

Matter and Energy: Evaporation and condensation

By Encyclopaedia Britannica, adapted by Newsela staff on 06.02.17

Word Count **446**

Level **520L**



Condensation on a cold bottle of water. Condensation is when a gas becomes a liquid. It happens when a gas, like water vapor, cools down. Photo from: Wikimedia Commons.

Everything in the world is made of matter. Matter is anything that takes up space. It can exist in three different states: solid, liquid and gas.

Matter can also change from one state to another. It does this through different processes. Two examples are evaporation and condensation. In evaporation, matter changes from a liquid to a gas. In condensation, matter changes from a gas to a liquid.

All matter is made of tiny moving particles. These are called molecules. Evaporation and condensation happen when molecules gain or lose energy. This energy takes the form of heat.

Evaporation

Evaporation happens when a liquid is heated. For example, when the sun heats the water in a puddle, the puddle gets smaller. The water seems to disappear. However, it actually moves into the air as a gas. This gas is called water vapor.

All molecules in a liquid move. Some move faster than others, though. The fastest molecules are usually at the surface of a liquid. As they get hotter, they move around more quickly. This gives them more energy. Soon they have enough energy to break away from other water molecules. This allows them to "escape." They leave the liquid as gas molecules.



Evaporation Versus Boiling

Another process that can change a liquid to a gas is boiling. This happens when a liquid is heated. As it gets hotter, its molecules move faster. Bubbles of vapor form within the liquid. Then they rise to the surface. It has to get very hot for this to happen. The temperature that causes a liquid to boil is called the boiling point.

There are two differences between evaporation and boiling. The first is where the change of state happens. Evaporation only happens at the surface of a liquid. But boiling can happen anywhere within a liquid.

The second difference has to do with temperature. Evaporation can happen at any temperature. For example, a puddle will evaporate even on a cold day. But boiling only happens at a liquid's boiling point.

