



APRIL FOOL'S DAY TRICKS: DISAPPEARING WATER TRICK

MATERIALS:

Diapers
Water

Plate
Non-Clear Clear Cup

VOCABULARY:

Polymer
Solid
Osmosis
Water
Liquid
Absorb

Dissolve
Gas
Concentration

Matter
sodium polyacrylate
Equal

DIRECTIONS:

1. Lay a plate on a table.
2. Carefully rip open the middle of an open diaper along the absorbent section.
3. Turn the diaper over upside down over the plate.
4. Gently shake the diaper so the absorbent crystals fall onto the plate.
5. Pick out any cotton that falls into the crystals.
6. Pour the crystals into a solid colored cup. You will need about a teaspoon's worth of crystals to make the trick work.
7. Add 1 cup of water.
8. Allow at least 30 seconds to pass.
9. Turn the cup upside down. No water will fall out.
10. You can scoop the gel that has formed out of the cup to observe, as well.
11. **Safety Note: Do not eat or drink sodium polyacrylate.**



THE STEAM BEHIND THE EXPERIMENT:

Disposable diapers contain the same chemical as astronaut 'maximum absorbency garments', fire-control gels, soil conditioners, those toys that grow when you add water, and floral gel. The super-absorbent chemical is sodium polyacrylate. When sodium polyacrylate is exposed to water, the higher concentration of water outside the polymer than inside (lower sodium and polyacrylate solute concentration) draws the water into the center of the molecule via osmosis. Sodium polyacrylate will continue to absorb water until there is an equal concentration of water inside and outside the polymer.

For this trick, you offer to pour a cup of water for someone, give the polymer a chance to absorb the water and form a gel that sticks to the cup. The person is not able to pour the water.



MAKE IT AWESOME:

Try playing a "3 Cup Monty" game. This is where you have 3 cups, rotate the cups, and ask friends to guess where the water is each time you stop moving the cups. One of the cups has the powder in the cup and will absorb the water- so when you turn the cup over, no water will fall out!

EXTENSIONS:

1. Try using more powder and larger cups. What happens?
2. Lay some of the powder out on a plate and add water using a pipette or straw. Observe what happens as it absorbs water.
3. What other changes can you make to this experiment?

WEBSITES AND VIDEOS:

1. Get an experiment kit: <https://www.stevespanglerscience.com/store/water-gel-magic-slush-powder.html>
2. Video about sodium polyacrylate: <https://youtu.be/pDE86qWZvwo>
3. Add salt to the polymer: https://youtu.be/p-g_0wyhV9E
4. Some more experiments you can do with the polymer: <https://www.scmuseum.org/2016/01/08/super-cool-science-with-sodium-polyacrylate/#:~:text=It%20is%20easy%20to%20use%2C%20easy%20to%20manipulate,6%20ounces%20of%20water%20and%20watch%20it%20expand%21>

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