



How does a refrigerator work?

In the summertime, have you ever come out of a swimming pool and then felt very cold standing in the sun? That's because the water on your skin is evaporating. The air carries off the water vapour, and with it some of the heat is being taken away from your skin. This is similar to what happens inside older refrigerators. Instead of water, though, the refrigerator uses chemicals to do the cooling.

If you look at the back or bottom of an older refrigerator, you'll see a long thin tube that loops back and forth. This tube is connected to a pump, which is powered by an electric motor. Inside the tube is Freon, a type of gas. Freon is the brand name of the gas. Chemically, this gas is called chlorofluorocarbon or CFC for short. This gas was found to hurt the environment if it leaks from refrigerators. So now, other chemicals are used in a slightly different process.

CFC starts out as a liquid. The pump pushes the CFC through a series of coils in the freezer area. There the chemical turns to a vapour. When it does,

it soaks up some of the heat that may be in the freezer compartment. As it does this, the coils get colder and the freezer begins to get colder. In the regular part of your refrigerator, there are fewer coils and a larger space. Therefore, the coils and CFC vapour absorb less heat.

The pump then sucks the CFC as a vapour and forces it through thinner pipes which are on the outside of the refrigerator. By compressing it, the CFC turns back into a liquid and heat is given off and is absorbed by the surrounding air around it. That's why it might be a little warmer behind or under your refrigerator. Once the CFC passes through the outside coils, the liquid is ready to go back through the freezer and refrigerator over and over again.

Modern refrigerators don't use CFCs because they are harmful to the atmosphere if released. Instead they use another type of gas called HFC-134a, also called tetrafluoroethane.

(Taken from http://www.energyquest.ca.gov/how_it_works/refrigerator.html)

EXERCISES

1 True or false?

- a. CFC gases do not hurt the environment. T F
- b. Modern refrigerators don't use CFC gases. T F
- c. Refrigerators use water for cooling. T F
- d. Freon is the chemical name for CFC gases. T F

2 Order the sentences.

- The CFCs start out as a liquid. The pump pushes the CFC through a series of coils.
- The pump forces the CFCs through thinner pipes.
- The CFC gases turn back into a liquid.
- The CFC gases turn into vapour.
- The coils get colder. The pump sucks the CFCs as a vapour.
- Heat is given off and is absorbed by the air surrounding the refrigerator.
- The CFC gases soak up some of the heat.
- Liquid CFC is ready to go back through the freezer and refrigerator over and over again.

3 Match questions and answers.

QUESTIONS		ANSWERS	
A	What happens to the water on your body when you get out of a swimming pool in the summertime?	1	If the CFC gas leaks from the refrigerator it can be dangerous for the environment as the gas plays a role in the depletion of the ozone layer and is more potent as a greenhouse gas than carbon dioxide.
B	How can CFC gas hurt the environment?	2	The water on your body evaporates. Through this process heat is taken away from your body and you feel cold.
C	Why is it a little warmer behind or under your refrigerator?	3	When the CFC gas is compressed it turns into a liquid: during this process heat is given off and absorbed by the air surrounding the refrigerator.

A B C