Playing with Polymers

Polymer Chemistry — A Brief Background

Polymer is the scientific word for the material most people know as **plastic**.

A Polymer is a long chain of molecules that are **chemically attached to each other**

in a repeating fashion, sort of like a long chain of beads or paper clips where each bead or paper clip makes one unit. Just as there are different sizes/colors/shapes of beads, there are **different types of molecules** that can be strung together and they will all have different properties.

This helps explain how polymers can all look so different!

Polymers are either **naturally occurring** (rubber, RNA and DNA, proteins, starch, and cellulose) or **synthetic (manufactured).**

Hydrogel polymers or **"super absorbent polymers"** are long molecule chains that grab onto water molecules. Some can absorb up to 500 times their weight in water!

Examples of POLYMERS include:

nylon jackets, shoes soles, plastic bags, plastic pop bottles, milk jugs, Tupperware, latex paint, Kevlar used in bullet proof vests, car tires, the "gel" found in disposable diapers, glue, disposable plastic utensils, seat cushions, balloons, Styrofoam coffee cups and so many more!

The word polymer comes from "poly" meaning many And "mer" meaning units.

You can Learn About:
Stretching Polymers, Foams, Water- Absorbing Polymers (hydrogels), Disintegrating Polymers, & Food Polymers… just to name few!

Supplies: Polymers science supplies can be ordered from various online sources. We like www.stevespanglerscience.com. Gel crystals can also be found at gardening stores or craft stores.

Developed by: Anne Stevenson, Extension Educator & Extension Professor, Extension Center for Youth Development steve020@umn.edu

Sources:
Helpful Hydrogels, The 4-H National Youth Science Day Experiment (2008). http://4-hyd.ext.wvu.edu/r/download/42738
Univ. of MN WISE. (2010). Cool Chemistry 2010 Teacher's Manual. More info at: http://www.chem.umn.edu/wise/coolchem2011.html

UNIVERSITY OF MINNESOTA | EXTENSION
Driven to Discover℠