Refrigerators

Refrigeration is the act of keeping things cool artificially. Before refrigeration, people stored food in cellars or streams in hopes of keeping it fresh through the hot months of the year. Spices and salts were used to "cure" meats so they would last.

Merchants realized they could sell ice to places that didn't have their own. In the 19th century, ice was cut from ponds, lakes, and rivers and shipped on trains to warmer climates. Because more and more people were moving to cities, consumers now lived farther from the farms and factories where their food was produced. Scientists in America and Europe tried to invent more efficient ways to keep that food safe while it was transported. As electricity became more widely available in the late 19th century, the possibilities for refrigeration increased.

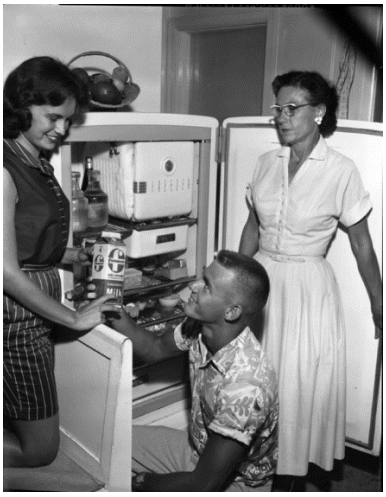
One important developer of refrigeration was Carl von Linde, a German engineer who in 1876 figured out how to compress ammonia, causing its vapor to create cold air. Chilling the air using chemicals

instead of ice was easier and less expensive. Manufacturers were able to keep food cold in hot regions without needing ice brought to them.

In 1913, American inventor Fred W. Wolf produced the first refrigerator for home use. His business failed, but in 1918 a new company called Frigidaire made a successful home model. The Frigidaire refrigerator was basically a food cabinet with a compressor underneath it to create cold air. These machines were extremely expensive, however, so very few households owned them.

General Electric designed the first home refrigerator that was widely used. The coolant in the compressor was sulphur dioxide. Ironically, compressing it caused a lot of heat. G.E. had to put the compressor on top of the cabinet to prevent fires. Another danger in all refrigerators at the time was that toxic chemicals could leak from them, which could make people sick or even kill them.

In the 1930s, a type of chemical compound called Freon was trademarked by the DuPont company. It was less toxic than previous refrigerants as well as being non-flammable. Thanks to this safety improvement, refrigerators became more common in homes. By the 1940s, they had separate compartments for keeping food frozen.



Since the 1970s, the biggest challenge facing refrigerator manufacturers has been making their products energy efficient. Many scientists agree that the technology of vapor compression needs to be replaced. It's as efficient as it can possibly be, yet the world's refrigerators still give off too much carbon dioxide into the atmosphere and use too much electricity. In 2016 the U.S. Department of Energy started the Energy Materials Network. One of its main goals is to invent new and better ways to keep things cool.