

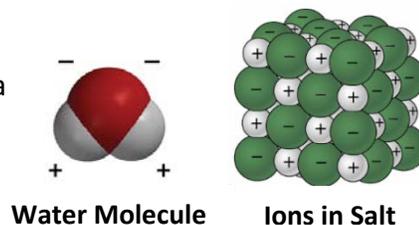
## 5<sup>th</sup> Grade - Lesson 1.3

### Dissolving and Back Again

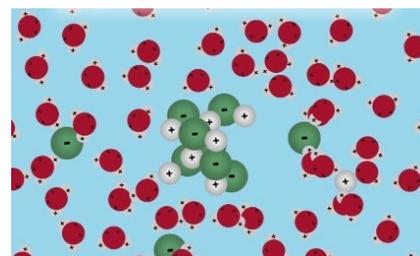
#### Student Reading

#### How does water dissolve salt?

The way water dissolves salt can be understood if you look at a model of a water molecule and a salt crystal. A water molecule has an area of positive charge and an area of negative charge. Salt is made up of sodium ions and chloride ions. An ion is an atom or molecule that has a positive or negative charge.



The positive area of the water attracts the negative chloride ion of the salt. The negative area of the water attracts the positive sodium ion of the salt. When enough water molecules surround and attract the ions, the ions come apart and the salt dissolves. When water evaporates, the positive and negative ions attract each other and come back together to form salt again.



Water Dissolving Salt

#### The importance of salt

Dissolving salt is a very important process for life on Earth. Dissolved salt is in your tears, sweat, and bloodstream. Salt is one of the substances that is essential for your nervous system to function. If the body's level of salt is too low for too long, a person can experience headaches, dizziness, and other nerve problems.



Human Nervous System



Salt Cellar

These days you can easily go to the store and buy salt, which is pretty cheap. But salt wasn't always so easy to get, and at one time it was very valuable. In ancient Rome, soldiers were paid with an amount of salt called a "salarium." This is where the word "salary" comes from. Salt was so precious that kings and queens had fancy silver containers, called *salt cellars*, specially made to hold salt at the table.

Salt has also been used throughout history to help preserve different types of food. When food is salted to the right level, certain harmful bacteria cannot live and grow on the food. This allows food to be transported over greater distances and to last longer.



Dried Salted Fish

## Where does salt come from?

There are two huge sources of salt on Earth. One is the salt that is dissolved in oceans and seas. The other is deposits of solid rock salt called *halite*, under the earth's surface. To get salt from ocean and sea water, the water is placed in large, open pools and allowed to evaporate. This causes the sodium and chloride ions dissolved in the water to recrystallize and form salt crystals.

There are two methods for getting salt from beneath the earth's surface. One technique is to drill down into a salt deposit and pump in large amounts of water to dissolve some of the salt. This salty water is then pumped to the surface and allowed to evaporate and recrystallize.

The other method is underground mining where long mine shafts and tunnels are dug to get down into the salt deposit. Machinery is used to blast, scrape, and dig the solid salt out of the ground. This salt is sent up to the surface where it is crushed and processed.



**Evaporating Sea Water**



**Salt Mine**