

# Read About Water

## WATER DISTRIBUTION & WATER QUALITY DEFINITION

Water is an essential substance needed by all living things. *Water quality* is a measurement of the condition of water and how clean it is for living things, including humans. The distribution of water on earth tells us where we can find water, like in oceans, lakes, rivers, glaciers, and underground. About 97% of Earth's water is in the oceans!

*To better understand Earth's water supply and distribution....*

## LET'S BREAK IT DOWN!

### Our Water Supply: Most of Earth's water is in the oceans.

You can divide water into two general categories: freshwater and saltwater. Saltwater is found in the ocean and contains salt. Freshwater is found in glaciers (frozen water), groundwater, and surface water (lakes, streams, ponds, rivers, and swamps).



Water covers 71% of the Earth, but it is not evenly divided between freshwater and saltwater. 97% of the Earth's water is found in the ocean. That means that **only 3% of the Earth's water is freshwater**. Since there is so little freshwater it is very important to know its quality, and how to keep it clean.

## **Water Supply Cleanliness: Plants and animals depend on clean water to survive.**

Living things need water to survive. If water contains too many pollutants, plants and animals will not survive and it can become toxic for humans to drink.

Some living things are more sensitive to pollution. If scientists find these sensitive organisms in bodies

of water, there is a good chance that the water quality is good. When the sensitive organisms are dying in bodies of water, it is possible that the water has been contaminated by pollutants.



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## **Impacting the Water Supply: Humans can negatively affect water quality even if they live far away from it.**

We can have an impact on water quality, even if we don't live near any major bodies of water. There are many ways in which people affect water quality.

Using too much fertilizer or pesticide, dumping wastes into storm drains, littering, and not cleaning up after dogs can all cause pollution.



These wastes can enter groundwater or move along the surface of land and contaminate larger bodies of water far away. In addition, all the paved surfaces in cities create a lot of surface water after it rains, which carries pollution from the streets into bodies of water.

Agricultural runoff can also contaminate the water. Water that is not absorbed by the plants travels over the soil and picks up fertilizers and other pollutants along the way. That water then flows into groundwater or nearby bodies of water. When polluted runoff reaches the ocean, it can create blooms of algae which take up all the oxygen in the water, leaving dead zones

where fish cannot survive.

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## Water Distribution: What happens to water when it goes down the sink or gets flushed?

The water we flush down the toilet is sent to a wastewater treatment plant. It goes through three main phases of filtration. First, dirty water is sent to a machine that filters out solids and other debris, like a filter. That material is chopped into smaller pieces and taken to a landfill. Next, the remaining water is sent to an underground tank. Here tiny organisms (bacteria) feed on the left-over waste in the water. Finally, the water is moved to oceans, lakes, and rivers, or to a final cleaning stage, before its used for watering farms or golf courses.



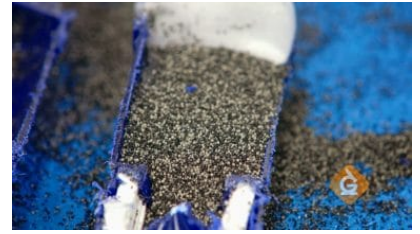
## EXAMPLES OF WATER DISTRIBUTION & WATER QUALITY



Programs like “Heal the Bay” give beach report cards to indicate the health of a beach. They measure levels of bacteria to determine if the beach is safe for swimming. Too much bacteria in the water can make people and fish get sick.



We can help by pitching in to clean up litter. Beach clean up days reduce the amount of litter and pollution from entering the ocean. Similar projects around rivers and lakes prevent pollution from entering freshwater ecosystems.



Water filters remove particles and minerals from water, making it safe to drink. Inside a water filter is a sediment filter that removes large particles (like sand or dirt). Then carbon in the filter absorbs chemicals found in the water, and a fine mesh screen removes any small particles that are left over.

## WATER DISTRIBUTION & WATER QUALITY VOCABULARY

**Glaciers** A slow moving mass of ice usually made from compacted snow on mountains.

**Marine Biologist** A scientist that studies life in the oceans.

**Water Quality** Measurement of the condition of water and how clean it is for living things, including humans.

**Surface Runoff** Water from rain or snow that flows over land before ending up in a body of water.

**Watershed** A large area of land that drains into a body of water.

**Storm Drain** A sewer that drains excess rain and groundwater from streets, parks and sidewalks.

## **WATER DISTRIBUTION & WATER QUALITY DISCUSSION QUESTIONS**

### **Why did Dr. Jeff mention the presence of dead zones when talking about water quality?**

Dead zones are areas where algae blooms grow. These blooms grow because polluted runoff reaches the ocean. Poor water quality can cause these blooms to form.

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### **How did the team describe the three stages of a water filter?**

The first stage separates out large particles from getting into water. The second stage has fine pieces of carbon. This helps absorb impurities in the water. The last stage consists of a fine mesh that takes out extremely small particles from the water.

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### **How is water distributed on earth in terms of freshwater and saltwater?**

97% of all the water on Earth is saltwater while only 3% is freshwater. This means bodies of water like rivers and lakes are part of the 3% while oceans make up the 97%.

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### **What happens when water reaches a water treatment plant?**

Water undergoes three phases of filtration. First, it is sent to a machine that filters out solids or other types of debris. Then, the water is sent to an underground tank where bacteria feed on contaminants. Lastly, the water is moved to either a body of water, such as an ocean or river, or to a cleaning tank, where it is further purified for other uses.

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### **What effect would lack of available clean water have on the distribution of water in a community, neighborhood, or even a city?**

If water that will be used for drinking or other purposes is of poor quality, then this will affect how much water is available to be distributed throughout an area. That is, there would be less clean water available for distribution, which would affect how much water is available for people to use.

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