

# When Water Changes State

The hummingbird flew to the feeder and put its tongue into the small hole. What it wanted was the sugar and water solution inside. But no luck today. The solution was **frozen**. It had changed from a liquid to a solid overnight because of the **cold temperature**. When that happens, most hummingbirds will **migrate** south to warmer places.

## States of Matter

**Matter** can be found in three **states**: **gas**, **liquid**, and **solid**. Some matter, such as water, can change from one state to another because of changes in temperature.

Changes in the state of matter can cause **problems** for people as well. **Black ice** forms when water suddenly turns into ice on roads and sidewalks. Black ice should really be called “clear ice” because it freezes with few air bubbles. This makes it transparent. What you see is the road under the ice. Black ice makes roads look as though they are wet.

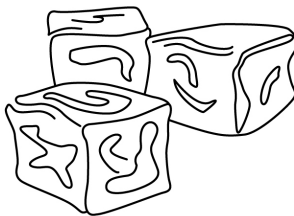
Black ice can be very dangerous. For example, stopping on black ice can take a car nine times longer than normal. There are things people can do to make driving on black ice safer. Most important is to make sure the vehicle is in top condition. Driving slower than usual can help, too. In some places, sand is put on the ice. This gives the tires a better surface to stick to. In other places, salt is used. **Salt** lowers the freezing temperature of ice and can change it back into a liquid.

Problems can also happen when water changes from a liquid to a gas. This is called **evaporation**. Evaporation of water can happen at any temperature. But water will evaporate very quickly when it boils, but hardly at all when it gets close to freezing.

**Reservoirs** are used to store large amounts of water. Water in a reservoir is used for many things. It can be used to make electricity, for **irrigating** farmland, and for home and business use. Reservoirs lose a lot of water through evaporation. One way to stop this is to put a special cover over the water. Scientists are working on other ways to stop evaporation because **saving water** is very important.



Liquid (water)



Solid (ice)



Gas (steam)