**Burning Issues**

**Procedure:**

1. Always wear safety goggles.
2. Dry the glass rod and plastic dish with a tissue.
3. Place the candle on the plastic dish.
   Ask an OMSI staff person to light the candle for you.
   
   **CAUTION:** Keep fingers and hair away from the flame!
4. Hold the glass rod by the handle. Touch the other end of the rod to the tip of the candle flame without touching the wick.
5. Remove the rod from the flame.
   
   **CAUTION:** Do not touch the end that was in the flame; it is hot!
6. Squeeze 1 drop of bromothymol blue onto the plastic dish near the candle.
   
   **What do you see on the end of the glass rod now?**
7. Place the jar upside down over the candle and the drops of bromthymol blue.
   
   **What do you see forming on the inside of the jar?**
8. Wait two minutes after the flame goes out; then remove the jar from over the candle.
   
   **Has the bromothymol blue changed color?**
   
   (Place a fresh drop near the old drop to check the color.)
9. Wipe the plastic dish and the glass rod clean with a tissue. Put used tissues in the waste container.
A Closer Look:

Candle wax is made primarily of carbon and hydrogen. As the wax burns, it reacts with oxygen in the air. In this experiment, the candle's flame went out when it used up all the oxygen in the jar.

A burning reaction is called combustion. The products of combustion—carbon, water, and carbon dioxide—were all seen in this experiment. The black soot on the glass rod was carbon (C), the "fog" on the inside of the jar was water (H₂O), and the bromothymol blue drop turned yellow in the presence of carbonic acid (H₂CO₃), which formed when the carbon dioxide gas (CO₂) combined with the water in the drop of bromothymol blue.

The combustion reaction of a candle is similar to the burning of wood or gas. Combustion reactions are responsible for some types of environmental pollution. The carbon particles produced add to smog. Carbon dioxide is a "greenhouse gas" and contributes to global warming.