

Challenge: Find out if there is empty space between molecules of water.



WHAT YOU NEED:

- Powdered sugar
- Cup of hot water
- Teaspoon



STEP-BY-STEP:

- 1.** Fill the cup to the brim with hot tap water. Get the surface to bulge above the rim.



- 2.** Without dipping the teaspoon in the water, **CAREFULLY** add a teaspoon of powdered sugar to the water.



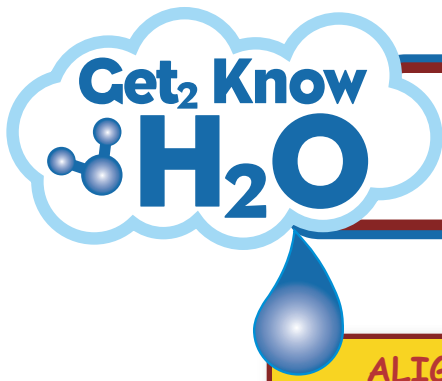
- 3.** Repeat several times.



QUESTIONS:



- Can a container that looks completely full still have room? How many teaspoons of sugar can be absorbed?
- If sugar does not make the water overflow, why will the spoon make it overflow?
- What if the cup was filled with so many beans you couldn't get one more in there? What happens if you slowly pour water over the beans? Will they spill out? Why not? What happens if you keep adding water?



EXPERIMENT 5: Hole-y Water by Bill Nye, The Science Guy

Instructor's Guide

ALIGNMENT WITH ILLINOIS STATE BOARD OF EDUCATION GOALS

State Goal 11: Section A: 2a, 2b, 2c, 2d, 2e and 2f Section B: 2a	State Goal 12: Section A: 2b and 2c Section C: 2b Section D: 2b
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WHAT'S HAPPENING?

This is a simple experiment to prove that the molecules in a glass of water contain a whole lot of nothing. Well, a lot of space. Everything around us is made of atoms and molecules. Surprisingly, atoms and molecules are made up mostly of empty space. The sugar molecules dissolve and fit into the empty spaces between the water molecules. That's why the water in the cup doesn't spill out. Matter is overflowing with empty space.

WHAT COULD GO WRONG?

Do not let the spoon touch the water.

WHAT ELSE CAN KIDS LEARN?

Predictions can surprise you
You'd think that adding anything to a completely full cup would make it overflow. Science can surprise us the first time we experiment. But, the next time we have a better idea of what to expect. The universe is filled with surprises waiting to be discovered.

LINKS

www.72.5.51.112/flash.html

YOUR FEEDBACK

Were the instructions clear?
Did the class stay interested?
Email us at feedback@Get2KnowH2O.org and let us know what you think. We would like to share your suggestions with other teachers and give you credit for your great ideas!

CREDITS

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