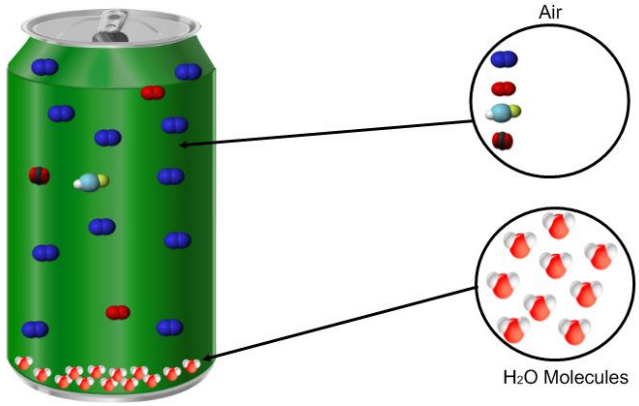
Name:_____ Section:_____ Date: _____

Mr. Whitaker's Magical Soda Can Demonstration

As you know matter can exist in four different phases: Solid, Liquid, Gas, and Plasma. You also know matter is made of atoms which take up space. Based on what you know, help Mr. Whitaker explain what is happening during each step of his demonstration.

Step 1:

Air is a mixture of the gases: __Nitrogen___ , ___Oxygen___ , ___Argon_____ , __Carbon Dioxide_____



Step 1:

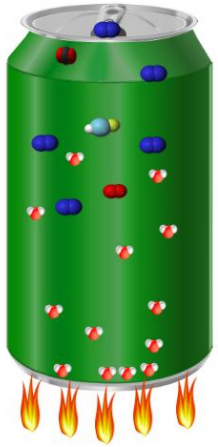
Explain what is happening:

Water is added to the bottom of the can before it is placed on the hot plate. Inside the can air molecules are moving around freely bouncing off the walls of the can and each other.

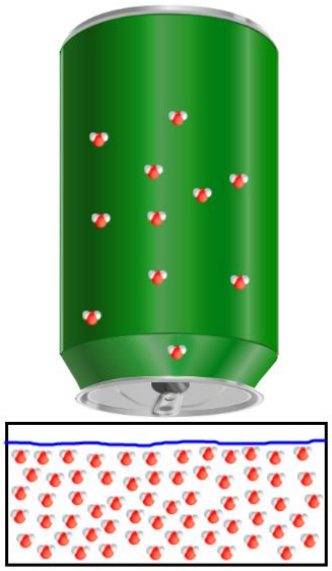
The water molecules are in a liquid phase at the bottom of the can huddled together.

Step 2:

Explain what happens to the molecules of air and water:



1. The can containing liquid water molecules and the mixture of gases that make up air is placed on a hotplate and energy (heat) is added to it.
2. As more **energy** is added to the can in the form of heat, the water molecules begin to move around rapidly and change their phase into a gas molecule through a process called **vaporization**.
3. As the water molecules change to a gaseous state they bounce around the can pushing the larger air molecules out of the can leaving only water molecules.

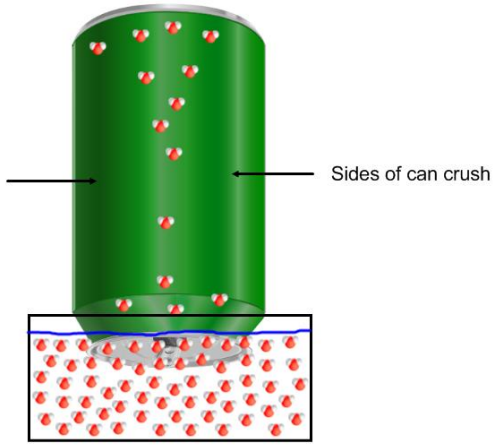


Step 3:

<u>Compare the molecules inside the can compared to the molecules container of water.</u>

The water molecules inside the can are in a gaseous state and move around the inside of the can rapidly.

The water molecules in the tray of ice water are moving very slowly because energy was removed by adding ice. The molecules are much closer together in the water than the can.



Step 4:

<u>Explain what happened to the molecules inside the can as the can was placed into the container of ice water.</u>

When the can was placed in the cold water, the gas molecules in the can underwent condensation and change phases to liquid, taking up less space.

As the water molecules condensed the volume took up less space causing the can to crush and also pull water into the can.