About fire

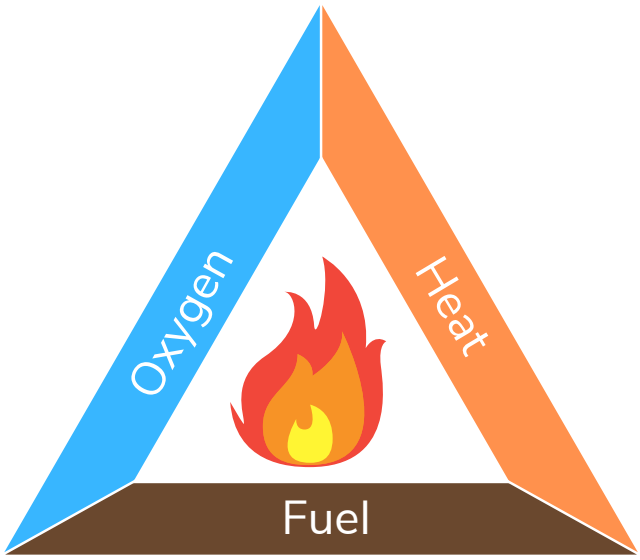
Burning is just one kind of chemical reaction. A chemical reaction occurs when chemicals combine to form new substances with new properties. Burning is a rapid type of chemical reaction that produces large amounts of heat and light. An example of a fast chemical reaction is an explosion, such as the exploding of fireworks or a bomb. An example of a slow chemical reaction is rusting (or oxidisation).

One of the chemicals produced during burning is carbon dioxide, which we now refer to as a 'greenhouse gas'. Later, we will also consider other chemicals that are produced during burning, such as methane and nitrous oxide.

Chemical reactions are not created simply by mixing, which creates only a simple, physical change. When chemicals are mixed it should be possible (though often impractical) to separate each chemical involved and have each one still retain their usual properties. Unlike simple mixtures, chemical reactions produce new substances - and result in the permanent alteration of the original chemicals.
The fire triangle model of understanding fire is used by fire-fighting agencies to educate the community and their volunteers about the three requirements to start and sustain a fire.

These three things are detailed here:

- A source of heat is required to start and sustain a fire.
- A source of fuel is needed to burn.
- An adequate supply of oxygen is needed for a burning/chemical reaction.



A candle can be used to demonstrate the fire triangle.

A match is used as the source of heat to light the candle wick. Once the candle wick is alight, the flame has enough heat to maintain itself.

The source of fuel in a candle is the wax vapour evaporating from the wick. Observe the flame on a candle. The flame is above the wick and the bottom of the wick doesn't get burnt away.

The surrounding air supplies the oxygen the fire needs in order to sustain the chemical reaction.

If you're still confused, consider this: in the case of a candle, which is a small, cooler flame, a rush of air (from blowing on it) suddenly reduces the heat and the flame goes out. The same principle works in reverse. Blowing on a burning log supplies more oxygen so that the flames become larger.

Fire is both a friend and foe for human-kind. Fire must always be used safely.