

CHAPTER 4	Launch Lab: Changing Gas Temperature, Pressure, and Volume at the Same Time	BLM 4.0.1
HANDOUT		

An empty container, open to the atmosphere, is bombarded by air molecules from the outside and the inside simultaneously. The volume of the container remains constant because the pressure on the two sides is the same. As you carry out this activity, recall what you have learned about the relationships among changes in gas volume, pressure, and temperature.

### Safety Precautions



- Use safety goggles while performing this activity.
- Always use beaker tongs to handle the heated can.
- Your teacher may choose to carry out this investigation as a demonstration.

### Materials

- 5 mL of water
- large beaker of ice water
- empty, clean soft drink can
- hot plate
- beaker tongs
- 10 mL graduated cylinder

### Procedure

1. Measure 5 mL of water with the graduated cylinder and pour it into the soft drink can.
2. Heat the can on the hot plate until steam begins rising from the opening of the can.
3. Using the beaker tongs, quickly invert the can into the large beaker of ice water so that the opening of the can is just under the surface of the water. Carefully observe the effects on the can.

### Analysis

1. What happened to the water molecules inside the can when the water was heated?
2. What happened to the air that was initially present inside the can when it was heated?
3. How can you account for the changes in the can when it was placed in the ice water?