

Safety Hazards

Wildland Fires – Cleaning non-burned structures

On this page

[What is a non-burned structure?](#)

[What occupations may be required to clean non-burned structures?](#)

[What are the hazards associated with cleaning non-burned structures?](#)

[What are the health effects associated with exposure to wildland fire smoke and ash?](#)

[What should a workplace do before cleaning a non-burned structure?](#)

[What are some general control measures to follow during clean-up?](#)

[What types of personal protective equipment are needed?](#)

[What are some clean-up methods that can be used for various surfaces?](#)

[What should a workplace do after cleaning has been completed?](#)

What is a non-burned structure?

Non-burned structures are structures impacted by wildland fires but have not been destroyed or damaged and are structurally safe to enter. They have been impacted by smoke, debris, ash, and dirt, which can pose a health hazard to workers performing cleaning activities.

What occupations may be required to clean non-burned structures?

Any worker may be required to participate in cleaning activities during or after a wildland fire. Some occupations include:

- Janitorial staff
- Housekeeping
- [Hotel](#), motel and other accommodation workers

- Workers in education services, such as [teachers](#)
 - Workers in commercial
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What are the hazards associated with cleaning non-burned structures?

Structures impacted by wildland fires and smoke can contain hundreds of chemicals. During cleaning activities, workers may be exposed to:

- Fine particulate matter
- [Carbon monoxide](#)
- [Carbon dioxide](#)
- Nitrogen oxides
- Sulfur oxides
- Volatile organic compounds
- Formaldehyde

When wildland fires reach into urban and residential areas, ash, debris, and dirt may also contain:

- [Asbestos](#)
- Disturbed building materials such as [lead](#)
- Other hazardous substances from plastics, cars, electronics, etc.

Additional hazards associated with cleaning activities include:

- [Cleaning products](#) such as [bleach](#)
 - Awkward postures and other [ergonomic hazards](#)
 - [Working in the heat](#)
 - Poor [housekeeping](#)
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What are the health effects associated with exposure to wildland fire smoke and ash?

Exposure to wildland fire smoke and ash can occur through inhalation of hazardous particles, skin contact, or contamination of drinking water supplies. Symptoms may vary but include:

- Headaches
- Cough
- Increased mucous
- Nose, throat, eye and sinus irritation

In more serious cases, exposure may also lead to:

- Dizziness
- Wheezing
- Chest pains
- Severe cough
- Asthma attacks
- Shortness of breath
- Irregular heartbeat

What should a workplace do before cleaning a non-burned structure?

Generally, before the clean-up, workplaces should:

- Conduct a [risk assessment](#) to [identify hazards](#) associated with clean-up activities and implement [control measures](#) based on the [hierarchy of controls](#).
- Check with local authorities and utility providers to see if power, gas, and water services are available or disconnected, as appropriate.
- Confirm that the structure is safe for workers to enter and occupy.
- Make sure sufficient [cleaning supplies](#) and [personal protective equipment](#) are available.
- Obtain a sufficient water supply for cleaning activities to suppress dust.
- Provide workers with training on the health effects of [wildland fire](#) ash and smoke, proper cleaning methods, [control measures](#), and proper hygiene.
- Install air filters in your heating, [ventilation](#) and air conditioning (HVAC) that are MERV 13 or higher.

What are some general control measures to follow during clean-up?

- Control dust levels by using methods such as damp wiping, misting surfaces, and using vacuums and tools equipped with HEPA filters.
- If the fire is still burning, keep windows and doors closed as much as possible. After the wildland fire is declared over, open doors and windows to replace indoor air with fresh outdoor air.
- Practice [proper hand hygiene](#) by regularly [washing hands](#) with soap and water. If soap and water are unavailable, use hand sanitizer containing at least 60% alcohol.
- If you get ash, debris, or dirt on your skin, wash it off as soon as possible with soap and water.
- Do not consume food and drinks in work areas. Always wash your hands and face before eating or smoking.
- Launder clothing after work.
- Discard items according to local regulations.
- Take frequent breaks to avoid [mental](#) and physical exhaustion.
- Follow proper [ergonomic](#) techniques.
- Maintain good [housekeeping](#) to prevent [slip, trip, and fall hazards](#).
- Use proper procedures when using cleaning products.
- Do not use leaf blowers, [compressed air](#), or other equipment that may create dust.

What types of personal protective equipment are needed?

The type of personal protective equipment required will be specific to the workplace and should be identified in the risk assessment. Generally, the following personal protective equipment is recommended:

- [Respirator](#) (at minimum a [fit-tested](#) N95 respirator; however, additional protection may be required depending on the extent of the [wildland fire](#) and any additional hazards present, such as [asbestos](#) or [lead](#))
- Cut- and chemical-resistant [gloves](#)
- [Safety goggles](#)
- [Safety footwear](#)
- Long-sleeved pants and shirt, or disposable coveralls

Always follow proper procedures for putting on and taking off personal protective equipment, and clean and disinfect reusable personal protective equipment.

What are some clean-up methods that can be used for various surfaces?

Methods may vary, but generally the following can be used:

Walls and ceilings – Wet-wipe using a detergent-water mix.

Floors – Use a HEPA vacuum or wet-wipe with a detergent water mix.

Carpets – Vacuum using a HEPA vacuum or wet-wipe using a detergent-water mix.

Soft goods or fabrics – Machine wash fabrics such as clothing and linens in hot water.

Other surfaces – Washable items such as ceramics, hard plastics, metals and glass can be washed using hot water and detergent.

Exterior surfaces – Exterior fixtures, including facades and hard items such as patio tables, can be cleaned manually using a detergent-water mix or using power washing methods. Soft goods such as outdoor cushions can be machine-washed in hot water.

Depending on the level of impact (e.g., heavy odours or visible smoke stains), the objects may need to be discarded. If in doubt or if an item cannot be cleaned, it should be removed and discarded. Consult with local legislation to determine appropriate disposal requirements.

Some surfaces, including HVAC systems or attics, should be cleaned by appropriate professionals.

What should a workplace do after cleaning has been completed?

- Perform a post-cleaning assessment to ensure all surfaces are adequately cleaned.
- Evaluate whether additional cleaning will be required if wildland fires remain in the area.
- Replace or clean your air filters in your ventilation system or portable air cleaner according to the manufacturer's recommendations.
- Identify and seal gaps in doors, windows and other pathways that can allow outdoor air to come inside.
- Increase the frequency of ventilation maintenance following the wildland fire event to ensure that the filters are well-fitted and not overloaded with dust.

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