

### Why is Water Essential to Life?

Water is one of the fundamental things needed for organisms to survive. This is a fact that is taught to us very early on in life and sticks with us throughout our life. Doctors recommend drinking 8 cups of water a day in order to maintain a healthy lifestyle. Wars have been fought over who gets the rights to drink from the source of water. Clean Water is one of the primary concerns of all countries, especially Third World countries.

However, have you considered why it's so important? Why is this substance so vital to the survival of all life? It should first be noted that it is the liquid form of water that is essential form for biochemical reactions by transporting vital nutrients from one place to another within a cell.

Water, as a polar molecule, is considered the "universal solvent", in that everything dissolves in water to some degree, allowing nutrients to be integrated into water with relative ease. Water also helps to 'bend enzymes'. Enzymes are proteins that catalyze chemical reactions, which speed up the reaction; water helps these enzymes to function.

One unique thing about water is that all 3 states of it (liquid, solid and gas) exists naturally in nature. This allows the water cycle to occur in nature which replenishes water around the world. Water has a wide range of temperature range for its boiling point and freezing point that can be easily manipulated with salt and other minerals. Water has a very high specific heat, which means it takes a lot of energy to heat it up. This allows water to survive the intense heat variations that Earth has without evaporating at once, and helps to moderate the temperature of the planet thanks to the oceans.

The last unique feature about water is that when it turns into ice, it expands instead of contracts, like a normal solid. This lets ice float above the liquid form, which prevents it from displacing water and causing the ocean levels to rise, and also allows Arctic and Antarctic life to thrive.

#### Sources

- <http://www.pbs.org/wgbh/nova/evolution/liquid-of-life.html>
- <http://www.wellnessgoods.com/waterimportant.asp>