

Condensation

Does cooling water vapor increase the rate of condensation?

In the last activity, you saw that heating liquid water makes it turn into water vapor faster. Now, we will see if the opposite is true: We will take water vapor and cool it to see if it turns into liquid water faster.

1. List at least two examples of where you have noticed tiny drops of water appear on a cold surface.

What happens when water vapor is cooled?

Procedure

1. Fill a wide clear plastic cup about $\frac{2}{3}$ full of hot tap water.
2. Quickly place a taller clear plastic cup upside down as shown.
3. Watch the cups for 1–2 minutes.
4. Use a magnifier to look at the sides and top of the cup.
5. Take the top cup off and feel the inside surface.



2. What is on the inside surface of the top cup? _____
3. Changing state from a liquid to a gas is called *evaporation*. Changing state from a gas to a liquid is called *condensation*. Do you think that some of the water from the bottom cup is evaporating? _____
4. Would you expect there to be more water vapor in the air inside the cups or outside the cups in the classroom air? _____
5. How do you think the drops of water on the inside of the top cup got there?

Activity 6.3

Condensation (continued)

6. What could you do to water vapor to increase the rate of condensation?

Hint: To increase the rate of condensation means to make the condensation happen faster.

Does cooling water vapor increase the rate of condensation?

Procedure

1. Fill two wide clear plastic cups about $\frac{2}{3}$ full of hot tap water.
2. Quickly place the taller, clear plastic cups (with smaller rims) upside down on each cup, as shown.
3. Place a piece of ice on top of one of the cups.
4. Wait 2–3 minutes
5. Remove the ice and dry the place where the ice was with a paper towel.
6. Use a magnifier to examine the tops of the two upper cups.



7 Compare the amount of water on the inside surface of the top of each cup. Which top cup has more water on it?

8. Does cooling water vapor increase the rate of condensation? _____

Explain your answer based on your observations.
