



What does an elementary school science lesson have to do with today's global water crisis?

Have you learned about the **hydrological or water cycle**? This has always been an important science lesson and it is even more important today. The availability of water is a growing problem around the world. In California, for example, a major drought has crippled the state for several years; January to June 2013 was the driest start to a year on record for the state in the last 118 years of record keeping!

We all remember the Texas drought of 2011-12. While this past year has been an especially wet one with some serious flooding, once again we're experiencing months of sweltering temperatures and little or no rain. During wet times or dry times, the **water cycle** is constant. Here's how it works.

The water cycle has no particular starting point, so let's begin with the oceans, since that is where most of Earth's water exists. The sun -- the energy behind the water cycle -- heats up the earth's surface water. Some **evaporates** or vaporizes into the air. Rising air currents carry the vapor up into the atmosphere, along with water from **evapotranspiration**, which comes from plants and the soil. The vapor rises into the air where cooler temperatures **condense** it into clouds. Air currents move clouds around the globe, cloud particles collide, and then fall out of the sky as **precipitation** -- rain, sleet or snow. Some of the snow can accumulate as ice caps and glaciers, storing frozen water for thousands of years. Most precipitation falls back into the oceans or onto land, where, thanks to gravity, the precipitation flows over the ground as **surface runoff**. Some of the runoff finds its

way to rivers, which ultimately flow to the oceans. Runoff and groundwater seepage accumulate and are **stored** as freshwater in lakes, rivers and streams.

The rest of the runoff soaks or **infiltrates** into the ground and replenishes aquifers (saturated subsurface rock), which store huge amounts of freshwater for long periods of time. Yet more groundwater is absorbed by plant roots and ends up as **evapotranspiration** from the leaves. All of this water keeps moving and the cycle continues endlessly.

Now that we're reminded about how the water cycle works, here are some disturbing facts:

- ◆ Less than 1 percent of all the freshwater is readily accessible for human use. In the 20th century, the world's population tripled, but the use of water increased sixfold.
- ◆ By the middle of this century, there will be an additional 3 billion people on our planet. One in five people already do not have access to safe drinking water.
- ◆ Groundwater depletion is a global condition. At least 2 billion people rely on groundwater as their primary water source, and much of this water comes from aquifers that are increasingly at risk in the coming decades.

Think of this as a lot of people drinking from straws in the same glass of water...sooner or later the glass will be empty.

Are you getting the picture? Sure, there may be plenty of water on the planet, but it isn't always where people need it most. Isn't it time to stop taking our finite water resources for granted. Will you and your family make a commitment to use water more efficiently? ■