**Lifecycle Analysis: How Does a Commercial Product Hold Up to the 12 Principles of Green Chemistry?**

**The 12 Principles of Green Chemistry** provide a scaffold for scientists to develop materials that are sustainable. According to the Environmental Protection Agency, “Green chemistry is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, use, and ultimate disposal.” <https://www.epa.gov/greenchemistry/basics-green-chemistry>

**The Green Chemistry BLOSSOMS video lesson** introduces students to the 12 principles. This Project-Based Learning lesson will inspire students to apply the principles with a commercial product lifecycle analysis.

**This PBL has two parts.**

* **Part 1** guides students through lessons in which they learn what a lifecycle analysis is and culminates in their own self-selected lifecycle analysis project.
* **Part 2** is a optional extension in which students apply engineering principles to develop and test a sustainable, polystyrene substitute product.