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After a Fire: Considerations of Personal Safety When Visiting Fire-Damaged Property

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After a Fire:

Considerations of Personal Safety When Visiting Fire-Damaged Property



1. General Considerations

Fire-damaged properties can contain hazards that are not immediately obvious, whether the structure burned completely or is still standing. Debris removal and remediation companies routinely send workers into these properties with high levels of safety equipment because the risk is that serious. This guidance reviews health, safety, and preparation steps for residents planning a site visit, drawn from firsthand experience responding to and recovering from fire emergencies and disasters.

A few things to keep in mind: (1) Proximity matters. Risk to life and health depends on how close you are to damaged buildings and vehicles, and on your location relative to the smoke plume; (2) Every property is different. Safety risks can vary drastically between neighboring properties depending on what burned; (3) Fire damage is not like flood damage. The health risks at a fire-damaged property differ significantly from those at a flood-damaged one. Take these hazards seriously, and minimize time spent onsite until the property has been professionally assessed for safety. Before visiting a site, review this document in its entirety so that the recommended personal safety supplies and pre/post property visit practices can be understood. Additional guidance is available on debris, soil, and building environmental hazards and safety in this *Resilience to Emergencies and Disasters* [series](#).

Do not judge a property's safety by sight or smell. Consult your local health department and a qualified environmental professionals before spending extended time inside or relying on personal protective equipment (PPE), and before removing any items, to avoid spreading contamination to your vehicle, temporary residence, school, or workplace.

2. Before You Go

Tell someone your plan. A range of things can go wrong onsite so make sure someone else knows where you are. Notify a family member, friend, or neighbor of your destination and expected return time. Also, do not go alone. Visit with at least one other person. Never enter debris or a damaged structure by yourself. Do not take children or pets, and make arrangements for care prior to going. Finally, be sure to confirm you have access. Check with local authorities that the area is open for re-entry and whether a permit is required. People with heart or lung conditions should consult their healthcare provider before post-fire cleanup, as mask use, wearing safety equipment, and physical exertion can both be harder on the body with these conditions.

3. Know the Risks Before You Enter

Destroyed structures pose real risks to life and health. Many hazards may be difficult or impossible to identify without professional help. Hazards may also have originated from nearby properties.

- **Underground fire.** Fires can sometimes smolder below ground for weeks to months, burning out invisible pits that create a fall hazard.
- **Sharps and punctures.** Nails, screws, broken glass, and twisted metal are common throughout debris fields and can puncture footwear. Fiberglass shards can puncture skin.
- **Propane tanks and gas cylinders.** These may be damaged, pressurized, or leaking. Treat all tanks as hazardous. Do not move them yourself.
- **Wells, pools, and septic systems.** Openings may be hidden under ash and debris, and fire damage can cause them to leak. Pool and spa water can be contaminated.
- **Animals.** Animals may have died due to the fire, and their remains can pose a health risk.
- **Electrical and gas lines.** Downed or exposed wiring and damaged gas service can remain energized or leaking. Do not attempt to cross power lines, and if you smell gas, leave the site immediately. Call 9-1-1, emergency services.
- **EV, solar/battery systems and lithium-ion batteries.** Damaged systems can reignite or off-gas toxic fumes for days after the fire. Avoid contact. Remember solar panels will still be energized and have no off switch.
- **Structural instability.** Weakened chimneys, floors, collapsed roofs, leaning walls, and compromised foundations can fail without warning.
- **Hot spots.** Ash and debris pits, including in raised garden beds, can retain enough heat to burn through boots or reignite for days to weeks. Landscaping timbers can smolder similarly.
- **Falling hazards.** Fire-weakened trees and retaining walls can fall without warning, sometimes months after the fire. Loss of vegetation can make slopes unstable, prone to rockfall, and can lead to landslides and erosion. Precipitation can destabilize slopes.

4. What You May Encounter in Outdoor Debris and Ash

Debris, ash and soil around burned structures and vehicles may contain chemical toxics that can cause harm immediately or after you have left the site. These toxics include asbestos, heavy metals (lead, arsenic, chromium, nickel, lithium, etc.), and cancer-causing organic compounds such as PAHs, PCBs, dioxins, and PFAS. Inhalation or contact with skin may cause immediate or long-term health effects. Most metal and chemical contamination cannot be seen with the naked eye so appearance is not a safe indicator.

Burned vehicles and batteries, including lithium-ion, EV, and home battery storage systems, are among the most hazardous materials on a lot, often carrying elevated lead, lithium, cobalt, and nickel. If mercury, thallium, or devices with radioactive components and materials were present on the property, the level of protective protocols needed increases significantly.

5. What You May Encounter in a Standing, Smoke-Damaged Building

Particles, gases, and vapors released from the fires can enter buildings and penetrate walls, HVAC systems, furniture, and personal belongings. These chemicals may release into indoor air long after the fire is out. Water from firefighting efforts or broken pipes may also lead to mold growth. Odor is not a safety test. Some harmful chemicals, including lead and asbestos, have no smell. A smell does not always mean unsafe chemicals are present. Damage can also hide inside wall cavities, attics, drywall, crawlspaces, garages, and HVAC components.

6. On-Site: Safety and Personal Protective Equipment (PPE)

If health symptoms are experienced while onsite, immediately exit the site. If the symptoms are severe, immediately seek medical attention. Health impacts can include headaches, ear, eye, nose, throat irritation, skin irritation, dizziness, dehydration, nausea, among other symptoms.

If a major exposure to the ash occurs, such as it blowing over you, or you are experiencing any symptoms like burning eyes or rash on skin, do not go home and wash first. Go straight to the emergency room.

Work in pairs, limit the time of your visit, and always wear protective equipment until structural inspection and environmental testing confirm that the site is safe. It may take structural repairs and environmental remediation before a site is rendered safe. Remember using PPE in even warm weather may cause overheating. Using a respirator may cause breathing issues for those with compromised health conditions. Should health conditions develop while using PPE, exit the site and seek medical attention. The following items can be purchased from local and regional supply stores. Be certain your respirator is NIOSH approved and not a cheap imitation.

- **For a visit to a standing, smoke-damaged home:** At a minimum, a half- or full-face respirator, with a cartridge/filter combination of particulate filter (P100) and Organic Vapors (OV) [NIOSH approved], disposable jumpsuit like Tyvek, safety goggles (ANSI Z87.1), chemical-resistant gloves, long sleeves and pants, sturdy closed-toe boots, and shoe covers.
- **For a visit to a destroyed structure or exterior debris field:** At a minimum, a full-face respirator, with a cartridge/filter combination of particulate filter (P100) and Organic Vapors (OV) [NIOSH approved], disposable jumpsuit like Tyvek, an inner nitrile glove under an outer work glove, and puncture-resistant boots. Consider skipping shoe covers/booties outdoors on debris as they can be a slip hazard. Dedicate a pair of boots to the site instead.

Bring cold water for hydration. Take frequent hydration breaks. Wearing safety equipment, especially when it is hot outside and there is no air conditioning can be exhausting. Hydration can help prevent dehydration. Take precaution to prevent contamination from being released into the air.

7. Decontamination: Pack a Plan

- Bring at least 10 heavy-duty contractor bags to store the used jumpsuit, gloves, and shoe covers. Use a one-gallon water sprayer and spray yourself or have your buddy spray you down from head to toe. Remove your outer gloves, then your jumpsuit. Next remove your boots and double bag them. Lastly remove your respirator and inner gloves.
- Change into clean clothes or a new jumpsuit before getting into your vehicle if you think or you did become visibly dusty or sooty.
- At home: Dispose of the contaminated PPE in a double bag. Launder site clothing separately from other laundry. Discard any clothing if there is any sign it was contaminated under your jumpsuit. Then shower promptly using mild, fragrance-free liquid soap or body wash. If clothes are soiled double bag and seal them and dispose of them in the trash. For showers, wash hands first after dealing with your PPE and clothing, then hair/scalp, face, body, and a final face/hands rinse. Use mild, fragrance-free *liquid soap or body wash*, including hair, with lukewarm water.

8. A Few Lessons From Past Fires

Assume contamination near destroyed structures. Within 250 yards of a burned structure or parcel, assume there is contamination that may be immediately harmful. Public health guidance after recent urban wildfires has directed residents to assume asbestos, heavy metals and organic contaminants are present in the fire-affected area until testing shows otherwise.

Homes that never used lead or asbestos, can have contamination. Hazardous levels of lead and asbestos can be transported onto or into properties from structures that burned elsewhere.

One scraping isn't always enough. Reviews of past debris removal projects have found that 16-34% of properties still had hazards, including hazardous waste, after debris removal and a single soil scraping. Confirmation sampling, which verifies a site is actually clear, is what closes that gap. (See the separate debris, ash, and soil restoration info sheet.)

For standing structures, testing comes before remediation. Moving, wiping, or discarding items before sampling can destroy the evidence needed to determine what hazards were present and where. Not testing first can also lead to insufficient remediation and expose workers to harm.

PPE only works if people wear it. Overly burdensome gear reduces compliance. Matching protection level to the real risk on-site, while keeping it practical, improves both safety and follow-through.

Contamination can travel home. Ash and dust tracked in on boots and clothing have contaminated vehicles, temporary housing, and laundry. Decontaminate before you leave the site, not after.

9. Frequently Asked Questions

Where can I get additional safety information? Contact your local health department and state worker safety agency who should have additional guidance on how to be protected at fire impacted properties.

Should I enter or live in my home before it's tested? Generally, no. Get advice from a competent environmental professional first. Impacts vary widely even between neighboring properties.

No smell, no visible damage, is it safe? Not necessarily. Many harmful chemicals, asbestos, and metals are odorless and invisible.

Can I clean it myself before testing? Not recommended. Cleaning before testing can spread contamination, expose you to hazards and impact your ability to demonstrate to insurance or others what chemicals of concern were present.

Can I use a sifter to recover my valuable and family heirloom. Not recommended. You will exposure yourself and others to ash, potentially asbestos and heavy metals. Contact a professional recovery contractor.

Do I need shoe covers on the debris field? Not typically outdoors. They're a slip hazard there. Use dedicated boots and decontaminate them instead. Shoe covers, and changing them between rooms, is highly recommended to avoid tracking possible contamination around.

A sign says debris removal is done. Is the soil safe to enter? No. Soil confirmation sampling must still be completed and reviewed before rebuilding.

My house is still standing, unlike my neighbor's. Am I in the clear? Not necessarily. Smoke, debris, and ash intrusion can contaminate a standing home even without direct fire damage, and a still standing home may be as hazardous or more than outdoor areas.

Can one contaminant (like lead) be tested for to know if the others are present? No evidence supports using one contaminant as an indicator for the presence or absence of others.

Do N95 respirators protect me from inhaling all fire-chemicals? No. N95 respirators protect against inhaling particles, but not organic vapors. Odors can sometimes still be detected by smell even while wearing an N95. For protection against organic vapors, a full- or half-face respirator fitted with an organic vapor cartridge is recommended (see above).

A consultant is not wearing PPE, does that mean I do not need it either? No. The level of safety equipment needed depends on the risk, not on what others are wearing. For properties with or adjacent to destroyed structures, the highest level of protection recommended above is likely needed. Risk generally decreases the farther you are from a burned structure. Based on experience, consultants may not always use the appropriate safety equipment to protect themselves. Using your PPE on your fire impacted property is recommended.

Where do I find information about property dust control policies? Contact your local health department, county, municipal agencies, and air districts.

10. Acknowledgment and Additional Information

Persons impacted by fire should seek specific advice from their local health department, as they have direct experience with the situation and health threats in their community. The enclosed information can be used to help inform decision-making. Additional information can be obtained from the authors. This work was partially supported by funding from the U.S. National Science Foundation grant FIRE-2536797, LightBox, the Spanicciati Family, and Purdue University. As more information about fire-caused contamination and health risks becomes available, this guidance may be revised. Image Source: Todd Thalhamer, 2007 Angora Fire recovery, California.