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## Conserve Water for Food

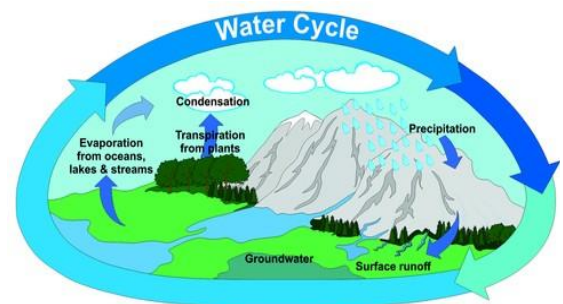
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### Water - A Resource for Life

The Earth's surface is about 71% water. Water is found in oceans, rivers, lakes, snow, glaciers, and under the ground. Most of the Earth's water is salty. Only 3% of water is not salty or considered **freshwater**. People use water to drink, grow food, care for animals, and clean. Water is also used for recreation, transportation, and energy. Freshwater is used for drinking and growing food.

Recall the **water cycle** in which water on the Earth's surface evaporates, condenses as clouds, and returns to the Earth as precipitation.

People use water in another type of cycle. Water is collected from the environment, cleaned, and used. After it is used, water is cleaned again and then returned to the environment for later reuse.



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### Water Recycling

Water that runs from the tap is pulled from the environment. This water comes from streams (a type of **surface water**) or from under the ground (**groundwater**). Water is cleaned before use. It is cleaned again after use before it is returned to the environment. Water is treated to remove chemical and biological **contaminants**. These contaminants can make people sick. Chemical contaminants can include things

that people purposely mix with water such as soap. Other contaminants may accidentally end up on the ground and mix with rainwater. An example is oil from a car leak. Biological (living) contaminants include **microorganisms** such as bacteria, viruses, and parasites. Most microorganisms are harmless

and are even helpful to humans. But some can make us ill if we consume them. These are sometimes called germs or **pathogens**. Pathogens maybe found in untreated animal or human waste.

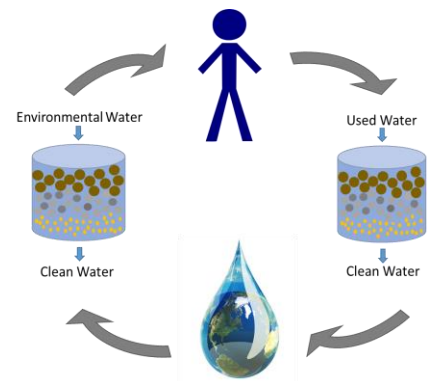
To remove contaminants, water is first treated by a process called **flocculation**. This is done to clump large debris for easier removal. Water is then treated by **filtration**.

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*We cannot make more water; we must protect the water we have.*

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This process passes water through layers of sand to trap small debris. Water is finally treated by **disinfection** to inactivate microorganisms. Communities have laws to ensure that the water we drink is cleaned to protect our health. There are also laws to make sure used wastewater is cleaned before being returned to the environment.



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## Water for Food

One of human's most critical needs for water is to grow food. Plants draw in water found in the soil through their roots. Water travels up into their stems in order to grow. Different plants need different amounts of water to grow. Ideally, rain would fall in the exact amount and at the exact time needed for plants to grow. However, this does not always happen. Sometimes there is too little rain (**drought**). Sometimes there is too much rain (**flood**). The amount of rain that falls varies by different geographical regions. Rainfall amounts can vary from year to year.

When there is not enough rainfall for food crops, growers water plants by **irrigation**. Freshwater is pumped from surface water or groundwater. Water is then sprayed on top of plants or dripped on the ground close to the top of plant roots.

Irrigation water must be clean and safe enough for growing food. Contaminated irrigation water could cause illness if it touches the part of the plant that is eaten.

## Water - A Resource in Demand

Obtaining enough clean surface water and groundwater to irrigate crops is already a challenge because of droughts and environmental contamination. As the human population increases, more food will be needed. Water needs are also expected to increase. Because of the strain on water resources, scientists study alternative water sources that can be used for irrigation. Alternative sources may include wastewater from food processing and from communities. Scientists study the



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amount of contamination in wastewaters. Then scientists evaluate ways to remove contamination to make the water safe for irrigation of food crops. Some communities already collect used water and clean it to be safe enough for agriculture use. This **recycled** water often flows through pipes painted the color purple. This helps make community members aware of how the water can be used.