AVIATION COOKBOOK

UTAH VALLEY UVU UNIVERSITY

Atmospheric Pressure

Concepts Illustrated:

The impressive force exerted by everyday atmospheric pressure.

Time Requirements: 10 minutes

Grade Level of Audience:

This qualitative demonstration is suited for students of all ages.

I. Materials and Equipment

1. Empty aluminum pop can
2. Short tray of ice water
3. Source of heat to boil water
4. Tongs, or Hot Hands™ or oven mitt

II. Description of Set-up

1. Pour a small amount (2-3 ounces) of water into the empty aluminum can.
2. Carefully heat the water in the aluminum can to a boil.
3. Once the water in the can in boiling, quickly and carefully invert the can in the ice water bath using the tongs or oven mitt.

III. Details of Student Implementation

1. The aluminum can very quickly collapses as a result of the atmospheric pressure outside of the can and the lower atmospheric pressure inside of the can.
2. The idea here is that when the water was boiling with the lid open, the pressure inside of the can was equal to atmospheric pressure outside of the can. However, the pressure inside of the can was due in large part to water vapor (water in gaseous form). When the can is quickly inverted in an ice water bath, the water vapor condenses, which removes gas (and therefore much pressure) from inside of the can. With the pressure outside of the can so much greater than inside of the can, the can collapses.
3. Careful observation of the collasped can will reveal that even some water was drawn up into the can from the water bath.