



Smithsonian

Dealing with Wildfires



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Up in Smoke

Large red and orange flames burn a path up a hill. The flames burn dried leaves below some trees. Strong winds push the flames closer to homes on the hill. Scared homeowners watch as a huge **plume** of smoke rises into the sky.

Wildfires burn outdoors in wooded areas or in open fields. They are fires that can get out of control. They spread quickly. They can be very dangerous.

A circular inset photograph showing a person from behind, wearing a jacket and a hat, standing on a stone walkway next to a stone wall with a lantern. In the background, a large wildfire is burning on a hillside at night, with bright orange flames and thick smoke rising into the dark sky. The scene is illuminated by the fire and the lantern.

A homeowner watches a wildfire from a safe distance.



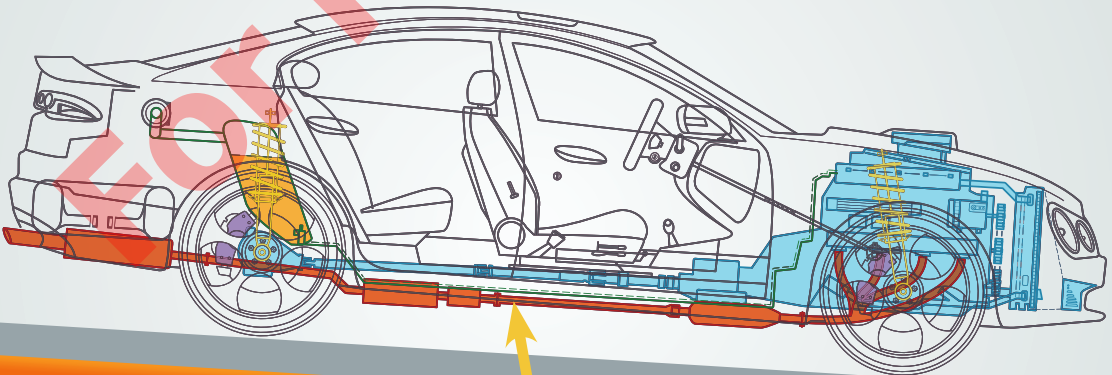
smoke plume

Wildfire Causes


It only takes one spark to start a wildfire. Wind, dry leaves, and **brush** can turn a small spark into a huge flame. But what causes the spark that **ignites** a fire?

People Can Cause Fires

People are the cause of most wildfires. Campers might leave hot coals on a campfire. The heat from an **exhaust pipe** on a car might cause a spark. Most of the time, people do not mean to start fires. They are accidents.



The exhaust pipes on cars run from the engine to the back.

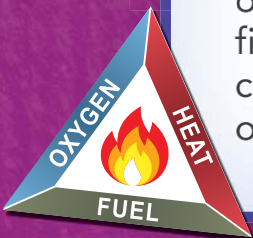


Campers roast marshmallows over a campfire.

Science

The Science of a Fire

Fires need three things to burn: heat, **fuel**, and oxygen. Heat from an exhaust pipe can start a fire. Nearby plants act as the fuel, and oxygen comes from the air. Firefighters must remove one of those three things to put out a fire.



Nature Can Cause Fires

There are natural causes of wildfires too. Lightning starts some wildfires. A lightning **bolt** can create a spark that causes trees to burn. Strong winds can spread the flames to plants and trees.

Lava from volcanoes can also start wildfires. Lava is very hot. It can burn dry grass and plants. That can cause a wildfire to ignite.



Lightning starts a wildfire.



Lava burns in a forest.

Lightning bolts can heat the air around them to temperatures that are five times hotter than the surface of the sun.



STEAM CHALLENGE

Define the Problem

There have been a lot of wildfires in your area recently. Members of your local fire crew have asked for your help. They want you to draw a design for the land around your home that will keep it safe from a wildfire.



Constraints: Your drawing must include your home, grass, plants, trees, and anything else that is normally outside your home.



Criteria: Your design must be clearly labeled and colored. Your drawing must also have symbols and a key showing what they mean.





Research and Brainstorm

What are wildfires? What two zones do fire experts recommend homeowners use? What three things do wildfires need to burn?



Design and Build

Sketch a design of your home. How many zones does your design have? What are their measurements? Draw your design.



Test and Improve

Share your design with friends. Can they see how your design will protect your home? Does your design have two zones? How can you improve it? Improve your design and try again.



Reflect and Share

Could you add technology to your design to notify homeowners of wildfires? What are some other ways people can protect their homes from wildfires?

