



TRY THIS OUT!



CLOUD IN A JAR

Time: 10 Minutes
Difficulty: medium

It may look like clouds are made of snow or cotton candy, but they're actually made out of water droplets! They might seem too far away for you to study, but in this demonstration, you'll make your very own cloud in a jar.

WHAT YOU NEED:

- Glass jar with lid
- Ice cubes
- Hairspray
- Boiling water

MAKE IT:

1. Fill your jar about 1/4 full with boiling water.
2. Flip the lid upside down, and place as many ice cubes on the lid as fit comfortably.
3. Spray the hairspray in the jar for a few seconds.
4. Place the lid (still upside down) back on top of the jar.

TEST IT:

The cloud will soon begin to form on the inside of the jar. Watch it swirl around, and then remove the lid and watch the cloud escape. Try to grab it — what does it feel like?

EXPLAIN IT:

Water exists naturally on Earth in three phases: solid (ice), liquid (water), and gas (water vapour). It can transform between these three phases easily; it's just dependent on the surrounding temperature. Water vapour exists all around us, but it's hard for us to notice it in our daily lives since it is colourless and odourless.

To make a cloud, you need three elements: warm air containing water vapour, a cool environment (like high up in the sky!), and naturally-occurring *cloud condensation nuclei*, which are small particles that water vapour can cling to. When the warm, moist air is cooled, the vapour changes from its gaseous form to its liquid form, making water droplets. When cloud condensation nuclei are present, the vapour can cling on to the cloud condensation nuclei and stay there as a liquid. This clumping is what forms clouds!

In your jar, the heat from the boiling water contributed the water vapour, which *evaporated* (changed from liquid to gas) from it. As the hot air rises, it hits the cold ice cubes, causing it to *condense* (change from gas to liquid). The aerosol hairspray acts as the cloud condensation nuclei, and the vapour clings to that, forming a cloud!

OBSERVE IT:

This process might be a little hard to see from the ground, but it's easy to see once it starts raining! When a cloud begins to accumulate too much condensed water, it becomes too heavy to remain suspended in the sky. All of that condensed water then comes down to Earth, pulled by gravity.

GO FURTHER:

If you've ever looked up at the sky, you'll know that all clouds are not created equal. Why is there such a difference in how clouds look and even behave? After doing some research on the different types of clouds, track which kinds of clouds you see at home every day for a month. What do you think they have to do with the kind of climate that you live in?



Safety first! Adult supervision may be needed when handling boiling water.

