



Technical Advisory Bulletin

Risk Control and Claim Advocacy Practice

Wildfires

Property risk control guidelines

Wildfires are not completely preventable; however, the following property risk control guidelines will help you prepare your property in the event of a wildfire:

Fire

1. In regions susceptible to wildland fires, construct all buildings and important structures of noncombustible material when possible. Noncombustible construction materials include stone, brick, concrete and any other material that can provide a minimum one-hour fire resistance rating. If possible, floors should rest directly on the ground. If they need to be raised, protect the support columns to provide a two-hour fire resistance. Allow no openings or penetrations where burning embers can enter the building. Attachments to the building, such as fences, sheds, awnings, platforms, etc. should be noncombustible as well.
2. Roofs should be made of a continuous, noncombustible material (such as metal sheeting, slate or concrete) that fits tightly and with no gaps.
3. Protect underfloor spaces to prevent sparks and embers from entering the building. If using screens to protect these areas, do not use those made of aluminum or glass fiber. Also, screen mesh should not exceed nominal 1/8-inch in size. Any screens used to protect chimney openings should be made of corrosion-proof material and not exceed nominal 1/8-inch size.
4. Provide fire-rated shutters having a minimum one-hour fire resistance rating to protect windows and frames. Use self-closing, one-hour fire rated doors for all external doors. Door windows should be properly fire rated as well. Seal spaces under the doors to stop embers from traveling underneath the door.
5. Skylights should be made of wired glass and permanently installed.
6. Rainwater gutters on the roof may collect leaves and debris. If in place, they should be made of noncombustible material or properly covered to prevent fire spread.
7. FM Global Data Sheet 9-19 suggests that a clearance zone be provided between buildings, outdoors structures and yard storage so that no continuous line of vegetation exists. **The recommended clearance zone is a minimum of 100 feet from a grassland exposure, 330 feet from a shrub, forest or woodland exposure and 200 feet down the slope from buildings, important structures, or yard storage.**
8. Plant 'fire-resistant' shrubs and trees that can help contain rather than fuel a fire. For example, hardwood trees are less flammable than pine, evergreen, eucalyptus or fir trees.
9. Consider the installation of automatic fire sprinkler system(s) to protect combustible walls and outdoor structures.

Smoke

Smoke from wildfires can travel hundreds of miles depending on wind direction, temperature, humidity and other factors. Clothing, food, pharmaceutical, semiconductor and electronics businesses have smoke sensitive manufacturing processes and/or raw materials and finished products that are highly susceptible to smoke damage. These businesses may be at risk even if they are not located in an area directly exposed to wildfires.

With this in mind, FM Global Data Sheet 9-19 suggests that air-intake openings on air conditioning systems should be fitted with automatic fire doors or dampers – actuated by smoke detectors – that will stop both fire and smoke.

Most air conditioners are designed by default to re-circulate indoor air. Those systems that have both ‘outdoor air’ and ‘re-circulate’ settings need to be set on ‘re-circulate’ during fire/smoke events.

Also, central air conditioners and some room air conditioners contain filters that can remove some airborne particles with different degrees of efficiency. If possible, replace the air-conditioner filter with a pleated medium- or high-efficiency particle filter. Higher efficiency filters are preferred as they can capture most of the fine particles associated with smoke and can further reduce the amount of outside air pollution that gets indoors. Make sure that the air conditioning system can handle the increased airflow resistance from a higher efficiency filter.¹

Wildfires and flooding²

Locations downhill and downstream from burned areas are susceptible to flash flooding and debris flows, especially near steep terrain. Rainfall that would normally be absorbed will run off extremely quickly after a wildfire, as burned soil can be as water repellant as pavement. As a result, much less rainfall is required to produce a flash flood. **Rule of thumb: If you can look uphill from where you are and see a burnt-out area, you are at risk.**

The time required for a flash flood to begin depends on how severe the fire was and how steep the terrain is, combined with the rate of precipitation. Steep terrain combined with a severe burn scar and light precipitation can result in flash flooding within minutes of precipitation beginning. Areas of less severe burn damage and flatter terrain will be able to absorb more water allowing more time before flooding

develops, even in heavier precipitation. **Rule of thumb: Half an inch of rainfall in less than an hour is sufficient to cause flash flooding in a burn area, but this can be more or less depending on the factors above.** The susceptibility to flash flood within the burned area is greatest during the first two years following the fire. The important point is that for any burn area it will take much less rainfall to result in flash flooding than it would have before the wildfire occurred.

Mudslides³

“People living directly downslope of mountainous wildfire areas should be aware that, in addition to debris flows, landslides, and rockfall; there is another, potential deadly hazard – mud flooding at and near the mouths of channels that drain burned-over, ashy slopes. Studies have shown that, in the first year following a wildfire, the volume of sediment and water runoff in streams greatly increases. People living, working or traveling near such streams could be killed or injured by floods that incorporate enormous amounts of debris and mud washed off burned hillsides.

Sudden debris flows gushing down rain-sodden slopes and gullies are widely recognized as a hazard to human life and property. Most debris flows are localized in small gullies, threatening only those buildings in their direct path. But the bare slopes left denuded by wildfires are especially susceptible to debris flows during and immediately after rainstorms. Debris flows often occur without warning in areas where they have never been seen before.

Those who live downslope of a burned area should be aware of this potential hazard. Following the fire and for years thereafter, burned areas are more susceptible to debris flows for about 5 – 10 years and sometimes longer.”

Pre-emergency planning

The importance of having written and well-practiced procedures established before an emergency cannot be overstated. Typically, people respond more rapidly and effectively when planning has occurred. Good pre-emergency plans outline what preparations are needed, ensures a clear understanding of specific tasks and assignments, describes what training and resources are required and identifies steps that must be taken to respond to the emergency. If you live or work in an area particularly prone to wildfires, you need to prepare for a rapid evacuation!

Effective property preventive maintenance already includes many key components of a wildfire property pre-emergency response plan:⁴

- Regularly clean roofs and gutters to eliminate any debris that can spread a fire.
- Rake leaves, dead limbs and twigs away from buildings and remove leaves and rubbish from under structures.
- Inspect chimneys at least twice a year and clean them at least annually. Keep the dampers in proper working order and equip chimneys and stovepipes with a spark arrester that meets the requirements of NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances.
- Keep items handy that can be used as fire tools, such as a rake, axe, handsaw or chain saw, bucket and shovel.
- Clear items from around the property that will burn, such as outdoor storage.
- Make sure all fire suppression and detection systems are in full working condition.
- Close outside attic, eaves and basement vents, windows, doors, etc. Close all shutters, blinds or heavy non-combustible window coverings to reduce radiant heat.
- Shut off any natural gas, propane or fuel oil supplies at the source. Personnel who are going to complete this task should be pre-determined and properly trained to perform this function safely.

To assist in the development or revision of your emergency response plan, we suggest you contact the authority having jurisdiction (AHJ) or governmental agency responsible for your area/region to evaluate your mitigation and action plans. This applies to areas in the United States and in countries such as Greece, Indonesia and Australia. Multi-organizational coordination in the planning process helps eliminate duplication of effort, provides a thorough understanding of goals and objectives, and allows all users of the plan to achieve the desired results.

Pre-emergency planning should include business continuity plans for the restoration and resumption of critical operations. For example, aboveground utilities (e.g., electric transmission and distribution lines) could have delay issues if lost, and you may need standby generators either on site or available after the area has been cleared for re-entry.

In the event of moderate to heavy rainfall, do not wait for a flash flood warning to take steps to protect life and property. Thunderstorms that develop over the burned area may begin to produce flash flooding and debris mud flows before a warning can be issued. If you are in an area vulnerable to flooding and debris flows, plan in advance and move away from the area. There may be very little time to react once the storms and rain start.

Before and during rains, watch for cracks in snow, ice soil or rock; bulges at the bottom of slopes; holes or bare spots on hillsides; leaning trees or increased muddiness of streams. Any sudden increase in runoff or debris is cause for concern.⁵

Conclusion

According to the National Interagency Fire Center, between 2011 and 2015, 320,942 fires have burned 36,077,913 acres. How can you prepare for a wildfire if you live or work in a high risk area? The answer is to have a strategy that includes the information, tools and resources needed to prepare for, mitigate, respond to and recover from a wildfire event.

Additional resources

US Forest Service

<http://www.fs.fed.us/>

Federal Emergency Management Agency

<https://www.ready.gov/wildfires>

American Red Cross

<http://www.redcross.org/prepare/disaster/wildfire>

NOAA

<http://www.srh.noaa.gov/ridge2/fire/>

National Interagency Fire Center

<http://www.nifc.gov/>

US Fire Administration

<http://www.usfa.fema.gov/>

National Fire Protection Association

<http://www.nfpa.org/>

- NFPA 1143, Standard for Wildland Fire Management
- NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire

Contacts

We encourage you to visit our Willis website to access prior publications on topics that may be of interest. For more information, please contact your Willis Towers Watson Client Relationship Director:

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- 1 http://www.arb.ca.gov/db/search/search_result.htm?q=wildfire-smoke-guide&which=arb_google&c=00618681887686055858%3Abew1c4wl8hc&srch_words=&cof=FORID%3A112
 - 2 <http://coloradogeologicalsurvey.org3>
 - 3 <http://geosurvey.state.co.us/hazards/Fires/Documents/Post-wildfire-mudslides-brochure-final.pdf4>
 - 4 <http://www.ready.gov/wildfires5>
 - 5 <http://coloradogeologicalsurvey.org/?s=Post-wildfire-mudslides-brochure-final.pdf>

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