

Equal Pressure

Why does a fire need fuel, oxygen and heat to stay lit?
Let's learn more about this, and about gases and pressure!

Materials

- Plate
- Tea light candle
- Glass cup
- Water
- Lighter
- Food coloring (optional)

Instructions

1. Place the candle in the center of the plate. Ask the audience what a fire needs in order to burn: oxygen, heat, and fuel.
2. Light the candle. (Note: get help from an adult!)
3. Pour water into the plate. Add one drop of food coloring to the water so visitors can see it better.
4. Before placing the glass face down over the candle, ask visitors what they think will happen!
5. Place the cup upside down on top of the candle, sealing the candle in the cup.
6. The flame will go out, and water should suck up into the cup.

The Science Behind it

When the glass is placed over the candle, the air inside the glass heats up quickly. This causes the gases inside to expand, creating an area of high pressure. When the lack of oxygen causes the flame to go out, the temperature decreases rapidly inside the cup, and the gases inside now contract, creating an area of low pressure. The area inside the glass now has less pressure than the surrounding atmosphere. This causes atmospheric pressure to push water inside the glass. Now the air inside the glass and outside the glass have equal pressure!