

## Follow up to Lesson 1: Water the Universal Solvent

### **Application of knowledge and potential topics for projects**

Water's ability as a solvent is without question one of its most impactful properties on our planet. Approximately 70% of the Earth's surface is covered with a saltwater ocean, representing about 97 percent of the Earth's water. This is where life on Earth began. One might wonder if water didn't wash over the rocky surface of an early Earth dissolving the minerals that formed our saltwater ocean, would life have gotten its start? It's water's ability as an excellent solvent that has led to the chemical weathering that has helped to shape our planet's surface.

#### ***Potential project topics:***

- ***The origin and importance of our ocean's salinity. In general is our ocean becoming more or less salty? Measuring ocean salinity.***
- ***Water's impact on the minerals of the Earth's crust.***

Every life form on this planet is dependent on water's ability to dissolve materials. By dissolving materials, water leads to solutions of molecules and ions in which important chemical reactions that support life can happen. All living things are made of one or more units called cells and nutrient molecules cannot enter living cells and waste molecules cannot exit cells unless they're dissolved and in solution. Water dissolves nutrient molecules in soil, and takes them into roots, up the stems, and into the leaves of plants. Water's ability to dissolve nutrient or waste molecules is essential for them to enter and be transported by your bloodstream to where they are needed or eliminated. Water's ability to dissolve important gases like Oxygen (O<sub>2</sub>) and Carbon Dioxide (CO<sub>2</sub>) allow underwater life to respire or carry out photosynthesis.

#### ***Potential project topics:***

- ***Water and metabolism in living things.***
- ***Water's ability to dissolve CO<sub>2</sub> and Ocean Acidification.***

Water as the universal solvent does lead to problems and challenges. Neighborhoods can collapse into sinkholes as water dissolves minerals in the Earth's crust undetected from the surface. Water promotes the corrosive chemical reactions that decay the materials supporting our buildings, bridges, roads, and other structures. Bodies of water can become easily polluted, and remain polluted, with a variety of materials from both natural sources and from human activity.

#### ***Potential project topics:***

- ***Lead in drinking water***
- ***Pollution from pharmaceuticals in bodies of water***
- ***Can water's ability to dissolve materials lead to solutions for plastic pollution?***
- ***Why does water lead to the rusting of Iron.***
- ***Ocean acidification***