

States of Matter in a Baggie

In second grade, students build on kindergarten and first grade foundations and explore higher-level science concepts, such as the water cycle, magnetism, and states of matter. Some of these scientific principles are difficult to observe, and can therefore be challenging for a second grader to understand. When it comes to science concepts, nothing makes abstract ideas concrete, quite like hands-on experiences.

Here's a simple experiment you can do in your own home, to help your second-grader understand how temperature can affect states of matter. Your child will have a more *solid* understanding of these important scientific concepts after she does this experiment in a baggie! Not to mention, this activity ends with a refreshing treat and is perfect for those warm summer days.



What You Need:

- Re-sealable sandwich baggie
- Ice cube tray
- Water
- Powdered drink, such as Kool-Aid
- Masking tape

What You Do:

1. Mix a batch of Kool-Aid or Hawaiian punch, or a more nutritious organic juice if you prefer, as long as it's brightly colored. Use it to fill an ice cube tray and leave it in the freezer until you've made solid ice cubes.
2. Once you've made your juice ice, have your child put a few cubes in a resealable baggie, and seal it up tightly.
3. Have your child squeeze the ice cubes in the baggie, and determine what state of matter they currently represent. (They should be in the solid state, because they maintain their shape.)
4. Tape the baggie to an indoor window, where it can get direct sunlight for most of the day.
5. Have your child observe the contents of the baggie about once every half an hour. What can she see happening? Is the ice cube still a solid? Has it become a liquid or a gas? How does she know? (A liquid takes the shape of its container, and flows.)
6. After the ice melts, of course, it will become a liquid. After several hours, however, your child may begin to notice tiny droplets of water forming at the top of the baggie. This is because with the heat of the sun, the water evaporated into the air inside the baggie, and formed water vapor, a gas. Since the vapor cannot escape, it begins to condense on the baggie, forming tiny droplets of water and returning to the liquid phase once again. Ask your child some questions to get her thinking more about states of matter:
7. What causes the water in the baggie to change from one state of matter to another? (The temperature.)
8. What could she do to prevent the water droplets from forming in the baggie? (She could refreeze the water, so it could become a solid again. Or, she could open the baggie to let the water vapor escape. Eventually all the water would evaporate into the air.)
9. Okay, now the most important part: what tastes better - frozen juice, cold liquid juice, or warm liquid juice?

