

SCIENCE SHOW OFFS

JUMPING FLAME

RESOURCES NEEDED

- **Candle**
This works best with large candles
- **Barbecue lighter**
This works best with a long lighter



EXPERIMENT

SET-UP

- Clear a table to light a candle on. Make sure there is nothing flammable nearby, and that you are not wearing loose clothing, or clothing that will easily catch fire, like a puffer jacket or a polar fleece, make sure you also tie back long hair.

STEP 1

- Light the candle, and wait until you see a glowing ember at the end of the wick. If you pour excess wax out of the candle it will help to make the burning part of the wick longer.

STEP 2

- Gently blow out the candle.

STEP 3

- Quickly put the lit lighter close to the wick where the smoke is. The smoke will relight, and the flame will jump back to the candle you just blew out without being touched by the flame from the lighter. People will have to be close by to see the 'jump'.



DISPOSAL AND CLEAN UP

- Make sure candles that are thrown into rubbish bins have no embers that could relight, as this could cause a fire! Keep the lighter away from possible sources of ignition, such as electrical wires, heaters, and fireplaces, as well as out of reach of children who might play with them.

RISK MANAGEMENT

RISK

Fire could burn skin, hair, clothing, and nearby objects.

MANAGING THE RISK

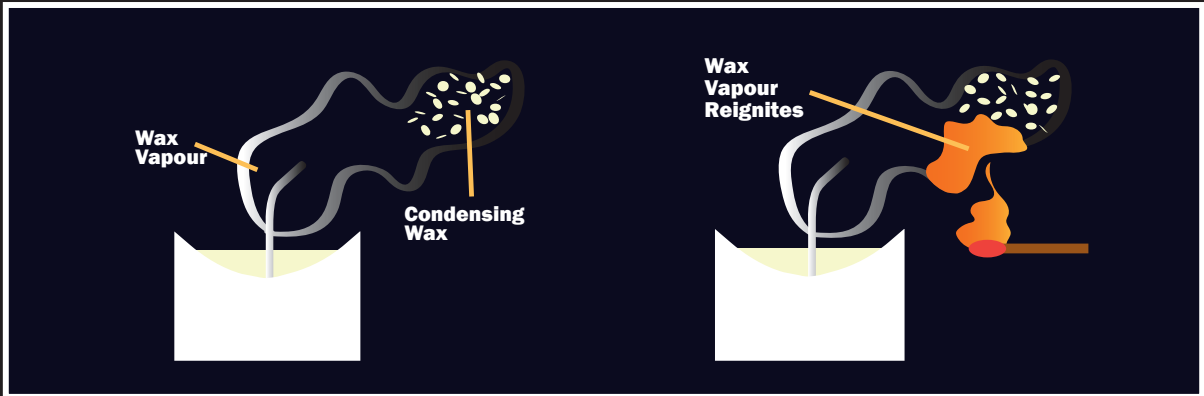
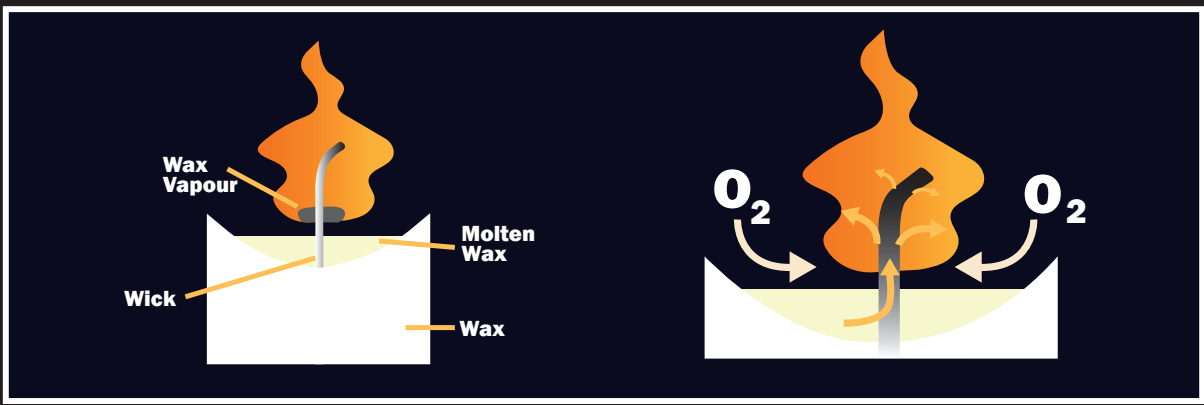
Take care not to put anything near or over the flame. Tie your hair up, and clear the table you are using. Make sure the candle is stable.

SCIENCE EXPLAINED

Have you ever thought about how candles work? Why doesn't the fire just burn down quickly through the string wick? Well, when you light a candle wick, the flame heats and melts the solid wax of the candle near the wick. The melted liquid wax is then drawn up along the wick string to the surface.

Here the liquid wax vapourises into a gas and reacts with oxygen to start burning, giving you the candle flame. When you blow out the flame, the end of the wick is still hot enough to create wax vapour.

This little cloud of wax vapour hangs around for a few seconds, so if you light another match near it, it will start to burn again; the fire travels back down the vapour cloud to the wick and sets the candle alight!



REAL WORLD EXAMPLES

In big bushfires, wind can propagate the fire really quickly by blowing the smoke in the direction of other trees; this makes the fire very hard to extinguish. This is also why petrol is much more dangerous than diesel. Petrol vapourises more easily than diesel, so with petrol there is more vapour to ignite if there is a spark.

PARENTAL GUIDANCE

Science Show Offs should take place with appropriate adult supervision.

COMPETITION

To enter the Science Show Offs Competition, go to;
otagomuseum.nz/scienceshowoffs