

IHAD Summer Camp

Imploding Pop Can Demo

- Fill two empty pop cans with ~two tablespoons of room temperature water.
 - Ask the class what happens to water when you heat it.
 - Begin heating the 1st can on hotplate. Bring to a boil. (It takes 5 minutes for the water to boil)
 - Ask the class what will happen if you turn the pop can over into ice water.
 - Using the tongs, flip the pop can upside down into a glass bowl full of ice water. Submerge the opening of the can in the ice water. Make sure that you set the can straight into the ice water to seal the opening of the pop can.
 - The can will implode.
 - Have another can ready to repeat the demo for students to see it again.
 - Encourage them to think about why the can implodes.
 - Discuss what happened in the demonstration as a class. Address the common misconception of sucking vs. pressure.
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- **Discussion Questions:**
 1. What was in the can besides the water at the beginning?
 2. What happens when water is boiled?
 3. What do you think will happen if the can is inverted in the bowl of water?
 4. What happens to the air in the can as water vapor is formed?
 5. What force is working on the outside of the can?
 - **EXPLANATION:** Before heating, the can was filled with water and air. By boiling the water, it changed states, from liquid to gaseous state (water vapor). The water vapor (steam) pushed the air that was inside, out of the can. By inverting the can in water, we are cooling the vapor very quickly and constraining the potential for rapid flow of air back into the can by submerging the top in water. The cooling condenses the water vapor back to water. All of the vapor which took up the interior space of the can before is now turned into a few drops of water, which takes up much less space. This causes the pressure to drop and the atmospheric pressure is therefore pushing on the can and crushing it.