

# Cool it and Pool it!

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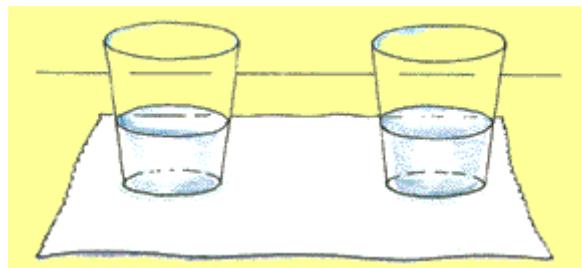
The air around us is made up of different types of gases. One of the gases in air is called water vapor. In this activity, you'll see if making water vapor colder can change its state from a gas to a liquid.

## Materials:

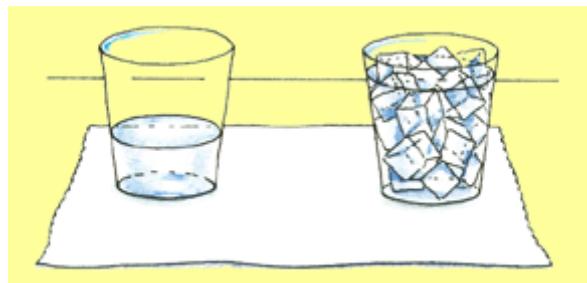
- Ice
- 2 clear plastic cups
- Water
- Paper towels

## Procedures:

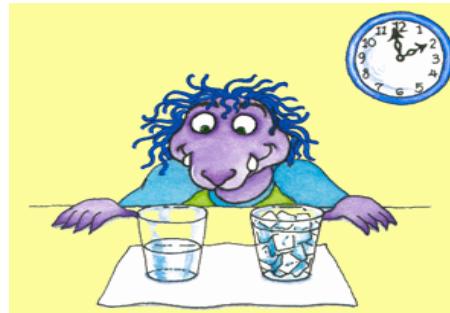
1. Place a paper towel on your work surface and put the cups on the paper towel. Pour cup of water into each cup.



2. Put lots of ice in one cup. Do not add any ice to the other cup.



3. Watch the cups for two or three minutes. Do you notice anything forming on the outside of either cup? What does it look like?



4. Touch the outside of the cups with your fingers. Is there any difference between the way they feel? If either cup feels wet, where do you think the liquid came from?



## Think about this ...

If you are wondering whether the liquid came from the air around the cup or from somewhere else, you can do a quick experiment to find out. Place 1/2 cup of water into each of two clear plastic cups. Put lots of ice in each cup. Place one cup in

a zip-closing plastic storage bag. Squeeze as much air out of the bag as you can and then seal it. Do not put the other cup in a bag. Watch the two cups for a few minutes. Is there any liquid on the outside of either cup? What does this tell you about where the liquid might be coming from?



### Where's the Chemistry?

Although the outside of both cups were dry to begin with, the outside of the cup with ice in it should have gotten wet. The reason it gets wet has to do with two things. First, air has water in it. The water in air is called water vapor. Second, as water vapor cools, it changes its state to liquid water. The air near the cup of ice water is cooler than the air near the other cup of water without ice. The water vapor in the cooler air changes its state to liquid water which ends up sticking to the outside of the cup.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at [www.acs.org/kids](http://www.acs.org/kids).

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## Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

### Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

**Never** eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

**Never** experiment on your own!

For more detailed information on safety go to [www.acs.org/education](http://www.acs.org/education) and click on "Safety Guidelines".

