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Science in the Kitchen - Air Pressure

By Jonathan Winter



Noah waits for the air pressure result

Air is all around us of course. You can imagine this air "stacked" on top of you in a column that reaches all the way up to space. All this air is pushing on you, not just down on you, but from all sides, much like water pushes on you when you swim to the bottom of a pool. You don't notice this pushing, known as air pressure, because your body is used to it. But the pushing power of air is quite strong as this experiment will show.

1. Gather these supplies:

Hard -boiled egg, peeled

Glass jar or bottle with a diameter just smaller than the egg (for a large egg an opening of about 1 1/4 inches is about right.

About half a sheet of paper towel or a quarter sheet of newspaper

Matches

Fork, knife, or chopstick

Please note: It might be difficult to find the right bottle for this experiment. The perfect container is an old fashioned glass milk jar, but if you can't find the right size, this experiment can be done with a wide mouthed jar and a water balloon instead.

Please also note: This experiment involves FIRE, so be sure there is an adult present to help out.

2. Start your experiment:

Crumple the paper towel or newspaper slightly so that it will fit into the jar. With adult help, light the paper on fire and push it into the jar using the fork. While the paper is still burning, quickly and firmly press the egg onto the top of the jar so that it prevents any air from getting in or out. Wait for the paper to burn out, keeping your eye on the egg.

3. What happened?

As the paper towel burned up the oxygen in the jar combined with the carbon in the paper to form carbon dioxide, a gas that is more dense than the air outside the jar. (Remember the density experiment?) Because the gas created takes up less space than the air outside the jar, the outside air is pushing harder than the inside air, so air pressure pushed the egg into the jar. Although it may look like the egg got sucked into the jar, it is important to remember that the egg was pushed. Some scientists might say that this is a good explanation why science never sucks!

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