that exposures to these pollutants for certain amounts of time are associated with an increased risk of adverse health effects.

These limits look at two types of exposures:

- High exposures over a short period of time (less than 24 hours)
- Lower exposures on a regular basis over a long period of time (annual exposures)

	PM _{2.5} Annual Average	PM _{2.5} 24-Hour Average
National Ambient Air Quality Standard	9 µg/m ³	35 µg/m ³
California Ambient Air Quality Standard	12 µg/m ³	None

µg/m³ is a unit of measurement that indicates the concentration of an air pollutant in micrograms per cubic meter of air. It's used to measure the amount of pollutants like ozone and particulate matter in the air.

WHAT CAN YOU DO RIGHT NOW?



HARVARD T.H. CHAN
SCHOOL OF PUBLIC HEALTH

HEALTHY BUILDINGS

ADVISORY: Wildfire smoke can get inside your home.
Stay safe with these simple tips.

3 WAYS TO REDUCE RISK FROM WILDFIRE SMOKE AT HOME

1 FILTER INDOOR AIR

- ✓ Upgrade to MERV13 filters or higher in central systems
- ✓ Use portable air cleaners with HEPA filters
- ✓ Consider air cleaner with HEPA + activated carbon if near to burn area and wear a mask while cleaning

2 CONTROL DUST

- ✓ Kick shoes off at the door to prevent tracking in soot/ash
- ✓ Damp wipe surfaces
- ✓ Use a vacuum that is air-sealed with a HEPA filter

3 MONITOR AIR QUALITY

- ✓ Install an indoor air quality monitor
- ✓ Track PM_{2.5} (airborne particles)
- ✓ Track TVOCs (airborne chemicals)

IF YOU HAVE QUESTIONS:

- Email us: info@lafirehealth.org
- Visit the website: www.LAFireHEALTH.org

The Los Angeles Fire Human Exposure and Long-Term Health Study is a 10-year study of the Los Angeles fires to evaluate which pollutants are present, at what levels, and where, and to assess the respiratory, neurological, cardiovascular, reproductive, and immune system impacts of the wildfires.

The data shared in this brief are preliminary in nature and are being made available to the public in an effort to provide data as soon as possible. Research is a process and results can change over time based on new data input. The data shared on this site is for informational use only and should not replace the advice of a medical professional. This is a study run by a consortium and as such, no one university or institution is responsible or liable for the data or recommendations presented.