

**Preliminary Data Findings: Indoor and Outdoor Air Quality (VOC and PM Levels) in the Burn Zone and Recommended Safety Precautions**

**Date Released:** 3/5/2025

### Key Takeaways:

- Indoor air quality can be lower inside homes that are located in the burn zone, especially in homes that suffered damage, even many weeks after the fire.
- Volatile organic compounds (VOCs) have been measured inside damaged homes at a level 4-5x higher than outdoors, and VOC and particle levels can spike due to activity in the home (such as cleaning, disturbing ash and dust, turning on HVAC systems, etc.).
- We recommend continued precautions when in the burn area and especially inside any impacted homes.

### What's in this report?

Preliminary results of PM and VOC levels collected at three homes in and near the Palisades burn zone:

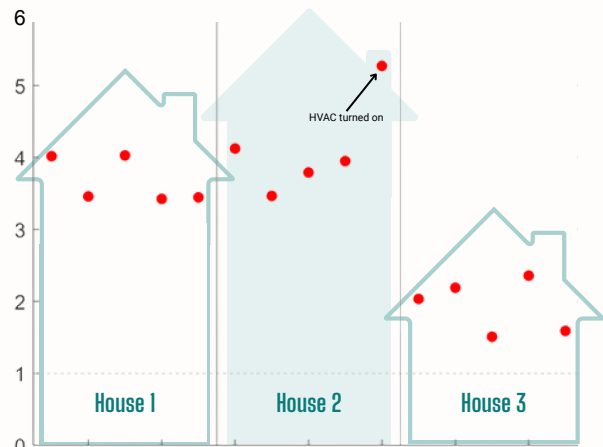
- House 1 was in burn zone with no damage.
- House 2 was in burn zone with minor damage.
- House 3 was outside the burn zone.

### What's next?

This is only one part of a larger study of air, water, dust, and soil at 50 homes in the vicinity of the Palisades and Eaton Fires. Additional testing is underway and will be reported publicly as the data are reviewed by the scientific team. Learn more at: [www.LAFireHEALTH.org](http://www.LAFireHEALTH.org).

### What did we find?

- PM and VOC levels are higher inside than outdoors in damaged homes.
- VOC levels were higher in homes in the burn zone than homes outside the burn zone, and were higher indoors than outdoors.
- Activity inside damaged homes can disturb debris and result in a spike in VOC levels.



# DATA SET 1: INDOOR/OUTDOOR PM

**Preliminary Data Findings:** Indoor and Outdoor PM<sub>1.0</sub> In and Around Burn Areas

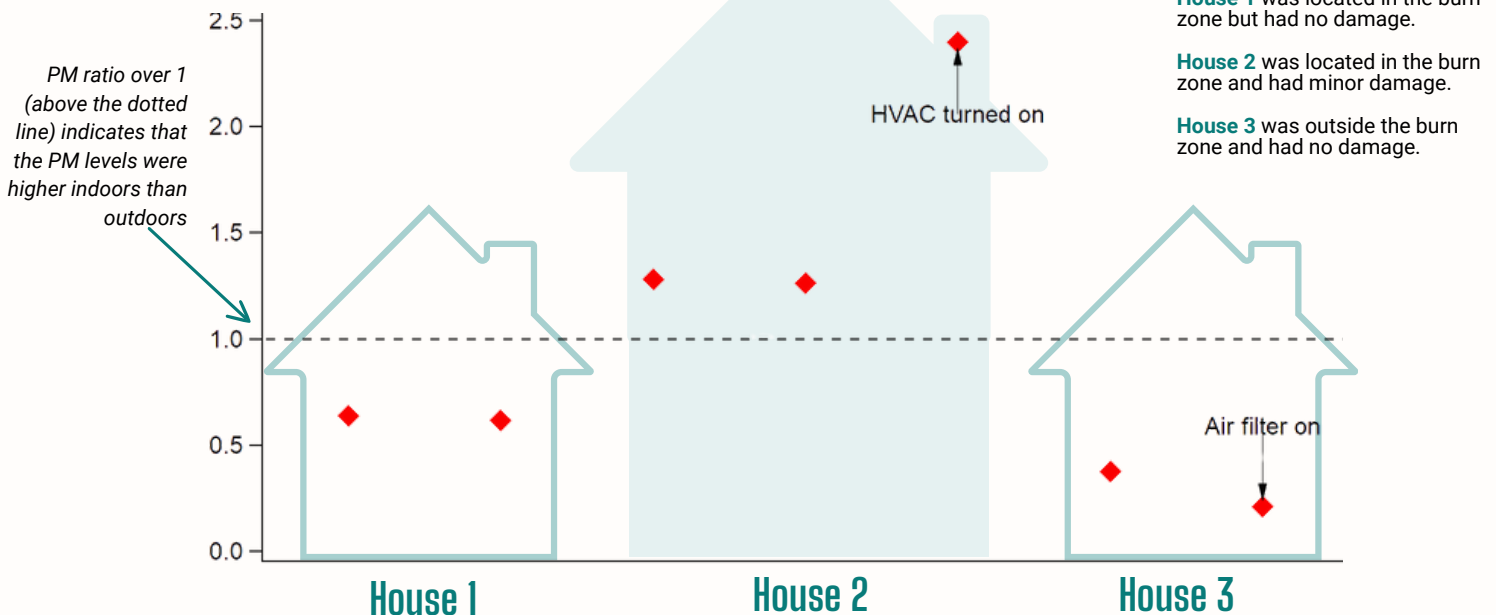
**Data Type:** Air Monitoring

**Location:** Palisades

## Key Takeaways:

- In the 3 homes we visited in/near the Palisades burn area, PM levels were lower indoor than outdoors in 2 homes that had no fire damage (Homes 1 & 3).
- In House 2 (which had minor damage), PM levels were higher indoors than outdoors, and turning on the HVAC system for the first time since the fires resulted in a spike of indoor PM, likely due to resuspension of particles.
- In House 3, the lowest particle levels were observed when a simple air cleaning device<sup>1</sup> was being used.

## INDOOR/OUTDOOR PM RATIOS



## Notes

1. PM stands for particulate matter, which are tiny particles present in air pollution. Learn more on our FAQ here: [lafirehealth.org/faq/#PM](https://lafirehealth.org/faq/#PM)
2. A Corsi-Rosenthal box is a portable air cleaner that you can build yourself using simple materials, such as box fans and air filters. Learn how to build it here: <https://engineering.ucdavis.edu/news/science-action-how-build-corsi-rosenthal-box>

# DATA SET 2: INDOOR/OUTDOOR VOCs

**Preliminary Data Findings:** Indoor/Outdoor VOCs in 3 Homes in Burn Area

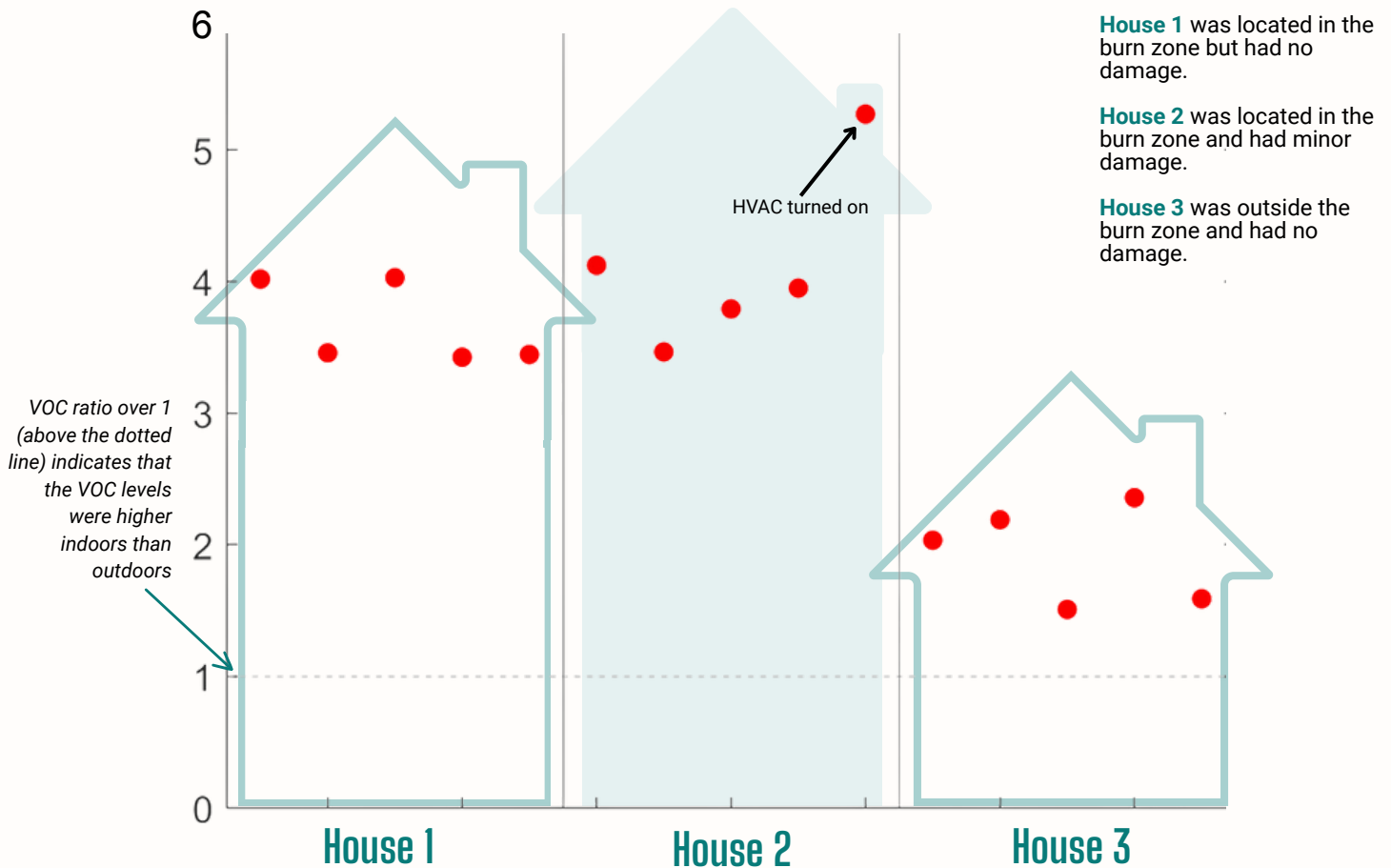
**Data Type:** Air Monitoring

**Location:** Palisades

## Key Takeaways:

- VOC levels of furan (a marker of fire-related air pollution) were higher indoors than outdoors in all 3 homes, and were highest in House 2, the most heavily impacted of the 3 homes.
- These data are preliminary and do not yet include the specific VOC concentrations, which are currently being calculated by the scientific team. We are presenting the indoor levels relative to outdoors using preliminary measurements to get this information out to the public quickly that indoor levels in impacted homes can exceed outdoor levels. The presence of furan indicates that other VOCs may be present at higher levels inside the homes, as well, and we recommend continued precaution.

## INDOOR AND OUTDOOR VOC RATIOS



**House 1** was located in the burn zone but had no damage.

**House 2** was located in the burn zone and had minor damage.

**House 3** was outside the burn zone and had no damage.

# FREQUENTLY ASKED QUESTIONS ABOUT VOCs

## What are VOCs?

VOC stands for volatile organic compounds. VOCs are invisible gases and vapors that are released into the air from solids. This can happen after structures burn during wildfires, but VOCs are also commonly emitted in homes from an array of everyday sources like cleaning products, air fresheners, paint, new furniture, etc. Some of these VOCs are harmful to human health.



## What is off-gassing?

Off-gassing is the production of gases from the chemical deterioration of a substance over time, and the release of gases from materials into the air. *Source: EPA Indoor Air Glossary.*

For example, when you light a scented candle, the heat from the fire melts and releases chemicals from the wax to help freshen the smell in your home. This is a similar process to the off-gassing that happens over time as chemicals are released from solids inside your home.

After a fire, this off-gassing can include more hazardous compounds due to the chemicals that are likely present in ash and debris from the fire. As the ash and debris get stirred up and moved (by cleaning activities, turning on the HVAC system, etc.), they can begin to emit fine particles and VOCs into the air.

This is why it is important to air out your home frequently in the days after a fire. This allows the VOCs to dissipate from your indoor environment.

This is also why it is advised to wear a protective mask and take other precautions when entering a home that was affected by the fire, or is located in a burn zone, even if the home itself was not damaged.

## How do I get VOCs and other potentially toxic substances out of the air inside my house?

If you still see soot and ash in your home or smell chemicals, you should ventilate to help these materials off gas:

- Open windows
- Run A/C (make sure you have a MERV-13+ filter on your HVAC system)
- Run air purifiers if possible – we recommend HEPA for filtration of particles and of VOCs.

However, make sure not to ventilate or air out your home when there are outdoor conditions that may bring more harmful materials inside.

### For example:

- **DON'T** ventilate when there are debris removal activities on neighboring properties.
- **DON'T** ventilate on days with high winds that may stir up debris.
- **DO** ventilate the day after it rains (when the air is typically cleaner) and when there is no cleanup or debris removal happening nearby.

If you see clean-up or debris removal happening nearby, that is when you should try to prevent outside contaminants in the air from coming inside:

- Close windows
- Turn off HVAC systems
- Run air purifiers and air filters in your homes
- Avoid working outside while this cleanup work is happening.

For more recommendations, please visit:

[lafirehealth.org/FAQ](https://www.lafirehealth.org/FAQ)

# RECOMMENDED PRECAUTIONS IN BURN AREAS

## How can I protect myself when working inside an affected home in a burn zone?

Due to the likely contaminants in soot, ash, and fire debris, even in homes that did not burn, we recommend wearing protective masks and clothing when entering a home in the burn zone.

If possible, hire a professional remediation company to remove the soot, ash, and fire debris before entering the home yourself.


If that is not possible, take the following precautions to avoid exposure to potential toxins in affected homes:

- When entering an affected home, always wear a well-fitting high-grade respirator (mask), see chart below for guidance on choosing a mask.
- When cleaning, always wear a protective outer layer that you can easily remove when leaving the burn site, and try to minimize exposed skin to avoid skin irritation. (In general, try to wear the most protective gear that you can afford and can find.)









## Recommended Precautions (continued):

- You can do this by wearing household dishwashing gloves, long sleeve shirts, and long pants.
- For more protection, you can wear a disposable Tyvek “bunny suit.” These can be purchased online and at local hardware stores.
- Wear safety goggles, not glasses, so that ash won’t get in your eyes.
- Cover your head to avoid ash from sticking in your hair.
- Wear thick-soled shoes or boots, and be sure to clean the soles of the shoes thoroughly when leaving the burn site.

After you leave the affected home, remove the outer layers of protective clothing and clean the soles of your shoes (preferably while outside so that you don’t track ash and toxins into where you are staying), and wash or discard dirty items. Be sure to shower and wash skin and hair with soap and water.

**Choosing the Right Respirator After a Wildfire**  **HARVARD T.H. CHAN**  
SCHOOL OF PUBLIC HEALTH **HEALTHY BUILDINGS**

Guidance for the General Public

	WHEN TO USE	AIRBORNE PARTICLES	AIRBORNE GASES	OIL-PROOF
<p><b>PICKING THE RIGHT CARTRIDGE FOR THE P100+ MULTI-GAS MASK</b></p> <p><b>MAGENTA (P100):</b> Particulates <b>REQUIRED</b></p> <p><b>BEST</b> ↑</p> <p><b>OLIVE:</b> Multi-Gas/Vapor Protection</p> <p><b>YELLOW:</b> Organic Vapor/Acid Gas Combinations</p> <p><b>GOOD</b> ↓</p> <p><b>BLACK:</b> Organic Vapors</p>	 <p><b>P100+ MULTI-GAS MASK</b></p> <p><b>HIGHEST PROTECTION</b></p> <p>In burn area; cleaning soot/ash</p>			
	 <p><b>N95 MASK</b></p> <p><b>GREAT PROTECTION</b></p> <p>Outside burn area; general cleaning; no visible soot/ash; AQI is “very unhealthy” or “hazardous”</p>			

For more information, please visit: [healthybuildings.hsph.harvard.edu/wildfirerespiratorselection](https://healthybuildings.hsph.harvard.edu/wildfirerespiratorselection)

# 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<sub>2.5</sub> (airborne particles)
- ✓ Track TVOCs (airborne chemicals)

## IF YOU HAVE QUESTIONS:

- Email us: [info@lafirehealth.org](mailto:info@lafirehealth.org)
- Visit the website: [www.LAFireHEALTH.org](http://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.