

# WILDFIRES

Large-scale fires are no longer the sign of an unusually severe season, but are increasingly becoming the norm. When drought conditions are present, proper precautions need to be taken in order to protect your property from the hazards of wildfire.

The risk of wildfire is not only present in the Western US – although this area is very prone – but anywhere buildings interface with timber. The leading cause of wildfire is arson although trash burning, lightning and careless smoking also account for a large amount of wildfires. The guidelines contained in this brochure are designed to help safeguard your business from the perils of wildfire.

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PENNSYLVANIA LUMBERMENS MUTUAL  
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# CAUSES OF WILDFIRES

Causes of forest fires differ from region to region but nationally they maintain a ranking within the percentage ranges listed below:

Cause	Percentage Range
Intentional burning / Arson	25–39
Trash Burning	18–23
Careless smoking	17–19
Miscellaneous/Unknown	10–14
Lightning	9
Machine Use	7–8
Railroads	5
Campers	3–6

The leading cause of wildfires in the United States is intentional burning or arson which accounts for one-quarter to one-third of the fires and burned over area. Debris burning accounts for another tenth to one-seventh of the fires, but affects a larger share of the burned area. In terms of the number of fires and burned areas, lightning is the leading cause in the Northwestern part of the country, as well as in Arizona and New Mexico. For the entire eastern half of the United States, intentional burning, arson, and debris burning are the chief causes. In California, equipment use and arson rank highest. In the Central Rockies, debris burning and lightning are the main problems.

## FIRE DANGER TODAY



# PROPAGATION CONDITIONS

The main drivers of fire propagation are the weather conditions, the type of surface fuel, and to a lesser extent the local topography.

- **Weather Conditions:** If weather conditions are either not currently occurring or about to occur, the National Weather Service will issue a Fire Weather Watch. When conditions are conducive to the formation of wildfires, a Red Flag Warning is issued which means there is an expectation of explosive fire growth potential.
- **Strong Winds:** In the autumn season in Southern California, the area is affected by very strong winds called the Santa Ana winds (called the Diablo winds in Northern California) which are caused when dry air from the high desert plateau of the Great Basin to the east of Los Angeles comes in to contact with the low pressure off the coast of Southern California. As the air descends, compressional heating warms it further, drying it out even more. Typical wind speeds are around 50 mph with gusts of up to 60 mph. The Santa Ana winds are notorious for spreading wildfires. These winds help spread fires over large areas and shower structures with firebrands or embers which travel well in excess of recommendations for defensible spaces around structures.
- **Surface Fuel:** Both dryness and the type of surface fuel are concerns. A measure of fuel dryness is "Energy Release Component" (ERC). Drought conditions caused by dry winter and summer months allow the fire fuel – vegetation consisting of chaparral and shrub – to become abnormally dry and therefore extremely susceptible to wildfires. Moreover, these types of vegetation are the least resistant to fire while wet grass is considered to be the most resistant.
- **Local Topography:** Fires often have distinctive behavior characteristics according to aspect, elevation, position on slope, steepness of slope, and shape of the surrounding countryside.
  - Aspect describes the direction a slope faces. Southern and Southwestern slopes provide favorable conditions for the ignition and spread of fires because these slopes receive direct sunshine, and the air and fuel temperatures are somewhat higher and cause snow to melt earlier. For these reasons, vegetation on south-facing slopes is not only sparser but also drier and more flammable than vegetation on north-facing slopes.
  - Extremes of elevation cause a variety of weather and fuel conditions that create distinctive fire control problems.
  - The position of a fire on a slope may provide a large fuel body. When a fire starts at the bottom of a slope, an entire mountainside of fuels and few topographic barriers may lie in its path. Once a fire starting at the base of a slope gains headway, the availability of a continuous fuel body makes a large burn possible.
  - Other conditions being equal, fires burn more rapidly on steep slopes. In general, as the steepness of the slope increases, the rate of fire spread increases. Combustion

is accelerated on steep slopes primarily due to increased heat transfer through radiation and convection. A fire will double in rate on a 30% slope and on a 55% slope it will double again.

- Narrow canyons, side drainages, sharp ridges, and large irregular slopes all have an impact on the direction of travel, rate of spread, and general behavior of fires.

# WILDFIRE PREVENTION

Often the carelessness of people leads to wildfires which create a challenge to prevention. However, there are several steps which can be taken to prevent or mitigate loss by this hazard.

- **Maintain large separation distances from vegetation lines to building exteriors.** Make sure all debris is cleaned from these areas and good housekeeping procedures are followed. The space recommendations are: 30' in low-risk fire areas, 50' in moderate-risk areas and 100' in high-risk areas. 62% of structures without a maintained vegetation clearance of at least 30' were destroyed as opposed to 22% whose vegetation clearance was maintained.
- **Use of nonflammable roofing materials:** Structures with flammable roofing materials have an 81% chance of being destroyed in wildfires whereas a structure with nonflammable roofing is much lower at 30%.
- **Extensive non-smoking policy.** Include a safe location for smoking. Keep in mind, non-smoking policies on insured property typically forces smoking employees to use adjacent areas which may be vulnerable to wildfire.
- **Fenced locations or procedures for unlawful entry to premises.** Typical crime reduction techniques may result in reduced exposure to unlawful entry and malicious mischief which can lead to arson exposures especially in idle/vacant buildings.
- **Open Burning procedures.** Do not allow open pit burning.
- **Lightning Suppression Systems.** We recommend lightning suppression systems where appropriate such as high value buildings located in the Gulf States where lightning strikes are most likely.
- **Provide adequate fire department access.** An access route with a minimum width of 12' with at least 13 ½' of vertical clearance near the structure is needed for fire truck access.
- **Effective Emergency & Disaster Planning and Procedures.** Important issues include both emergency evacuation procedures and business continuity. The IBHS' Business Continuity Toolkit, OFB-EZ®, would be an appropriate tool to aid in this area.