

Mike wins a copy of the terrific book *The Best of Beakman & Jax*.

Dear Beakman,
 Why does hot water turn into ice cubes faster than cold water?
 Mike Myers
 Battlecreek, Michigan

Dear Mike,
 The idea that hot water freezes faster than cold water is very popular and is also false. To figure that out, it'd be good to know how a refrigerator works. Fridges do not make cold. They move heat. The more heat there is to move, the more work the machine has to do, and the longer it takes.
 I will also tell you this is one of those things that people *love* to believe and will have a hard time giving up.

Beakman
 Beakman Place

MOVING HEAT

WHAT YOU NEED: Rubbing alcohol - tissue - your sweet self

WHAT TO DO:

Dab a bit of alcohol onto the back of your hand. Gently blow on the alcohol and notice how that makes your hand feel.

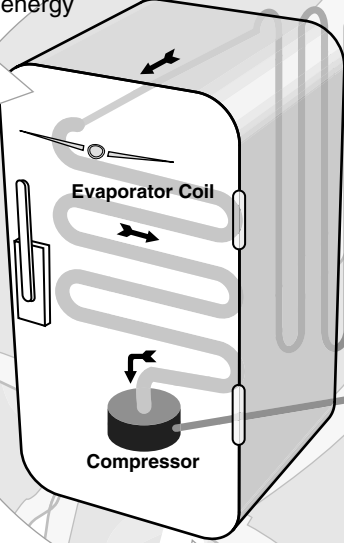
WHAT IS GOING ON:

When you blew, you helped the alcohol turn from a liquid into a gas – what we call evaporation (ee-VAP-ur-A-shun).

1 - A liquid chemical is inside the fridge's pipes. Heat moves from your ice tray to the liquid. That heat energy evaporates the liquid and it turns into a gas.

2 - The gas goes into a compressor, which squeezes it back down in size until it becomes a liquid again. But the heat in the gas has to go somewhere. It can't just disappear, because nothing ever disappears! The liquid is now hot.

3 - The liquid goes to a coil outside the refrigerator, where the heat moves from the coils to the air in your kitchen. The more heat energy it has to move, the longer it takes.



SO WHAT:

Heat from your hand moved into the liquid and provided the heat energy that evaporation needs. As the heat moved from your hand, it felt cold. Cold is not a thing. Instead, it's the absence of heat.

Refrigerators work the same way, by pumping a liquid through long coils of pipe inside and outside the machine. Heat from food - or your ice cube tray - moves into the liquid and then from the liquid into the air in your kitchen. Find the outside coils on your fridge. They're either in the front at the bottom or at the back. Feel them.

