

# **WILDFIRE** - *New Mexico Burning* **Safety Tips & Prevention**



Jun 2011 This is a forest fire near the Colorado New Mexico Border as taken from an airplane.

With July 4 just two days away; a month of smoke haze and air quality warnings in Albuquerque; bans on fireworks (even though the vendor stands are still up and selling like crazy) and road and public land closings. I have to seriously wonder where we humans have our priorities. Ah, yes the all mighty dollar and our own amusement or S & G's.



We humans will have our fireworks, legal or not and who gives a darn if the woods catch fire and some people lose their homes or worse, their lives – as long as it is not us and we had fun, what's the problem right?. After all with this economy, the vendors have to make their money and with the depressing troubles in the news we need a little entertainment and fun to chase the blues away. We don't really need all those trees to release oxygen into the air do we? So what if we are in a drought, the plants will grow back fast enough to prevent landslides, right?



Los Alamos Jun 28 2011

Think living in the city or town will save ya? Better think again - In Albuquerque we have a heavily wooded Bosque that runs through the center of town; the Sandia and Manzano Mtns are a tinder box waiting to go up on Albuquerque's east side - Ask Luna and Ruidoso or Silver City how much being in town protected them.



**A FIRE - woodland or urban is inhuman - it is all consuming;** it doesn't care what country we are from; what our political affiliation is; if we are rich or poor or what color our skin is and it most assuredly doesn't give a dam if it is convenient or not. **It is a beast, a fire breathing dragon running amok and our only "dragon slayers" are our firefighters!**



## Wildfire – Safety Tips & Prevention - Continued

***If you currently live in the High danger zones for this July (2011):*** New Mexico, west Texas, southern Colorado, western Oklahoma, Nevada, southern Utah, southern California, eastern Louisiana, southern Mississippi or southwestern Alabama or small areas of: Georgia, South Carolina, Florida, Montana, Massachusetts or Wyoming *you had best pay particular attention to this information.*



Los Alamos Jun 2011



NM Jun 2011



Demming, NM Jun 2011

To keep abreast of Wildfires check out the U.S. Forest Service @ <http://gacc.nifc.gov/> and [www.publiclands.org/firenews/](http://www.publiclands.org/firenews/). For New Mexico see <http://nmfireinfo.wordpress.com/>, <http://nmroads.com/>, <http://www.cabq.gov/airquality/> or any of the local news outlets.



AZNM Wallow Fire Jun 2011

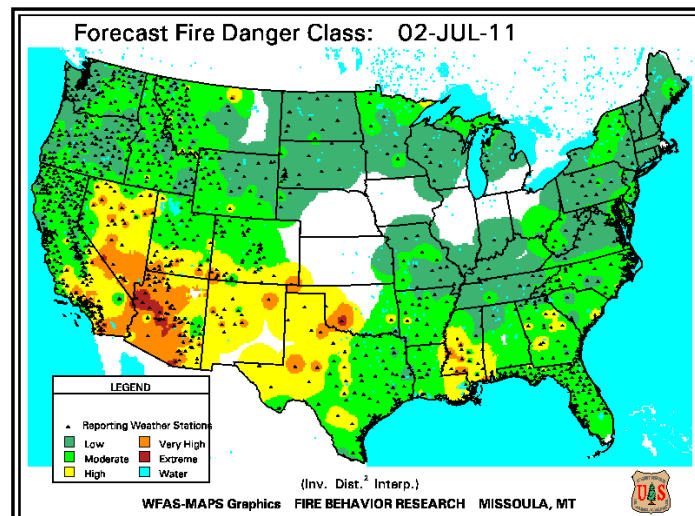
For information on fireworks and the 4<sup>th</sup> of July in New Mexico see:

City promises big consequences if fireworks spark fires <http://www.kob.com/article/stories/S2182623.shtml?cat=500>



Jemez Mtns Jin2011

Public Fireworks Displays <http://events.kob.com/default.aspx?ct=r&q=fireworks>



This July 4 let us be responsible for our own actions or inaction. **Be Smart - Be Safe**



NM Jun 2011



Last Chance Fire NM Jun 29 2011



Luna, NM Jun 2011

On to Wildfire safety and prevention:

### 2011 National Fire Season Themes



Every year during the “Fire Season” the National Interagency Fire Center (NIFC) creates “themes” to alert and educate the public. Here are the themes for 2011. Some of the subject matter is discussed in more detail later in this document.

**1. Safety of the public and firefighters** is the top consideration in fire and aviation management.

- Firefighters always make safety their top concern.
- No structure, or natural or cultural resource, is worth taking an unneeded risk.
- Structures can be rebuilt and natural resources generally come back in time. A life cannot be replaced.



## 2. Firefighters count on you to do your part.

Thousands of communities are located in fire-prone areas. Residents must take action to adapt their communities to fire. These actions will protect their homes and improve the safety of the public and firefighters.

### Zone 1: Home Ignition Zone

The most critical area is your home ignition zone, which includes your home itself and the landscaping within 30 feet. Remember: windblown embers or firebrands can ignite a home while leaving the surrounding vegetation untouched or only charred. Some tips to better protect this zone include:

- Clear pine needles or other woody debris from rain gutters and off the roof.
- Clear all vegetation and debris from under decks and touching the foundation.
- Be sure all eaves and attic vents are screened with a small, ½-inch screen.
- Move stacks of firewood away from the structure.
- Keep vegetation in this area trimmed low, well-irrigated, and free of dead material and spaced apart to prevent a continuous path of fuel to your home.

### Zone 2: Defensible Space Zone

This is the second most critical zone and includes the area from 30 to 100 feet from your home.

- Remove dead and dying grass, shrubs, and trees.
- Reduce the density of vegetation and ladder fuels by thinning and keeping them free of dead material.
- Replace hazardous vegetation with less flammable, irrigated landscaping, including lawn or low growing ground cover and flowering plants.

### Zone 3: Wildland Fuel Reduction Zone

In this zone, from about 100 feet and beyond, remove dense undergrowth and thin out densely-crowded smaller trees.

Experts recommend keeping 10 feet of space between trees and shrubs. Mature trees should be limbed up 6 to 10 feet above the ground.

While there are many steps that can be taken to enhance the survivability of your home and property when wildfire occurs, it's important to remember that each step you take, no matter how small, can make a large difference. Multiple steps together can vastly improve the resistance to fire and subsequent losses.

### 3. Fires are managed in different ways.

Not all fires are managed the same way. Responding to a fire may include using multiple strategies. The response could range from monitoring a fire that is beneficial to the landscape to aggressively putting out a fire that threatens people, homes, or important natural or cultural resources.

Decisions are based on:

- safety for the public and firefighters,
- what is threatened by the fire,
- forecasted weather,
- fire behavior, and
- what the fire and land-use plans or objectives are for the area.

Firefighters provide the right response to a fire, for the right reasons, at the right time.

### 4. Fire seasons are expected to become longer and more difficult.

We are never really out of fire season. Fires can burn at any time of the year in different parts of the country. Several reasons contribute to longer fire seasons:

- an abundance of flammable plants and trees,
- climate change, and
- more homes and other buildings in fire-prone areas.

Even though the last two fire seasons have been mild in most of the country, firefighters expect future activity to increase.

### 5. Teamwork is essential in wildland fire.

Wildland fire knows no boundaries. Local, state, tribal and federal firefighters all work together to manage wildfires. Pooling our strengths and resources helps us to be more effective and keeps our costs down.

## Firefighters, Smoke Jumpers and Hot Shots



A picture of American firefighters in the 1770s



**Firefighters** (historically, firemen) are rescuers extensively trained primarily to put out hazardous fires that threaten civilian populations and property, to rescue people from car incidents, collapsed and burning buildings and other such situations. The increasing complexity of modern industrialized life with an increase in the scale of hazards has created an increase in the skills needed in firefighting technology and a broadening of the firefighter-rescuer's remit. They sometimes provide emergency medical services. The **fire service**, or **fire and rescue service**, also known in some countries as the fire brigade or fire department, are some of the emergency services.



**National Fire Protection Association**

The authority on fire, electrical, and building safety

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

Firefighting and firefighters have become ubiquitous around the world, wildland areas to urban areas, and on board ships.



According to Merriam-Webster's Dictionary, the English word "firefighter" has been used since 1903. In recent decades it has become the preferred term, replacing the older "fireman", since many women serve as firefighters, and also because the term "fireman" can have other meanings, including someone who sets or stokes fires - exactly the opposite of the firefighting role.

The history of organized combating of structural fires dates back at least to Ancient Egypt. Many people put out fires back in biblical times, but whether people did it for a living is unknown.

### Fire Brigades

Firefighters were known in the Roman Republic, but only as privately organised and funded groups operating as more of a business than a service. This ad-hoc approach was later revolutionised during the Principate to become the first truly professional firefighting service. Augustus called for the creation of a trained fire guard, paid and equipped by the state. Known as the Vigiles, they were organised into cohorts and also served as a night watch and a city police force.

Today, fire and rescue remains a mix of paid, call, and volunteer responders. Some Fire and Rescue Services in the UK employ retained firefighters who are typically on call with pagers from their homes and/or place of work; a small number of unpaid volunteer firefighters are also used in some services.

Wildfire suppression refers to the firefighting tactics used to suppress wildfires. Firefighting efforts in wildland areas requires different techniques, equipment, and training from the more familiar structure fire fighting found in populated

areas. Working in conjunction with specially designed firefighting aircraft, these wildfire-trained crews suppress flames, construct firelines, and extinguish flames and areas of heat to protect resources and natural wilderness. Wildfire suppression also addresses the issues of the wildland-urban interface, where populated areas border with wildland areas.



**Handcrew · Hotshots · Helitack · Smokejumper · Rappeller · Engine crew**

Wildfire suppression equipment and personnel is part of the science of fire fighting focusing on the use of specialized equipment, training and tactics to effectively control, surround and eventually extinguish a natural cover fire. There are several specially designed tools that through their function and user training, perform specialized tasks that are specific to natural cover firefighting. This is used together in conjunction with the general understanding of the behavior of fire to form a viable plan of attack.



**Hand crews**



<http://uswildlandfirefightersasso.ning.com/>

Typically, wildland firefighting organizations will use large handcrews of 20 or more people who travel in vehicles to the fire incident. Although these crews can vary above or below 20 firefighters, they are generally called twenty-man crews. The designations of these crews in the U.S., defined in large portion by training, are as follows:

- Type I Interagency Hotshot Crew



- Type I Crew
- Type II Initial Attack (IA) Crew
- Type II Crew
- Type III Crew

Some personnel are organized into fast attack teams typically consisting of five to eight personnel. Similar to the larger crews, they travel by vehicle.

### **Hot Shots**



Interagency Hotshot Crews (IHC) are diverse teams of career and temporary agency employees who uphold a tradition of excellence and have solid reputations as multi-skilled professional firefighters. Their core values of "duty, integrity, and respect" have earned Hotshot crews an excellent reputation throughout the United States and Canada as elite teams of professional wildland firefighters.



[http://www.fs.fed.us/fire/people/hotshots/IHC\\_hist.html](http://www.fs.fed.us/fire/people/hotshots/IHC_hist.html)

Hotshot Crews started in Southern California in the late 1940s on the Cleveland and Angeles National Forests. The name was in reference to being in the hottest part of fires. Their specialty is wildfire suppression, but they are sometimes assigned other jobs, including search and rescue and disaster response assistance. Hotshots not busy fighting fire will also work to meet resource goals on their home units through thinning, prescribed fire implementation, habitat improvement or trail construction projects.

### **Smokeyjumpers**



**Smokejumper** duties can be hazardous and extremely arduous. Smokejumpers are highly-skilled firefighters specially trained in wildfire suppression tactics. They parachute into remote areas from aircraft to combat wildfires and are equipped to work in remote areas for extended periods of time with little logistical support.



<http://smokejumpers.com/main/home.php>

Smokejumping was first proposed in 1934 by T.V. Pearson, the Forest Service Intermountain Regional Forester, as a means to quickly provide initial attack on forest fires. By parachuting in, self-sufficient firefighters could arrive fresh and ready for the strenuous work of fighting fires in rugged terrain. The smokejumper program began in 1939 as an experiment in the Pacific Northwest Region, and the first fire jump was made in 1940 on Idaho's Nez Perce National Forest in the Northern Region. In 1981, the first woman smokejumper in the nation successfully completed the training program at the McCall Smokejumper Base in Idaho.

Today, Smokejumpers are a national resource. Jumpers travel all over the country, including Alaska, to provide highly-trained, experienced firefighters and leadership for quick initial attack on wildland fires in remote areas. Fire fighting tools, food and water are dropped by parachute to the firefighters after they land near the fire, making them self-sufficient for the first 48 hours.

Aircraft commonly used in smokejumper operations include turbine engine DC-3s and Twin Otters. For safety, there is always a spotter on board communicating essential information about, the wind, fire activity and terrain to the pilot and the jumpers.

### Helitack



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The use of helicopter-delivered fire resources varies by agency. Often, helitack crews perform duties similar to other initial attack crews. Two or three firefighters will be dispatched to a newly-reported fire. Helitack crews are usually used for initial attack on fires that are difficult for other firefighters to access, or on extended fires that require aerial support in the form of water drops, cargo delivery, crew shuttling, or reconnaissance. A typical initial attack response by a helitack crew involves flying to the fire via helicopter and spending one to three days (although sometimes much longer) putting the fire out before hiking to the nearest road for pickup.

### Rappellers



A highly effective way to fight wilderness fire when no roads are nearby is to have wildland firefighters rappel from a helicopter. These firefighters then take suppressive action on the fire or clear a safe landing zone to receive additional firefighters if the fire is too large. Rappellers usually carry 30 pounds of personal gear plus up to 300 pounds of fire gear which is lowered down to them from their helicopter. Rappelling heights can range from 30 feet (in tall, continuous brush) to 250 feet (in timber). When suppression is complete on rappel fires, ground transport is typically arranged to pick up the firefighters at the nearest road. These crews carry chainsaws, hand tools, radios, and can even have 75-US-gallon (280 L) water bags, known as blivets, flown in to help fight the fire. When not rappelling, the crew works as a helitack crew and can fly or hike to any regular fire.

# WHAT'S IN YOUR PACK?

**Stan Hill, Captain, Palomar (Calif.) Interagency Hotshot Crew**  
*Story & Photos By Ed Sherman*

Stan Hill began his career with the U.S. Forest Service (USFS) as a seasonal firefighter in 1992. He enjoyed his first engine assignments, but wanted to explore other aspects of wildland firefighting. Hill later moved on to become a member of the Redding/California Smokejumpers for two seasons and the Laguna Hotshots for four seasons; he ultimately decided to remain on a hotshot crew.

Originally established in 1975, the Palomar Hotshots from northern San Diego County disbanded in 1981, but reformed as a Type 2 fire crew in 2002. Based on his knowledge and experience, Hill was selected as the first captain of the crew. On June 22, 2005, the crew earned the coveted Type 1 designation and became the Palomar Hotshots once again.

Hill carries about 35 lbs. of gear in a Ruffian pack. He likes the pack and gives the manufacturer high marks for customer service. Hill tries to be prepared for all situations while minimizing the size and weight of items when possible. For example, he carries a 50' length of parachute cord that he says has "1,001 uses," including hanging food from a tree and serving as impromptu shoelaces. However, he can't do much to reduce the burden of carrying the requisite five quarts of drinking water.

A couple of the other items found in Hill's pack: a Garmin eTrex Summit GPS unit that he highly recommends because it works as an electronic compass when not moving, and a small titanium stove that's "pretty light and cools down quick." To be ready for whatever Mother Nature might dish out, Hill also brings along a knitted cap, a long-sleeved polypropylene shirt, a space blanket and a rain poncho.

MREs occupy the official role of food in the pack, although Hill also keeps one or more Clif Bars available as a convenient snack. While many wildland firefighters enjoy hot, cooked firecamp meals, Hill prefers the opportunity to spike out. In this way, he says, the food is flown, which allows him to spend more productive time in the place he most wants to be—out on the fireline. ▲

*Ed Sherman is a fire service writer and photographer based in Temecula, Calif.*

WILDLAND FIREFIGHTER 17  
 FEBRUARY 2007

Homeowners who live outside of major urban areas may be living in peaceful seclusion, but are also at a disadvantage with regard to fires. Because there are fewer firefighters in rural areas, country folk should be well-informed on wildfire prevention, and on how to protect their homes from fire risks and hazards. In order to rest assured, contact your local fire department – they would much rather help you prevent a fire than have to rush over to extinguish one.



## What causes wildfires?

Wildfires are a natural phenomenon of the environment – nature’s way of eliminating dead vegetation. However, it is sad to say that the majority of wildfires today are caused by humans - unintentionally (by accident or just gotta have some fun and it gets out of hand) and intentionally – arson. In fact 75% of wildfires are caused by people being just plain careless, resulting in people being forced to evacuate, suffer loss or damage to their homes and possessions and yes some even die.

## Wildfire – Safety Tips & Prevention - Continued

*Most Common Human Causes:* burning debris, vehicle exhaust, sparks from trains and heavy equipment, camping, smoking and arson.

*Less Common Causes:* smoking, lightning, Sparks from falling rocks and Volcanic Activity

Factors and causes of wildfires will also vary depending on where you live, the season, the climate, the vegetation, the topography, and the weather. These are known as “*casual factors*” and they affect the overall behavior of the wildfire.

- Weather is the most important factor influencing the behavior of wildfires.
- Topography (land features such as lakes, rivers, swamps, hills) also plays a crucial role in how wildfires spread. For example, fires spread faster uphill because of heat radiation and convection.
- The steepness or slope of a hill also affects the speed of the spread: the greater the slope, the faster the spread.
- Vegetation can act as fuel during a fire, especially dry vegetation as it would intensify and speed up a fire’s spread. The more naturally flammable the plant (like eucalyptus), the hotter and faster the fire burns; the dryer the plant material is the faster it burns.
- Weather is the most important factor *influencing* the behavior of wildfires.
- Topography (land features such as lakes, rivers, swamps, hills) also play a crucial role in how wildfires spread. For example, fires spread faster *uphill* because of heat radiation and convection.
- The steepness or slope of a hill also affects the speed of the spread: the greater the slope, the faster the spread.
- Given wind and the right conditions, forest fires can move quicker than we can run. Gusty winds can propel a fire at amazing speeds. According to studies conducted after Black Saturday, the fire traveled at an average 5 miles per hour. In bursts it was capable of crossing a third of a mile (600 meters) in 30 seconds. Like fire ridden Australia, California suffers a similar event due to mountain winds that push fires with lightening speeds.
- Ahead of the larger fire, there may be additional fires.
- As in the case of the Black Saturday tragedy, these smaller pockets of fire cut off roadways by merging with the larger fire.
- Out running or escaping by car isn’t always possible. Vehicles have been burnt to the frames as people tried to drive away and became trapped.
- Digging a trench that fire can’t cross is also not advised. Large fires can and will jump these.

### Prevention Steps Before a Wildfire Threatens:



For downloadable information on fire-retardant plants and the like see [Wildfire Tips -Downloads & Links @ http://www.scribd.com/doc/59214071/Wildfire-Tips-Downloads-Links](http://www.scribd.com/doc/59214071/Wildfire-Tips-Downloads-Links)

### Wildfire Prevention Tips for Drivers from Arizona Department of Transportation

- Never park your vehicle on dry grass, or drive through tall grass
- Never throw a lighted cigarette out the window of a vehicle
- When pulling trailers, attach safety chains securely; loose chain can drag on the pavement and cause sparks, igniting roadside fires
- Do not park where vegetation is touching the underside of your vehicle
- Look behind you before driving away to check for signs of a developing fire
- Observe “Red Flag” warnings. Warnings are issued when weather conditions are conducive to the easy start and rapid spread of wildfires
- Driving into smoke can be dangerous; avoid active fires by calling 5-1-1 or log onto ADOT’s Traveler Information site at az511.gov to seek alternate routes



### How do I safely operate an ‘on’ or off-road vehicle on public lands when fire potential is high?

- Never park your vehicle on dry grass.
- Never throw a lighted cigarette out the window of a vehicle.
- Grease trailer wheels, check tires, and ensure safety chains are not touching the ground.
- Avoid driving through tall grass.
- Internal combustion engines on off-road vehicles require a spark arrester.
- Check and clean the spark arrester.
- Carry a shovel and fire extinguisher in your vehicle or OHV/ATV.



### How can I prevent a wildfire if I smoke?

- Never throw a lighted cigarette from the window of a vehicle.
- Never walk off and leave a burning cigarette.
- Be aware of smoking restrictions when recreating on Federal and State public lands.
- Use ash trays.
- all local restrictions and guidelines about smoking.

### Fire Resistance Construction

- Choose locations wisely; canyon and slope locations increase the risk of exposure to wildland fires.
- Avoid designs that include wooden decks and patios.
- Choose non-combustible roofing materials like tile, fiber cement, clay, single ply membranes, fiberglass shingles, slate, metal, and concrete tile when you build, buy a home, or replace an existing roof. Avoid flammable roofing materials such as wood, shake and shingle. Don't be fooled by claims that a spray-on treatment will protect your wood shake roof from fire; the fire resistance won't last, once again leaving your roof and home vulnerable to fire. The roof is especially vulnerable in a wildfire. Embers and flaming debris can travel great distances, land on your roof and start a new fire.
- Use fire resistant siding. Use fire resistant materials in the siding of your home, such as stucco, metal, brick, cement shingles, concrete and rock. You can treat wood siding with UL-approved fire retardant chemicals, but the treatment and protection are not permanent.
- Enclose the undersides of patios and decks with fire-resistant materials. Stucco, brick and decorative rock will provide effective fire resistance to the exterior of your home. Any porch, balcony or overhang with exposed space underneath is fuel for an approaching fire.
  - Overhangs ignite easily by flying embers and by the heat and fire that get trapped underneath. If vegetation is allowed to grow underneath or if the space is used for storage, the hazard is increased significantly.
  - Clear leaves, trash and other combustible materials away from underneath sun decks and porches.
  - Extend 1/2-inch mesh screen from all overhangs down to the ground.
- Protect the interior of your home from radiant heat caused by fire by installing residential fire sprinklers.
- Install spark arrestors in chimneys and stovepipes.
  - Use spark arrestors made of 12-gauge welded or woven wire mesh screen with openings 1/2 inch across. Ask your fire department for exact specifications.
  - If you're building a chimney, use non-combustible materials and make sure the top of the chimney is at least two feet higher than any obstruction within 10 feet of the chimney.
  - Clean your chimney at least once a year. Have it inspected for an accumulation of soot or creosote building up.
- Clean your roof surfaces and gutters regularly to avoid accumulation of leaves, twigs, pine needles, and other flammable materials.
- Enclose wooden stilts with non-combustible material such as concrete, brick, rock, stucco or metal. Use non-combustible patio furniture and covers.
- Combustible pre-existing exterior materials should be treated with fire-retardant chemicals. Consider replacing these with other non-combustible materials.

- If you're planning a porch or sun deck, use non-combustible or fire-resistant materials. If possible, build the structure to the ground so that there is no space underneath.
- Enclose eaves and overhangs. Like porches and balconies, eaves trap the heat rising along the exterior siding. Enclose all eaves to reduce the hazard.
- Cover house vents with wire mesh. Any attic vent, soffit vent, louver or other opening can allow embers and flaming debris to enter a home and ignite it. Cover all openings with 1/4 inch or smaller corrosion-resistant wire mesh.
- If you're designing louvers, place them in the vertical wall rather than the soffit of the overhang.
- Choose safety glass for windows and sliding glass doors. Windows allow radiated heat to pass through and ignite combustible materials inside. The larger the pane of glass, the more vulnerable it is to fire. Dual- or triple-pane thermal glass, and fire resistant shutters or drapes, help reduce the wildfire risk. You can also install non-combustible awnings to shield windows and use shatter-resistant glazing such as tempered or wireglass.
- Prepare for water storage; develop an external water supply such as a small pond, well or pool.
- If your trees are predominantly evergreen, often highly flammable, a 10 foot space between the crowns or limbs of adjacent trees should be maintained, minimum 10 feet. 15 is better.
- Keep at least 20 feet between a building and a thick evergreen tree canopy.
- Heat, outside, from a large wildfire can ignite sheer curtains inside homes through glass windows. Consider closeable shutters for large windows. On the other hand, if those shutters are wood, those could ignite too.
- Enclose foundations of buildings, decks and overhangs with solid flame-resistant materials to keep sparks out.
- Install electrical lines underground, if possible.



### Access and Visibility to Your Home

- Make sure the roadway approaching your home is wide enough to accommodate an evacuating car and an entering fire truck at the same time.
- Trim over-hanging branches to allow enough clearance for large emergency vehicles.
- Streets and roads must be marked with clearly visible street signs. Missing or difficult-to-read street signs can delay emergency response.
- Your address should be easy to see from the street. If necessary, post it at your driveway entrance as well as on your home. The numbers should be at least four inches tall on a contrasting background. Periodically check to make certain that new plant growth has not covered any part of your address.
- Have location for a fire truck “turn around” - radius of at least 30 feet.
- Driveways: If your driveway is less than 150 feet long, firefighters can reach your home from the street.
  - Your driveway should be at least 12 feet wide and clear of branches 15 feet up.



## Wildfire – Safety Tips & Prevention - Continued

- Curves in long driveways need to accommodate large emergency vehicles. Without access and escape routes, firefighters may not endanger themselves to save your home.
- Make sure your driveway has a solid driving surface and that all culverts and bridges can accommodate heavy fire trucks.
- If your driveway is over 150 feet long, add a large turnaround near the house with a radius of at least 30 feet.
- Place any trees, bushes or hedges well back from the sides of your drive to leave plenty of clearance for emergency vehicles.



### Fire Resistant Landscaping

- Clear a perimeter of defensible space around homes. Clear combustible vegetation in a 100 foot radius from any structure.
- Use non-flammable landscaping materials within 5 ft of the house.
- Clean dead leaves and needles from your roof and gutters.
- Stack woodpiles and any stored fuel (gas, propane, kerosene) 100 feet from all structures.
- Keep vegetative fuel accumulations away from firewood piles and any stored fuel (gas, propane, kerosene).
- The best option for piles of kindling is to store in a fire resistant outbuilding, well distanced from the home.
- Remove enough evergreen trees in a 100 feet deep perimeter around the house so that crowns are at least 10 feet apart. Prune lower branches of remaining evergreens up to 5 to 10 feet.
- Are there any branches close to power lines? Ask the power company to remove them. If not the power company, contact a tree service.
- Eliminate all flammable vegetation 30 feet around the home.
- Select fire-resistant landscaping plants. Water regularly. Avoid flammable pines, conifers, and eucalyptus.
- Since most fires start low and ascend, remove tree branches that are lower than 6 feet.
- Don't surround trees with bushes or plants that can spread fire upwards into the tree branches.
- Landscape vegetation should be spaced so that fire can not be carried to the structure or surrounding vegetation.
- Avoid using bark and wood chip mulch
- Emergency water supplies should be adequate for firefighters. Community fire hydrants, an emergency storage tank shared with neighbors or large bodies of water (such as swimming pools or ponds) are usually acceptable sources for fighting fire.



## Preventative Measures

- Check gutters regularly for debris and keep clean. Clean roof surfaces and gutters of pine needles, leaves, branches, etc., regularly to avoid accumulation of flammable materials.
- Remove portions of any tree extending within 10 feet of the flue opening of any stove or chimney.
- Remove branches from trees to height of 15 feet.
- Dispose of stove or fireplace ashes and charcoal briquettes only after soaking them in a metal pail of water.
- A fuel break should be maintained around all structures.
- Store gasoline in an approved safety can away from occupied buildings.
- Propane tanks should be far enough away from buildings for valves to be shut off in case of fire. Keep area clear of flammable vegetation.
- All combustibles such as firewood, picnic tables, boats, etc. should be kept away from structures.
- Garden hose should be connected to outlet.
- Maintain a screen constructed of non-flammable material over the flue opening of every chimney or stovepipe. Mesh openings of the screen should not exceed 1/2 inch.
- All roads and driveways should be at least 16 feet in width.
- Have fire tools handy such as: ladder long enough to reach the roof, shovel, rake and bucket for water.
- Each home should have at least two different entrance and exit routes.
- Clear dry brush, grass, and dead leaves a minimum of 30 to 100 feet from your home.
- If your home is located on steep terrain, or surrounded by dense vegetation, provide even more clearance. Call your fire department for exact brush clearance rules in your area.
- Remove trees and bushes planted against your home where they can ignite and spread flames to the structure.
- Check with your local nursery and purchase fire-resistive plants. Landscaping with the right materials can provide an attractive, fire resistant barrier.
- Remove debris from under sun decks and porches.
- Place a 1/4 inch mesh screen over the grill. Always use the grill cautiously but refrain from using it all during high risk times.
- Keep the gas grill and propane tank at least 15 feet from any structure. Clear an area 15 feet around the grill.
- Be aware of burning restrictions in your area.
- Remove vines from the walls of the house.
- Move shrubs and other landscaping away from the sides of the house.
- Prune branches and shrubs within 15 feet of chimneys and stove pipes.
- Remove tree limbs within 15 feet of the ground.

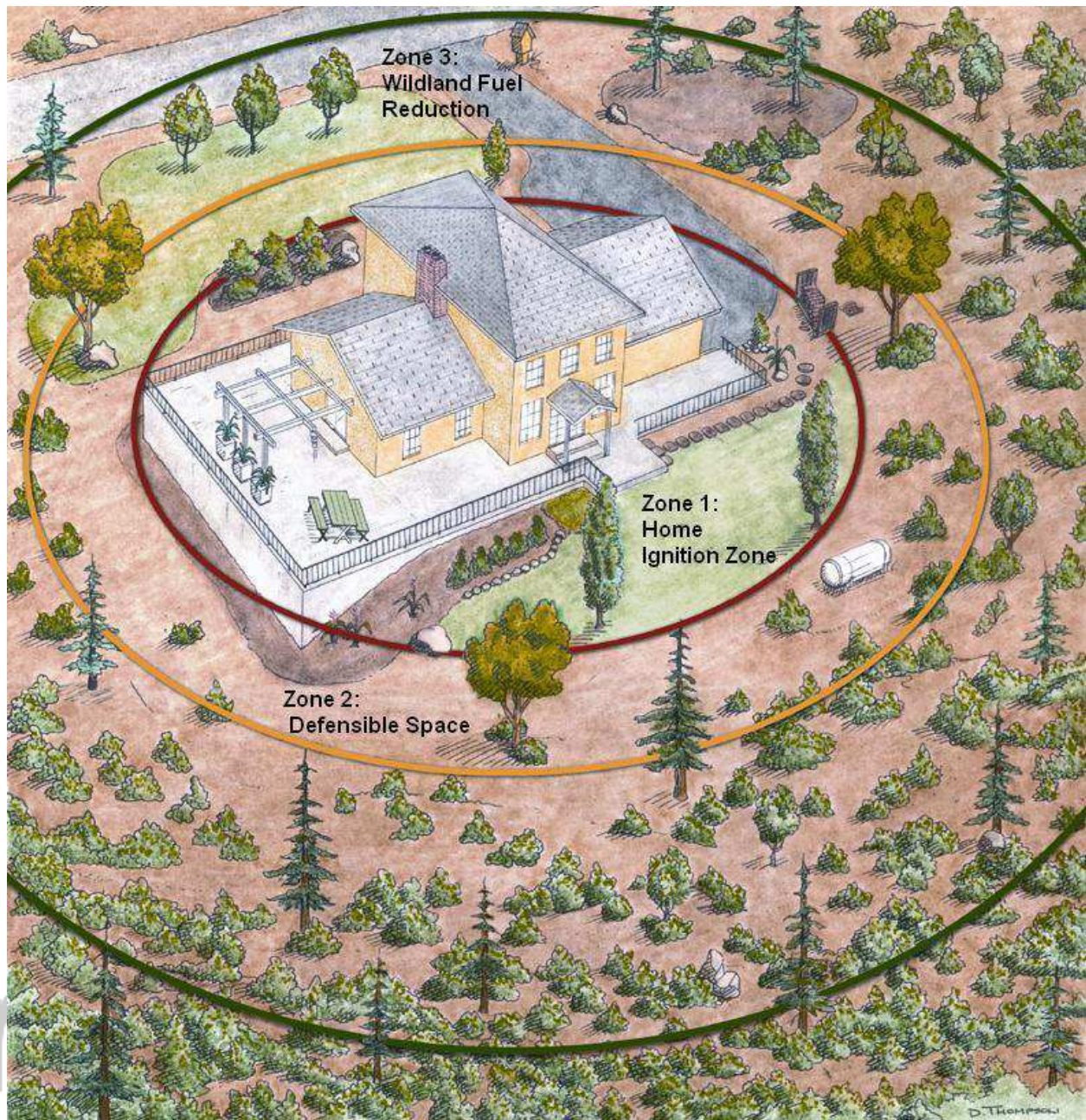
- Thin a 15-foot space between tree crowns.
- Replace highly flammable vegetation such as pine, eucalyptus, junipers and fir trees with lower growing, less flammable species. Check with your local fire department or garden store for suggestions.
- Replace vegetation that has living or dead branches from the ground-level up (these act as ladder fuels for the approaching fire).
- Cut the lawn often keeping the grass at a maximum of 2 inches. Watch grass and other vegetation near the driveway, a source of ignition from automobile exhaust systems.
- Clear the area of leaves, brush, evergreen cones, dead limbs and fallen trees.
- Keep a bucket, shovel, garden hose and rake handy for fighting fires.
- Make sure all outside faucets work.
- Install a roof sprinkler system, according to structural and urban interface fire fighter, Brent Stainer, is worthwhile to prevent damage from embers.
- Power failures can make well pumps inoperable. Plan accordingly by having a backup generator. Clearly mark all water sources and keep the route accessible.
- Maintain fire awareness and prevention:
  - Replace batteries regularly on smoke detectors.
  - Place several charged fire extinguishers around your home, especially near flammables.
  - Keep a fire extinguisher and flashlights (with batteries) in your vehicle. Teach your family how to use fire extinguishers - Pull, Aim, Squeeze, Sweep
  - Keep a charged, ABC-type fire extinguisher in the kitchen and garage; make sure family members know how to properly use it - Pull, Aim, Squeeze, Sweep
  - 2-Ways out of any room or structure as well as your property.
  - Stop, Drop, Roll
  - One out Stay Out until authorized to return.
- Keep flashlights readily available throughout the home. Check batteries often.
- Use a non-flammable cabinet to store combustibles. Keep doors closed.
- Write a family plan that includes escape routes and contact numbers.
- Conduct drills to practice.
  - Drive the routes for evacuation prior to an emergency.
- Create a survival kit that includes a 3 day supply of food and water and other necessities to sustain your family in the event roads are impassable or you must shelter elsewhere.
- Make a checklist of everything to take with you.
- Keep cell phones charged and fuel in vehicles.
- Store important papers and photos in a fire proof safe.
- Have a first aid kit well stocked with essentials. In the event of a fire, you may have to administer assistance to the injured until rescuers arrive. Make certain your kit has pain relievers, burn spray and wound dressings.
- Take CPR and first aid classes as a family.
- Fire blankets should be considered for those in high risk areas. While they won't protect you from smoke inhalation, they can prevent some thermal burns. Opt for non-wool, high temperature tested fire blankets. Don't let these give you a false sense of security. Use them only for emergencies.
- Learn about the history of wildfire in your area.
- Be aware of recent weather. A long period without rain increases the risk of wildfire.

## Wildfire – Safety Tips & Prevention - Continued

- Consider having a professional inspect your property and offer recommendations for reducing the wildfire risk.
- Determine your community's ability to respond to wildfire.
- Are roads leading to your property clearly marked? Are the roads wide enough to allow firefighting equipment to get through?
- Is your house number visible from the roadside?
- Build fires away from nearby trees or bushes.
- Always have a way to extinguish the fire quickly and completely.
- Install smoke detectors on every level of your home and near sleeping areas.
- Never leave a fire--even a cigarette--burning unattended.
- Avoid open burning completely, and especially during dry season.
- Encourage your family and the neighborhood to learn about fire safety.
- Make sure that motorized garden equipment, like mowers and chainsaws have proper functioning spark arrestors.
- If you see a wildfire, call 9-1-1. Don't assume that someone else has already called. Describe the location of the fire, speak slowly and clearly, and answer any questions asked by the dispatcher.
- Safeguard against sparks and heat from chainsaws, vehicle engines and chains.
- Don't permit children to play with matches, lighters, flammable liquids, or fires.



Create Safety Low Fuel Zones Around Any Structure



### 30 Feet from Any Structure - Home Ignition Zone

The most critical area is your home ignition zone, which includes your home itself and the landscaping within 30 feet. Remember: windblown embers or firebrands can ignite a home while leaving the surrounding vegetation untouched or only charred. Some tips to better protect this zone include:

- Clear pine needles or other woody debris from rain gutters and off the roof.
- Clear all vegetation and debris from under decks and touching the foundation.
- Be sure all eaves and attic vents are screened with a small, ½-inch screen.
- Move stacks of firewood away from the structure.
- Keep vegetation in this area trimmed low, well-irrigated, and free of dead material and spaced apart to prevent a continuous path of fuel to your home.

### 30 to 100 Feet from Any Structure - Defensible Space Zone

This is the second most critical zone and includes the area from 30 to 100 feet from your home.

- Remove dead and dying grass, shrubs, and trees.
- Reduce the density of vegetation and ladder fuels by thinning and keeping them free of dead material.
- Replace hazardous vegetation with less flammable, irrigated landscaping, including lawn or low growing ground cover and flowering plants.

### 100 Feet and Beyond from Any Structure - Wildland Fuel Reduction Zone

In this zone, from about 100 feet and beyond, remove dense undergrowth and thin out densely-crowded smaller trees. Experts recommend keeping 10 feet of space between trees and shrubs. Mature trees should be limbed up 6 to 10 feet above the ground.

While there are many steps that can be taken to enhance the survivability of your home and property when wildfire occurs, it's important to remember that each step you take, no matter how small, can make a large difference. Multiple steps together can vastly improve the resistance to fire and subsequent losses.

### Camping and the Outdoors

- Clear campfire sight down to bare soil
- Circle the pit with rocks.
- Build campfires away from overhanging branches, steep slopes, dry grass, and leaves.
- Keep a bucket of water and a shovel nearby.
- Never leave a campfire unattended.
- When putting out a campfire, drown the fire, stir it, and drown it again.
- Always have an adult around to supervise outdoor cooking.
- Be careful with gas lanterns, barbecues, gas stoves, and anything that can be a source of ignition for a wildfire.
- If smoking is permitted outdoors, safe practice requires a 3-foot clearing around the smoker. Fully extinguish cigarettes in ashtrays then soak butts in water.
- Don't park your vehicle on dry grass.
- If off-road vehicle use is allowed, internal combustion equipment requires a spark arrester.
- Know your county's outdoor burning regulations. Unlawful trash burning is a punishable offense.
- At the first sign of a wildfire, leave area immediately by established trails or roads. Contact a Ranger as soon as possible. If escape route is blocked, go to the nearest lake or stream.
- Leave campsite as natural as possible, traveling on trails and other durable surfaces.
- Inspect your site upon leaving.
- Never take burning sticks out of a fire.
- Never take any type of fireworks on public lands.
- Keep stoves, lanterns and heaters away from combustibles.
- Store flammable liquid containers in a safe place.
- Never use stoves, lanterns and heaters inside a tent
- Safeguard against sparks and heat from chainsaws, vehicle engines and chains.

- Don't permit children to play with matches, lighters, flammable liquids, or fires.



### How to Survive a Wildfire

Like a wall of roaring flames, a wildfire can be a violent and fast moving death trap. Annually, forest fires account for billions of dollars in damages. Many people, especially those who underestimate the force and intensity of these fires, become trapped or tragic fatalities.

Understanding wildfires, as with any crisis, is vital to increasing survival. In February 2009, Australia experienced their most deadly wildfire episode. The “Black Saturday” fires left over 200 dead, many of them too charred to identify and thousands homeless, as 400 fires swept through the bush, devouring towns.

Most individuals had a plan that included fire safety. For many, it was simply- to evacuate and quickly. Others, faced with multiple fast moving infernos, little advance notice and fire blocked exit routes were trapped and became victims.

A few became survivors. Amidst the ash raining down and trees exploding from heat, they took quick, life saving action. A mother and her children crawled into the safety of a wombat’s burrow. Two men took refuge in a drainage pipe, rolling in water as flames approached. Another man, avoided death by jumping into his swimming pool, while fire engulfed the area, destroying his neighbor’s home.

The best and surest means to survive a wildfire is to escape well in advance. However, often that is not possible. Wildfire can jump, suddenly across streams and bare areas.

Research has shown evacuations save lives and allows emergency workers the ability to concentrate on fighting the fires. In spite of this data, studies show up to an alarming 60 percent of homeowners would stay behind and fight fires produced by wildfires.

That, according to Daniel Berlant of the California Department of Forestry and Fire Protection(Cal Fire), is a dangerous practice, putting not only the lives of homeowners in jeopardy, but also rescue workers in grave risk.

## Wildfire – Safety Tips & Prevention - Continued

There is no doubt that prompt evacuation is the best and only plan to avoid the dangers of a wildfire. As Berlant states, “Building a fire shelter is never meant to be a plan.” Neither is fighting a fire for untrained homeowners.

- Keep a battery-operated radio with extra batteries so you can keep up-to-date with the latest advisories.
- Designate a place outside your home to meet if there is a fire.
- Identify multiple places you could evacuate to, like a motel or friend's house outside the danger zone.
- Create an emergency supplies kit.



### Basic Information:

- Most fires, even wildfires, are caused by man. 4 out of 5 are the direct result of human beings.
- Lightning strikes are the second most common cause of forest fires. Hence, be wary of any storm front that produces lightening when in wildfire prone areas.
- California has engineered a wildfire protection plan, “Ready, Set, Go”, advising citizens to prepare by applying fire resistant techniques to their property, gather emergency supplies, and then to evacuate once a wildfire threatens. This plan is the works to be adopted by other states in 2010.
- Warnings to evacuate vary greatly in the amount of time given to residents- as little as a few minutes to several hours. Be vigilant to conditions during fire season and ready to leave quickly.
- Wildfires are capable of great speeds. Propelled by wind currents and the right fuel, they have been known to cover a third of a mile in less than a half a minute.
- Embers, which account for most property damage, can be sent ahead of a wildfire a quarter of a mile or more.
- After a fire has burned through, embers still pose a significant fire risk to homeowners. Even hours later, they can start a fire. Usually they are trapped in outside structural material, but they can also travel into the home through openings in windows or doors.
- External property damage is apparent, as flames lick outsides of buildings. However, the intense heat of wildfires can also cause combustion indoors- even when flames have not permeated the home.
- Some wildfires exceed temperatures of 1,200 degrees.
- In some cases, because you can't usually outrun a wildfire, taking shelter in a home is better than attempting to flee on foot.





## If a Wildfire Threatens Your Home

- Remove anything combustible and place it outside your safety zone.
- Close up everything: windows, doors and crawlspaces.
- Pack the car with your emergency supplies.
- Shut off your gas supply.
- Fill any large containers or pools with water.
- Turn off all your lights.
- Don't lock your doors. Firefighters may need to enter the house quickly to fight the fire
- Make sure each vehicle has plenty of gas and is parked facing toward the exit road. Know where the keys are.
- Always be ready for an emergency evacuation and be prepared to leave when told by officials or as soon as you feel threatened by the approaching fire. Evacuation may be the only way to protect your family in a wildfire. Know where to go and what to bring with you. You should plan several escape routes in case roads are blocked by a wildfire.
- Move any flammables away from buildings (such as gas grills). Close propane valve tightly.
- Shut off natural or LPG gas to the house. Turn off pilot light.
- Connect garden hoses and fill buckets of water.
- Close/Protect Openings. Close outside attic, eaves and basement vents, windows, doors, pet doors, etc. Remove flammable drapes and curtains. Close all shutters, blinds or heavy non-combustible window coverings to reduce radiant heat.
- Close Inside Doors/Open Damper. Close alt doors inside the house to prevent draft. Open the damper on your fireplace, but close the fireplace screen.
- Keep the house well lit and the exit route doors unlocked and unblocked.
- Close windows and fireplace flue, turn air conditioning off. Plug up vents in attic. (This keeps airborne embers from entering).
- Move flammable furniture away from windows and exterior walls and to the center of the rooms.
- Take curtains off windows. Close metal blinds to keep heat out.
- Wear long pants, closed toe, heavy soled shoes and long sleeves and eye protection. Cover your hair in a hat. Use a dry cloth to protect your face. (Wet fabric against skin can cause steam burns in high heat).
- AVOID any synthetic clothing, such as nylon, which can melt in high temperatures to your skin. Cotton clothing is best.
- Listen to regular updates from authorities!
- Stay watchful of the surroundings
- Wear Protective Clothing.
- Pumps. If you have gas-powered pumps for water, make sure they are fueled and ready.
- Ladder. Place a ladder against the house in clear view.
- Garage Doors. Disconnect any automatic garage door openers so that doors can still be opened by hand if the power goes out. Close all garage doors.
- Valuables. Place valuable papers, mementos and anything "you can't live without" inside the car in the garage, ready for quick departure. Any pets still with you should also be put in the car.
- Car. Back your car into the driveway and roll up the windows.

## Wildfire – Safety Tips & Prevention - Continued

Fire can move as rapidly as the wind blows. So be sure to leave while it is still safe. Resist the temptation to stay behind in order to try and save your home with a garden hose. You might be endangering the lives of emergency personnel, as well as your own. No house or anything in it is more valuable than a human life.



### Survival in a Vehicle

This is dangerous and should only be done in an emergency, but you can survive the firestorm if you stay in your car. It is much less dangerous than trying to run from a fire on foot.

- Roll up windows and close air vents. Drive slowly with headlights on. Watch for other vehicles and pedestrians. Do not drive through heavy smoke.
- If you have to stop, park away from the heaviest trees and brush. Turn headlights on and ignition off. Roll up windows and close air vents.
- Get on the floor and cover up with a blanket or coat.
- Stay in the vehicle until the main fire passes.
- Stay in the car. Do not run! Engine may stall and not restart. Air currents may rock the car. Some smoke and sparks may enter the vehicle. Temperature inside will increase. Metal gas tanks and containers rarely explode.



### If You Are Trapped at Home

If you do find yourself trapped by wildfire inside your home, stay inside and away from outside walls. Close doors, but leave them unlocked. Keep your entire family together and remain calm.

- If you live in a high risk area consider adding a Fire resistant “safe room”
- Fire blankets should be considered for those in high risk areas
- Disposable “smoke masks”
- If you have a pool or hot tub that will hold your family, consider it as your safe spot.

## Wildfire – Safety Tips & Prevention - Continued

- Call 911 immediately. Tell authorities where you are currently seeking refuge in your home, along with the address and your condition.
- Stay with your family in one protected area, away from windows and outside walls.
- If you know the direction the fire is coming from, move to the opposite part of the home, (but away from windows and outside walls.)
- Immediately fill sinks, tubs and any containers with cold water. Keep a bucket to bail water nearby.
- If the power goes out, the well pump may not work. If you can't get to the generator or don't have one- scoop water with small containers from the back and bowl of the toilets and fill a bucket. Take all the ice out of the freezer and put in containers to use as it melts. This won't make up for a tub of water, but it will buy you time to douse small fires until help comes.
- Keep flashlights with you.
- Leave exterior doors unlocked, but closed. Keep lights on.
- Close all windows and interior doors. This will help contain any fires, as well as keep the heat and smoke compartmentalized.
- Stay away from windows and outside walls. Windows can shatter from heat.
- Stay low if smoke fills the room. Keep your face covered.
- Extinguish any small fires that appear with water, fire extinguishers or using a fire blanket.
- If you have a roof sprinkler system, activate it.
- It will become hot in the home, but the heat will only be more intense outdoors.
- Keep exit routes clear.
- Only leave your home if it catches on fire.
- Stay inside until help comes or the fire passes.
- If you are trapped in a life or death situation, turn on any outdoor sprinkler system to your yard or roof.



### If Caught in the Open

- The best temporary shelter is in a sparse fuel area - plowed fields, riverbeds, ponds, rocky areas.
- On a steep mountainside, the back side is safer.
- Choose downhill, not uphill routes if possible. Fire moves faster uphill due to updrafts.
- Avoid canyons, natural "chimneys" and saddles.
- Stay away from dry, arid fuel potential, such as dead leaves, dry weedy fields, dead trees, etc. Survivors have described trees exploding from heat. In Australia, the fires were said to reach temperatures of as much as 1,200 degrees- enough to cause dry fuel to burst into flames, even before the fire reached the area.

## Wildfire – Safety Tips & Prevention - Continued

- Leafy trees burn more slowly than evergreen trees. Some trees and bushes, like eucalyptus, contain flammable oils that cause burning to intensify. Try to select a route that is less flammable, if possible. If you must choose a wooded area as your escape route, pick leafy trees over pines.
- If a road is nearby, lie face down along the road cut or in the ditch on the uphill side. Cover yourself with anything that will shield you from the fire's heat.
- If hiking in the back country, seek a depression in the ground with sparse fuel. Clear fuel away from the area while the fire is approaching and then lie face down in the depression and cover yourself. Stay down until after the fire passes!
- Find a cave, barren crevice, drainage pipe or an underground hole. Lay low and curled up. Cover any exposed skin (including face) to keep thermal burns at a minimum. This will also help reduce smoke inhalation. If you live in or are visiting a high wildfire threat area, consider a fire blanket for emergencies.
- Dig a trench to lie in. Cover your body with a foot of soil. This is dangerous as fire consumes oxygen and can suffocate you. Only do this as a last resort. However, some have survived using this dire tactic. Lay face down. Try to create a small pocket under your face to trap oxygen. Hold your breath and keep eyes closed when fire passes over you.
- If you have time as you evacuate, choose cotton clothing and shed nylon apparel. Nylon has a very low melting point. If you are close to a fire or intense heat, nylon can melt onto your skin.
- If you are near water (lake, river, swimming pool) submerge as much as possible. Try to avoid coming to the surface when fire passes, as the heat can sear your lungs.
- After the fire passes, proceed upwind, against the direction the fire is moving and where fuel has been already consumed by the flames.
- Seek emergency help as soon as possible. It's likely you'll have thermal burns that need to be treated or may be dehydrated, suffering from smoke inhalation or in shock.



### Evacuation

- Follow your plan. Stay calm!
- Use your checklist to make sure you have everything in your survival kit assembled.
- Put survival kit items in vehicle.
- Face vehicle toward road. Hang on to keys. Make sure cell phone is charged and with you.
- Gather family and pets.
- If you are advised to evacuate, do so immediately.
- Listen to routes suggested by officials.

## Wildfire – Safety Tips & Prevention - Continued

- If you leave prior to a mandatory evacuation, pick an exit route that takes you away from the fire and is free of falling debris (like trees) that can block your path.
- Homes that are protected by people do stand a better chance of surviving. BUT don't attempt fire fighting if ordered to evacuate or if conditions worsen rapidly before an evacuation is in effect. Belongings can be replaced, people can't.
- Listen to community updates.
- Don't turn your sprinkler system on when evacuating, as it can lower water pressure for fire fighters.



### Staying Safe While You're Evacuating

- Roll up your windows and close your air vents.
- Drive slowly and turn on your headlights.
- Don't drive through heavy smoke.
- Stay in the car if you are trapped. Get on the floor and cover up with a blanket or a coat.
- If you're caught in the open, try to find a ditch or depression and cover yourself with a blanket or a coat.



### What to do After a Wildfire

- Do not return home until authorized to do so.
- After the fire has moved on, it's vital to check the entire exterior, especially the roof. Look for burning embers or smoldering areas under decks, in attics and throughout yard. Have fire fighters assess your home's safety.
- For several hours after the fire, maintain a "fire watch." Re-check for smoke and sparks throughout the house. The water you put into your pool or hot tub and other containers will come in handy now. If the power is out, try connecting a hose to the outlet on your water heater.
- Be on the alert for rain and mudslides. After wildfires in the local mountains, there is an increased risk of mudslides. Avoid being anywhere below or on burnt hillsides if it is raining or has rained recently.



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