



Curiosity Guide #607

Convection

Accompanies Curious Crew, Season 6, Episode 7 (#607)

Candle Convection

Investigation #8

Description

Try this light-bending investigation!

Materials

- Candle
- Candle holder
- Match
- Poster board
- Maglite

Procedure

- 1) Place the candle in the candle holder. Light the candle with a match.
- 2) Stand the poster board up a safe distance behind the candle.
- 3) Shine the Maglite toward the candle to cast a shadow on the poster board.
- 4) What do you notice?
- 5) What happens if you move the light closer or further away from the candle?

My Results

Explanation

The lit candle causes the air nearby to heat up. As the air heats up from the lit candle, the air particles start to collide more frequently and with more energy. The air particles expand in volume and decrease in density. Light bends or refracts when traveling through different densities of materials. As a result, the Maglite's light bends one way and then the other when shining at the candle. The light wavers as it travels through the moving colder or warmer air and makes the lit poster board areas fluctuate from darker to lighter.

Think further. Convection is even found inside the earth, where convection cells creep through the mantle and cause horizontal movement of the fluid near the earth's surface. That movement causes the tectonic plates to slowly shift and collide.

Convection is also found on the surface of the sun! Convection cells circulate the most intensely heated particles through the upper layers of the sun to the surface. There are thousands of cells occurring simultaneously all over the sun, and these cells can be as big as the earth itself. It's quite the convection celebration!

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