

Weather science: How to make a cloud in a jar (2 different methods!)

April 20, 2016 by [Katie](#) [20 Comments](#)

Don't you just love looking at clouds in the sky? I sure do!

But how do they get there?

A cloud is formed when water vapor condenses into water droplets that attach to particles (of dust, pollen, smoke, etc.) in the air. When billions of these water droplets join together, they form a cloud.

How to make a cloud in a jar using hairspray

For this method, you will need the following materials:

- A jar with lid
- About 1/3 cup hot water
- Ice
- Hairspray (which I forgot to include in the picture below)



Start by pouring the hot water into the jar. Swirl it around a bit to warm up the sides of the jar.



Turn the lid upside down and place it on the top of the jar. Place several ice cubes onto the lid, and allow it to rest on the top of the jar for about 20 seconds.



Remove the lid, quickly spray a bit of hairspray into the jar, and then replace the lid with the ice still on top. Watch the cloud form.



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When you see a good amount of condensation form, remove the lid and watch the “cloud” escape into the air.



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How does it work?

When you add the warm water to the jar, some of it turns to water vapor. The water vapor rises to the top of the jar where it comes into contact with cold air, thanks to the ice cubes on top. Water vapor condenses when it cools down. However, a cloud can only form if the water vapor has something to condense on to. In nature, water vapor may condense onto dust particles, air pollution, pollen, volcanic ash, etc. In the case of this activity, the water vapor condensed onto the hairspray.

How to make a cloud in a jar using a match

For this method, you will need the following materials:

- A jar
- A match
- A balloon with the bottom cut off (so you can get the balloon over the mouth of the jar)
- Warm water
- A flashlight



Pour enough warm water into your jar to cover the bottom 1/2" of the jar.

Light a match, then hold the lit end in the jar for a few seconds to allow smoke to enter the jar. Then remove the match (or you can simply drop it into the jar – the flame will extinguish when the match hits the water).

Quickly cover the opening of the jar with the cut balloon.



With this next step, the goal is to change the air pressure in the jar by gently pushing and releasing the balloon. Be gentle as you do this to ensure that the balloon does not come off the top of the jar.

With your finger, gently push the balloon into the jar a little bit to increase the air pressure in the jar. Then release. As you release, you should notice a cloud instantly form inside the jar. You may want to shine a flashlight at the jar to help you see the cloud more clearly.

You can repeat the pushing and releasing several times and you will see additional clouds form.



How does it work?

When you add the warm water to the jar, some of it turns to water vapor. When you press on the balloon, you increase the air pressure in the jar, which results in warmer air. When you then release the balloon, you decrease the air pressure in the jar, which results in cooler air. As the air cools, the water vapor in the jar condenses. The condensed water vapor is able to collect on the smoke particles from the match, and thus you see a cloud form.