

From Sea Water to Fresh Water: Desalination

As a major part of the water cycle, salt water from oceans is heated by the sun, evaporating into the air. As the water evaporates, the salt remains in the ocean. The water condenses into clouds and returns to earth in the form of rain and snow. When the water returns to earth through precipitation, it's fresh water. This natural process of removing salt from water is called *desalination*. For communities that do not have access to fresh water for drinking, like people aboard ships and submarines, they use a manual system for desalinating sea water.

Try it Yourself!

1. Pour a 1 in depth of drinking water into the bowl.
2. Mix some salt into the water. Add enough so the water tastes salty. (only taste test a drop or two!)
3. Place the mug in the center of the bowl.
4. Cover the bowl top tightly with plastic wrap. Ensure there are no open spots around the rim.
5. Place the bowl in a safe, clean place that gets LOTS of sunshine.
6. Place the rock on top of the plastic wrap, right above the cup. The rock should cause the plastic wrap to sag in the center above the cup.
7. Wait several hours.
8. Water condensation should form on the underside of the plastic wrap, flowing downward slowly and dripping into the mug.
9. Once the mug has some water in it, pull back the plastic wrap and remove the mug.
9. Taste the water in the mug– there's no salt!

Materials

Iodized salt
Drinking Water
Heavy ceramic mug
Large glass bowl (mug should fit inside)
Plastic wrap
Small rock
Sunlight



What's Happening?

Warmed by the sun, the water's surface evaporates, turning into water vapor. Water vapor cannot carry the salt left at the bottom of the bowl. The plastic wrap acts as a form of greenhouse, trapping the vapor inside the bowl and creating a humid environment. When the humid air rises and touches the plastic wrap, the water vapor condenses and forms water droplets. Over time, the water droplets grow larger and flow to the center of the wrap where the rock is. The droplets join together, growing heavier and eventually dropping into the cup as desalinated drinking water!

