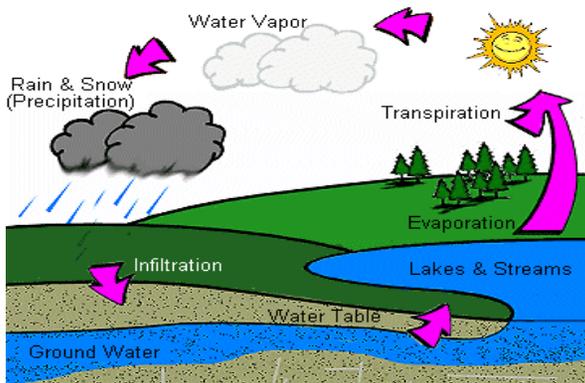


## What is Groundwater?

Groundwater is one of our most valuable resources – even though you probably never see it or even realize it is there. It is found beneath the Earth's surface and is the largest available source of fresh drinkable water.

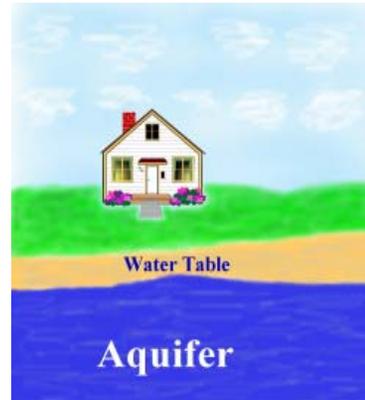
Groundwater comes from a kind of global plumbing system called the hydrologic cycle or water cycle. The water cycle is controlled by the sun, which produces heat energy that determines the way the Earth uses and recycles its water. This heat energy evaporates water in the oceans, lakes, and even backyard pools. The water then rises into the cooler air, collects, and forms clouds.

Eventually, water droplets that form the clouds fall from the sky as rain, snow, sleet, or hail. When rain, snow, sleet, and hail fall to the ground gravity pulls the water through the soil and rock. The water passes between particles of soil, sand, gravel, or rock until it reaches a depth where the ground is filled, or saturated, with water where it becomes groundwater. Some of this water may then slowly flow into rivers and lakes, or back into the sea. Then the cycle starts all over again.



## What is an Aquifer?

The area where the ground becomes filled or saturated with water is referred to as the “saturated zone” which is broken down into two distinct layers. The upper layer of the saturated zone is called the water table. The water table may be very near the ground's surface or it may be hundreds of feet below. For example - if you were to dig a hole on the beach you would find water very near the surface because the water table is at the same level as the ocean. But in other areas of the country you would have to dig several feet to find the water table. The depth of the water table depends on the topography or structure of the Earth's rocks and soil in a particular area.



The area beneath the water table is called an aquifer, which is a huge storehouse of water. The soil and rock of the water table act like a giant filter that helps clean the water before it is pulled into the aquifer. Unlike surface reservoirs like lakes and rivers, there is no silty mud to cloud the water and the sun is not able to evaporate it, making it a generous source of clean water.

*Irrigation accounts for the largest use of groundwater in the United States. Some 58 billion gallons of groundwater are used daily for agricultural irrigation.*

## A Fragile Resource

Groundwater is one of our most valuable natural resources. Clean, plentiful groundwater is a key to our health and way of life. Pollution from the land's surface puts some groundwater at considerable risk of contamination.

The availability and purity of groundwater are taken for granted by most of us. However, the dangers to groundwater are countless because many of our activities on land affect the groundwater below. Contaminants on the ground's surface are generally dissolved and carried by rainwater into soil above the water table. From there, contaminants can enter into the aquifer and begin to migrate in the direction of groundwater flow.

Because groundwater advances so slowly, pollutants that get into it are not quickly diluted or flushed out. Also, it is difficult to detect groundwater pollution until it reaches a well, underground utility, or surface water area. By this time pollution can be widespread. Once groundwater becomes polluted, it is extremely difficult and expensive to clean up.

*Groundwater provides about 97 percent of the world's total supply of drinkable water. More than 50 percent of Texas residents rely on groundwater as their source of drinking water either through public utilities or residential wells.*

## Risks of Contamination

The degree of risk posed by contaminants in groundwater varies according to many factors.

These include:

- How much contaminant is present
- How toxic is contaminant
- How much contaminant reached the aquifer
- How long does it stay in the environment
- How much environmental exposure exist
- Are people being exposed and if so,
- How much are they being exposed to
- How many people could be affected
- Is there another source of safe drinking water available
- Is water obtained through utilities where filtration and/or chemical disinfection is being done

## Prevention of Groundwater Contamination

Natural or man-made substances can seep into the groundwater, making it unsuitable for use. There are many causes for groundwater contamination. Some examples are improper management of feedlots, improper storage and use of hazardous materials, accidental chemical spills, leaking septic tanks, improper waste disposal, and corrosion.



When water gets contaminated, all living things that drink the water can be severely affected.

Groundwater is used for many purposes, including bathing, drinking, irrigation, and commercial and industrial use.

Once groundwater contamination occurs it not only threatens public health and the environment, but can be very costly to clean up. We must all try to do our best to protect groundwater from contamination.

If you have questions concerning proper disposal of hazardous materials please contact the

Texas Commission on Environmental Quality  
512-239-4671

# Groundwater

## Our Most Valuable

# Natural Resource



**Texas Department of State Health Services  
Health Assessment & Toxicology Group  
1100 West 49th Street, MC 1964  
Austin, Texas 78756  
1-800-588-1248**

<http://www.dshs.state.tx.us/epitox.shtm>

