



Fog Chamber

Have you ever looked out your bedroom window and couldn't see the neighbor's house? Or wondered why the clouds were so low in the sky? Create fog in a jar and discover how these low-lying clouds are made up of water molecules suspended in air!

TEKS:

3.8A: The student is expected to observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation.

4.8B: The student is expected to describe and illustrate the continuous movement of water above and on the surface of the Earth through the water cycle and explain the role of the Sun as a major source of energy in this process.

Materials:

- 1-gallon clear glass or plastic jar with a wide mouth (for example, a pickle jar)
- Matches
- Rubber glove
- Tap water

How To:

1. Pour just enough water into the jar to barely cover the bottom.
2. Hang the glove inside the jar with its fingers pointing down and stretch the open end around the mouth of the jar to seal it.
3. Place your hand halfway into the glove, and pull the glove quickly outward without disturbing the seal. Does anything happen?
4. **An adult's supervision is required for this next step.** Now, remove the glove and drop a lit match into the jar. Quickly replace the glove. Pull outward on the glove again, being careful to keep the seal intact. Does fog form?
5. Let the glove snap back. Does the fog disappear?

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STEM Explanation:

The match causes the water to heat up and evaporate into water vapor molecules, which are an invisible gas. When you pull the glove outward, the air in the jar expands and loses some of its thermal (heat) energy. This means that the molecules slow down slightly and the air becomes cooler. When the water vapor molecules slow down, they stick to each other and form tiny water droplets. This causes fog to form. The smoke particles from the match give the water droplets something to join on to. When the glove goes back inside the jar, the air is warmed back up and the fog goes away.

Career Connection:

Meteorologists study the Earth's atmosphere by observing temperature, air pressure, water vapor, and their interactions and changes over time. They use simulations to help them predict the weather and to understand weather patterns so they can piece together climatic schemes, or focus on more complex weather such as hurricanes, tornados, etc. Meteorologists need an in-depth knowledge of physics, geology, chemistry, and other sub-disciplines of atmospheric sciences including climatology, hydrology, and even oceanography. These scientists are important to the fields of energy production, transportation, agriculture, and more!

Resource:

<http://www.exploratorium.edu/snacks/fog-chamber>

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