

A SALTY STORY

Most people don't notice it, but salt is everywhere. It is in most of the foods you eat. It is used in cooking and at the table to improve the flavor of foods. Salt is found in ocean water. There are places on land where great deposits of salt are found. The salt flats near Salt Lake City, Utah, are one example. That salt was left behind when sea water evaporated a very long time ago.

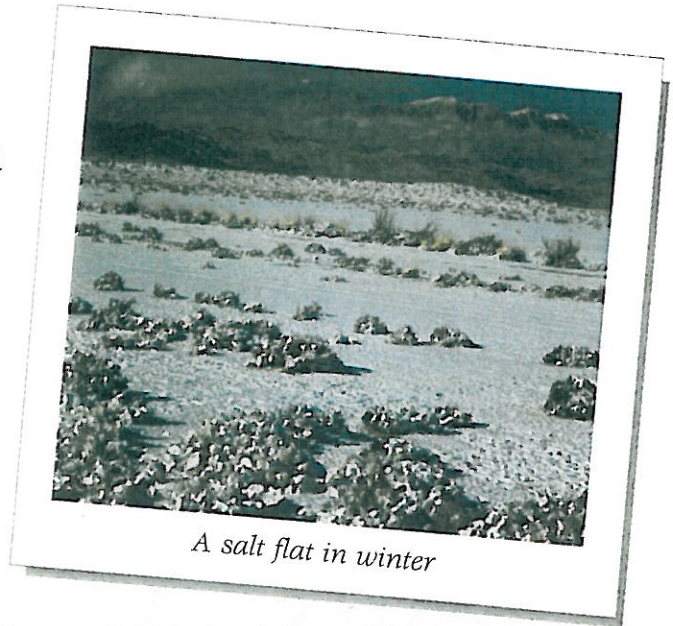
Salt has been important to people since early times. It was often used to keep food from spoiling. Heavily salted food could be preserved for a long time. When sailors spent months at sea, the foods they carried on their ships were heavily salted.

Salt is the oldest known food additive. The earliest reference to salt was written in China around 2700 B.C.E. It described how salt made food taste better and helped people stay healthy.

The value of salt led to the development of a salt industry. Salt was first mined from salt deposits on land. It was packaged and sold or traded in marketplaces. In Europe, some monarchs placed heavy taxes on salt. In France, the salt tax was one of the reasons for the French Revolution in 1789.

Salt was important in United States history, too. The first patent issued to a U.S. colonist by the British government was for a salt making process. The process involved boiling sea water in huge iron pans. As the water boiled away, the salt was left in the pans. The U.S. salt industry continued to grow. Salt became one of the main products shipped along the Erie Canal in the 1800s. And during the Civil War (1861–1865), Union forces attempted to destroy the South's salt industry. They did not want the South to be able to preserve food for its soldiers.

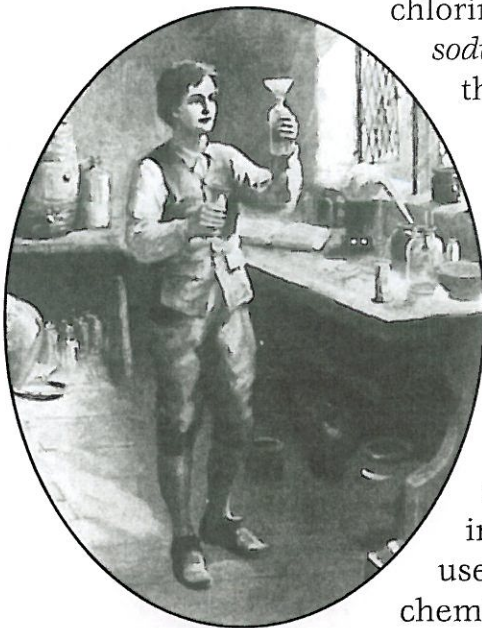
Today more uses have been found for salt. It is added to the diets of livestock to improve their health. It is used to soften hard water. It is used to melt ice on slippery roads. And other chemicals are produced from salt, such as chlorine and sodium.



A salt flat in winter

WHAT IS SALT?

Look at a tiny piece of salt. You will see that it appears to be a cube-shaped crystal. Chemists describe salt as a *compound*. A compound is a substance that is made up of two or more elements. Salt is made up of sodium (Na) and chlorine (Cl). The chemists' name for salt is *sodium chloride*. The formula chemists give this compound is NaCl.

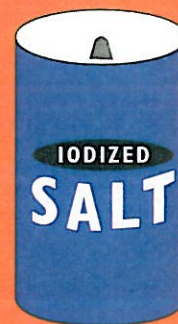


Neither sodium nor chlorine is found in nature by itself. In 1807, English scientist Humphry Davy found a way to separate the two elements that make up salt. The separation produced the element chlorine and the element sodium. This is one reason why scientists value salt. It is the major source of chlorine and sodium. These two elements are important to many industries. Chlorine is used to make medicines, pesticides, and chemicals. Sodium is used to make chemicals, soaps, medicines, and other important products.

Salt to the Rescue

In 1924, physician David Marine persuaded a group of Michigan doctors to add the element iodine to common table salt. For years, Marine had researched the cause of *goiters*. A goiter is a swelling of the *thyroid*, a gland in the neck. Marine determined that goiters were caused by a lack of iodine in the diet. He thought that by adding iodine to something as widely used as salt, goiters could be wiped out.

Marine was right. By 1951, iodized salt had all but ended iodine deficiency problems in the United States. People in other parts of the world do not get enough iodine. They continue to suffer from goiters. The World Health Organization hopes that iodized salt can help developing countries. The organization intends to end iodine deficiency problems in Africa, Asia, and Latin America.



Salty Facts

- Salt makes up 77 percent of all the minerals in ocean water. It is estimated that there are about 45 million billion tons (50 million billion English tons) of salt in the sea.
- Ancient Greeks traded salt for slaves. Slaves were “not worth their salt” if they didn’t work hard.
- Roman soldiers were paid part of their wages in salt. The Latin for these salt rations, *salarium argentum*, is the root of the English word “salary.”
- An adult human body contains about 250 grams (8.75 ounces) of salt.

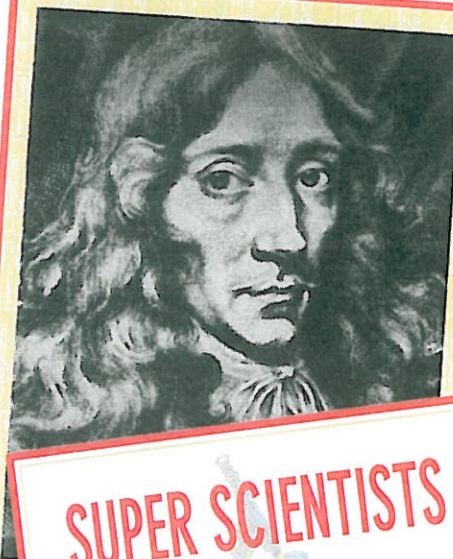
Making and Mining Salt

One of the earliest ways people made salt was by boiling sea water. When the water boiled away, it would leave behind the salt. In North America, hundreds of years before colonists arrived, Native Americans boiled sea water to get salt.

The production of salt was important to colonists in the 1700s. After boiling away the water, workers packed the salt into molds to dry. When dry, the salt was sold as lumps in the shapes of the molds.

By the late 1800s, factories used huge vacuums to separate sea water into salt and water. Today the vacuum pans are large, airless, enclosed cylinders that more quickly and effectively evaporate water. This method is presently the most common way to obtain salt. Most of the table salt in the United States is produced in this way.

Another early way people produced salt was to dig it right out of the ground. Land deposits of salt were sometimes found on or near the surface. That salt could be dug up in much the same way as any other mineral deposit. If the salt deposit was far below the surface, workers tunneled to it. When they reached the salt, they carried it away like miners mine other earth materials. One of the earliest salt mines on record was established in Poland around 1251. The salt that comes from mines is called *rock salt*.



SUPER SCIENTISTS

Robert Boyle

(1627–1691)

Robert Boyle was an Irish-born scientist. He is considered the “father of chemistry.” He thought human knowledge could be improved through experimentation. He did many experiments with gases and founded procedures for isolating and collecting gases.

Salt and Folklore

Because of its importance to people of different cultures, many stories have been made up about salt.

- After you spill salt, throw a pinch of it over your left shoulder to avoid bad luck.
- In the 1800s, people in such countries as Scotland and Ireland thought salt would bring health to a newborn baby. To ensure good health, they placed salt in the baby's pockets or bathed the baby in salt water.
- Newlyweds in Poland are given gifts of salt and bread after their marriage for health and good fortune.
- At medieval feasts, important people were seated closer to the salt than less important people. This gave rise to the saying, "Above the salt."
- Long ago, sailors thought it bad luck to mention salt at sea. In some places, this superstition lasted as long as the 1930s.
- In Japan, salt was once sprinkled on theater stages to keep evil spirits from bewitching the actors.

SUPER SCIENTISTS

Marie Curie

(1867–1934)

Marie Sklodowska Curie was a Polish-born French scientist. She overcame prejudice and discrimination in the male-dominated world of science. She made important contributions in the fields of chemistry and physics. Along with her husband Pierre, Curie discovered the elements radium and polonium in 1898. The Curies also conducted important research on radioactivity. Curie was awarded the Nobel prize twice, first in 1903 and again in 1911. In 1934, she died from an illness caused by exposure to radioactive materials.



Marie Curie