Wildfire Resources

**Readiness**

* **Fires that burn organic material in the soil are called ground fires**. This is a slower burning fire, usually under litter or under vegetation. They burn by glowing combustion.
* **Some fires burn on the surface of the ground. They burn dry leaves, broken twigs and branches and other materials on the ground**. These fires spread quickly and are known as **surface fires**.
* **Crown fires burn with huge flames and has intense heat and power. They burn from tree top to tree top and spread very quickly with the wind and heat**. It is even worse if they are exposed to steep slopes.
* **Spotting**, is yet another interesting fire type. **Sometimes winds blow ‘firebrands’ away from crown fires onto new areas. Firebrands are like fireball that fly from burning treetops to other new places, resulting in new fires and keeps the fires spreading**.
* **Conflagration: This is a large fire with a character of aggravation, usually enhanced with wind action and firebrands**.

**Surface fires** - The most common type of wildfires, surface fires move slowly and burn along the forest floor, killing and damaging vegetation.

**Ground fires** - These are usually started by lightning, ground fires burn on or below the forest floor through the root system.
 **Crown Fires** - These fires spread by wind moving quickly along the tops of trees.

**Santa Ana Winds** - "Santa Ana" is the name given to the gusty northeast or east wind that occurs in Southern California during the fall and winter months. Santa Ana winds are often hot and very dry, greatly aggravating the fire danger in forests and bush lands.
 **Conflagration** - A large and destructive fire, typically aggravated by strong winds that carry firebrands over natural or artificial barriers.

**Fire Weather Watch** = dangerous fire weather conditions are possible over the next 12 to 72 hours

**Steps to Take**

* Turn on your TV/radio. You’ll get the latest weather updates and emergency instructions.
* Know where to go. If you are ordered to evacuate, know the route to take and have plan of where you will go. Check-in with your friends and family.
* Keep your car fueled, in good condition, and stocked with emergency supplies and a change of clothes.
* Contact your local fire department for all the laws, fire tips and safety information. Get information of the closest fire hydrants and the conditions they are in.
* Be sure to call the fire department any time you notice a fire or think there is a fire hazard anywhere. A fire hazard is any thing or activity that can bring about a fire. Look out for them at home, school, and on camping grounds.
* Keep fire service and emergency numbers handy.
* Learn how to use the fire extinguisher in the car, at home, in the office or school. Always make sure they are in good condition. You can also plan escape routes in advance and go through fire drills with your friends as a way of preparing for a real fire. It is also a good idea to keep gallons of water handy and in strategic places.
* If you live in a town where burning refuse or debris is permitted, be sure to do that in a safe way. Always clear out any fuels that will make the fire stray onto another area. Keep your eye on the fire ALL the time. Check the weather for winds and dryness as they can aid burning.
* Camping is a big deal in many countries but fires used at camping grounds must be monitored very well. Keep campfires at a manageable size and use larger woods rather than small twigs and grass. Make sure you extinguish it completely by pouring water on it until it’s completely out. Get a friend to double check if it is out completely!
* Since 1974, five rating levels have been used to describe danger levels in public information releases and fire prevention signing:



* These signs may be a common site on or near public lands to make people aware of the fire danger.
* **Low (Green)**—Fire starts are unlikely. Weather and fuel conditions will lead to slow fire spread, low intensity and relatively easy control with light mop-up. Controlled burns can usually be executed with reasonable safety.
* **Moderate (Blue)**—Some wildfires may be expected. Expect moderate flame length and rate of spread. Control is usually not difficult and light to moderate mop-up can be expected. Although controlled burning can be done without creating a hazard, routine caution should be taken.
* **High (Yellow)**—Wildfires are likely. Fires in heavy, continuous fuel such as mature grassland, weed fields and forest litter, will be difficult to control under windy conditions. Control through direct attack may be difficult but possible and mop-up will be required. Outdoor burning should be restricted to early morning and late evening hours.
* **Very High (Orange)**—Fires start easily from all causes and may spread faster than suppression resources can travel. Flame lengths will be long with high intensity, making control very difficult. Both suppression and mop-up will require an extended and very thorough effort. Outdoor burning is not recommended.
* **Extreme (Red)**—Fires will start and spread rapidly. Every fire start has the potential to become large. Expect extreme, erratic fire behavior. NO OUTDOOR BURNING SHOULD TAKE PLACE IN AREAS WITH EXTREME FIRE DANGER.



***Oxygen:***
This is simply a gas found in air. The air we breath contains about 21% of oxygen. In fact, only 16% is all that is needed to produce fire. When fuel burns, it reacts with oxygen from the surrounding air. This chemical reaction releases heat and other products such as gases, smoke and particles. This process is known as ***oxidation***. This is why some smoke can be very dangerous because depending on what is burning, the gases produced can be very deadly.

***Fuel:***Fuel is any kind of combustible material. This can be gas, liquids or solids. Examples of solid fuels include wood, dry leaves and even paper. Examples of liquid fuels include petro and turpentine. Examples of gas fuels include LPG Gas. Fuels with less moisture tend to burn faster than fuels with high moisture.

***Heat:***
Heat is thermal energy. You may not see it, but can feel it. Extreme heat of about 617°F will start a fire in the presence of fuel and oxygen. Heat eliminates moisture from any nearby fuel, warms the air around and prepares the fire path to accept the fire and make it burn with ease

**Make a Wildfire plan**

* Know your [**wildfire risk**](http://www.nps.gov/fire/wildland-fire/learning-center/fire-in-depth/understanding-fire-danger.cfm).
* Familiarize yourself with local emergency plans. Know where to go and how to get there should you need to evacuate.
* Make a wildfire [**emergency plan**](http://www.ready.gov/make-a-plan) including an evacuation plan and a communication plan.
* Many communities have text or email alerting systems for emergency notifications. To find out what alerts are available in your area, search the Internet with your town, city, or county name and the word “alerts.”
* Build or restock your[**emergency preparedness kit**](http://www.ready.gov/kit), including a flashlight, batteries, cash, and first aid supplies.
* Stay tuned to your phone [**alerts**](http://www.ready.gov/alerts), TV, or radio, for weather updates, emergency instructions or evacuation orders.
* **Create a fire escape plan that has two ways out of every room and practice it twice a year.**
* **Choose a meeting spot near your home, then practice getting there.**
* **Choose a spot outside of your neighborhood in case you can't get home. Practice getting there from school, your friends' houses, and after school activities.**
* **Keep your family's contact info and meeting spot location in your backpack, wallet, or taped inside your school notebook. Put it in your cell phone if you have one.**

**Prepare Your Home**

* Create and maintain an area approximately 30’ away from you home that is free of anything that will burn, such **as wood piles, dried leaves, newspapers, brush, and other landscaping that can burn.** From 30 feet to 100 feet reduce or replace as much of the most flammable vegetation as possible and prune vegetation, create **“fuel breaks,” such as driveways, gravel walkways, and lawns. Work with neighbors to create spaces up to 200 feet around your homes where vegetation is thinned to remove underbrush and tall trees do not touch each other for continuous canopies.**
* Regularly **clean the roof and gutters**.
* Connect **garden hoses** **long enough to reach any area of the home** and fill garbage cans, tubs, or other large containers with water.
* Review your homeowner's insurance policy and prepare/update a list of your home's contents.
* Include **a first aid kit, canned food and a can opener, bottled water, batteries, battery-operated radio, flashlight, protective clothing, and written instructions on how to turn off electricity, gas, and water**

**Causes**

* Common causes of wildfires include **lightning, human carelessness, arson, volcano eruption, and pyroclastic cloud from active volcano**. **Heat waves, droughts, and cyclical climate changes** such as El Niño can also have a dramatic effect on the risk of wildfires. Although, **more than four out of every five wildfires are caused by people.**

**Response**

* Firefighters use a tool known as a **pulaski. Its a combination of an ax and hoe used to dig a fireline. A fireline is a strip of land from which all brush and debris have been cleared to rob a wildfire of its fuel.** Firefighters also use **hotshots and smoke jumpers to clear a large path in a big circle around the fire so the blaze is contained in a ring of dirt.** When the fire reaches this area, it runs out of fuel and starves to death. **If the fire is too large, however, planes and helicopters fly overhead, dropping water and special chemicals that smother the flames. This pink, fire-retardant chemical is called sky jell-o.**

**Recovery**

* Most of the time we worry about prolonged [**asthma attacks**](https://www.childrenscolorado.org/conditions-and-advice/conditions-and-symptoms/conditions/asthma/). During wildfires, these attacks can last longer than they normally would. If someone is having an asthma attack due to high smoke exposure from the outdoors, we recommend that they try to stay indoors. If they must go outdoors, they should use their [**rescue medications**](https://www.childrenscolorado.org/doctors-and-departments/departments/breathing-institute/programs/asthma/how-to-use-an-inhaler/) prior to going outside. If outdoors, they should try to limit the amount of vigorous activity. What are some symptoms parents can look for?
	+ - Decreased activity level
		- Increased coughing
		- Wheezing and/or audible breathing sounds
		- Change in color or pallor of skin
		- Easily fatigued
		- Breathing hard
* If children get red or itchy eyes — sometimes they can get soot in their eyes — rinse out the eyes just with water. With the heat, drink many fluids.

Children and families who have experienced wildfires may have these common emotional reactions:

* Increased fears and worries, including dread about another fire
* Increased distress and anxiety with reminders of the wildfires
* Decreased feelings of security
* Increased concerns about the safety of loved ones, friends, classmates, teachers, and neighbors
* Separation anxiety
* Disturbances in sleep and appetite
* Changes in behavior:
	+ Children may become more irritable, with increased temer tantrums and disruptive behavior
	+ Adolescents may become angry and withdrawn
	+ Parents may notice increased marital discord
	+ Parents may be less tolerant of child behavior problems
	+ Physical complaints (not due to the wildfire smoke and ash) including headaches and stomachaches
* Decline in school and work performance
* Decreased interest in pleasurable activities
* Increased feelings of sadness and depression

**Returning Home**

* Return home only when authorities say it is safe.
* For several hours after the fire, maintain a "fire watch." Check and re-check for smoke, sparks or hidden embers throughout the house, including the roof and the attic.
* Use caution when entering burned areas as hazards may still exist, including hot spots, which can flare up without warning. Evacuate immediately if you smell smoke.

**Cleaning Your Home**

* Wear a NIOSH certified-respirator (dust mask) and wet debris down to minimize breathing dust particles.
* Discard any food that has been exposed to heat, smoke or soot.
* Do NOT use water that you think may be contaminated to wash dishes, brush teeth, prepare food, wash hands, or to make ice or baby formula.
* Photograph damage to your property for insurance purposes.

**Background**

* three conditions that need to be present in order for a wildfire to burn, which firefighters refer to as the **fire triangle***: fuel, oxygen, and a heat source*. **Fuel is any flammable material surrounding a fire, including trees, grasses, brush, even homes**. The greater an area's fuel load, the more intense the fire. **Air supplies the oxygen a fire needs to burn**. Heat sources help spark the wildfire and bring fuel to temperatures hot enough to ignite. **Lightning, burning campfires or cigarettes, hot winds, and even the sun can all provide sufficient heat to spark a wildfire.**
* most common in the [U.S.](http://travel.nationalgeographic.com/travel/united-states-guides/) West, where heat, drought, and frequent thunderstorms create perfect wildfire conditions. **Montana, Idaho, Wyoming, Washington, Colorado, Oregon, and California** experience some of the worst conflagrations in the U.S. In California wildfires are **often made worse by the hot, dry Santa Ana winds**, which can carry a spark for miles.
* Although often harmful and destructive to humans, **naturally occurring wildfires play an integral role in nature. They return nutrients to the soil by burning dead or decaying matter**. They also **act as a disinfectant, removing disease-ridden plants and harmful insects from a forest ecosystem**. And by burning through thick canopies and brushy undergrowth, wildfires allow sunlight to reach the forest floor, enabling a new generation of seedlings to grow.
* The **Santa Ana winds are hot, dry winds that aggravate the fire danger in forests and bush lands**. These winds characteristically appear in Southern California and Northern Baja California weather during autumn and early winter. In southern California, **under the influence of Santa Ana winds, wildfires can move at tremendous speeds, up to 40 miles in a single day, consuming up to 1,000 acres per hour. Dense clouds of burning embers push ahead of the flames crossing firebreaks without a problem.**
* Wild fires can also be termed***forest fires, grass fires, peat fires and bush fires* depending on type of vegetation being burnt**. Note that these **fires tend to thrive in very warm and dry climates, rather than the thick, moist rainforest types.**
* The critical component of a fire’s smoke is so-called “fine particle” air pollution, which is a direct threat to human health even during relatively short exposures.  And the pollution levels produced by these wildfires are extremely high: high enough to potentially increase mortality in susceptible populations, like the elderly and those with heart conditions, and increase emergency room visits for asthma sufferers and others with respiratory conditions.

**If you’ve got air conditioning at home, set it to recirculate mode and make sure all your doors and windows are tightly closed.**

**Your best bet: disposable respirators, like the ones found at hardware stores and pharmacies. Look for ones**[**labeled N95**](https://www.doh.wa.gov/Portals/1/Documents/Pubs/334-353.pdf)**and make sure they’re properly sealed around your face (that goes double for San Francisco’s bearded hipsters).**

5 rules for fire safety:

1. Only you can prevent wild fires
2. Always be careful with fire
3. Never play with matches or lighters
4. Always watch your campfire
5. Make sure your campfire is completely out before you leave
6. Contain fire by putting rocks around it

They do. Indoor air filtration devices with HEPA filters can reduce the levels of particles indoors. Make sure to change your HEPA filter regularly. Don’t use an air cleaner that works by generating ozone. That puts more pollution in your home.

Many areas report EPA’s Air Quality Index for particulate matter, or PM. PM (tiny particles) is one of the biggest dangers from smoke. As smoke gets worse, that index changes -- and so do guidelines for protecting yourself. So listen to your local air quality reports.

**Sources**

<http://www.nationalgeographic.com/environment/natural-disasters/wildfires/>

[https://www.ready.gov](https://www.ready.gov/alerts)

<http://eschooltoday.com/natural-disasters/wildfires/information-on-wildfires.html>

<https://www.childrenscolorado.org>

<http://www.nctsn.org/trauma-types/natural-disasters/fires/wildfires>

<http://easyscienceforkids.com/all-about-wildfires/>

<https://www.fs.usda.gov>