SCIENCE FROM HOME

CAN AIR CRUSH A CAN?

Instructions:

1. Add the 50mL (1/4 cup) of water carefully to the can
2. Place your can on the heat source for about 5 minutes
3. Watch for steam to come out of the can
4. Carefully grab the can with the tongs and quickly place it upside-down in the bowl of water

Questions:

Why does the can collapse?

What causes the pressure inside and outside the can to be different?

Why do you have to cap the can in water quickly?

How it works:

We don't often think about it, but the atmosphere all around experts pressure on everything. The amount of pressure is related to the number of molecules in a given area. We don't feel this atmospheric pressure because our lungs and other organs contain air that pushes back out with matching strength. When air or water is heated, the molecules spread out, meaning fewer molecules in the same volume of area. When those same molecules cool down, they don't have the energy to push out and take up the space, so the outside air has more pressure. This is what causes the can to collapse inward.

Going beyond:

How does changing the amount of water placed in the can change the reaction?

What parts of your life are affected by air pressure?
(Hint: think about vacuums, straws, tires)

Materials:

Empty aluminum can

Heat source (stove top)

Bowl of cool water (1-2" deep)

Heat resistant tongs

Water
(approximately 50ml or ¼ cup)

Key terms:

Atmospheric pressure

Water vapor

Implode

ACADEMIC