

## **Water Shortage - The real inconvenient truth**

In the past six weeks, the people of northeast Columbia have been advised to preferentially water their lawns due to water shortages. The city of Columbia has received only two thirds of its climatological average up to this point of the year (17 of 24 inches, so we are in a deficit by 7 inches). This is worrisome as the northeast has many expanding communities and in future may result in greater water consumption.

One would wonder why the city of Columbia which is only 100 miles or less from the Atlantic Ocean would suffer from water shortages. After all, our planet Earth is seven tenths ocean and only three tenths portion land. However, the hydrological cycle which is responsible for circulating this water, some of it from the oceans and some from land sources has been changing rapidly over the past decades. Rainfall is now unevenly distributed with larger fluctuations in the extremes. Rainfall events are now composed of thunderstorms with large amounts of rainfall accompanied by high winds and many locations suffer from longer periods of no rain. In other words, instead of having moderate, well spaced rainfall events, the rain comes down in a few intense events with no rain between events. A good example is the recent string of wet events in Northern Texas and Oklahoma which has had numerous rain events in the past few days. The water from these large rainfall events constitutes surface runoff to streams, rivers, lakes and ponds often carrying with it large amounts of sediment thereby changing the land surface.

In Columbia this summer we are suffering from low rainfall amounts. This is reflected in the below normal flows in the rivers and dry conditions in the Southeast United States. The National Drought Monitor shows two regions of intense drought condition, one is in the western United States and includes most of California, Utah and Nevada. The other is in the eastern United States and includes Tennessee, Kentucky, Northern Alabama, Southern Indiana and Southern Ohio and borders on South Carolina. So for all our present problems, there are several other states around us and in the west whose problems are far greater.

What is the solution? In the future, residential communities will have to take into account possible water shortages and build in contingency plans. One major option would be to build household units that are water efficient akin to energy efficiency. This would include low flow bathrooms and efficient lawn watering systems. Low flow toilets which are common in European and some Asian countries help in conserving water as well as reduce the amount of water treated at treatment plants. Watering the lawns during cooler hours, e.g. 4 am to 7 am and watering only when the soil moisture is below a certain level, i.e. not having the sprinklers come on when it is raining will help cut down water use.

The problems of water shortage are not limited to the United States. Almost every year there is a drought and famine in some region of Africa or Asia. In these regions the problems are exacerbated by a large population dependent on agriculture as a means of sustenance and crop failure leads to public health issues as well. In many urban areas of Asia and Africa, water is scarce year-round with water being either delivered to residential

neighborhoods in tankers and rationed or water being available in the houses at fixed times (generally very early in the morning) daily or several times a week.

A deeper appreciation of the nature of the water problem is needed. Often, the general public tends to confuse the term global change with global warming and do not associate the global change with problems of water scarcity. Education in water issues would greatly help in the practice of conservation.

Global shortage of water, now that is the real inconvenient truth...



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