Plastics and the Plastic Life Cycle

TEACHER RESOURCES: Marine Debris Interruptions

This educator resource provides link to lessons, activities, and readings that you can use to help students learn about the characteristics and life cycles of plastic materials.

Plastic Materials

Hands-on Activity: Investigating the Properties of Plastic and its Effects on the Environment
From Teach Engineering, 2020
Grade level: 8-10
Summary: Plastics offer a lot of worth to our world, ranging from medical use to consumer products, but they also adversely affect our environment and ecosystems. Working in teams, students investigate four different plastic properties: density, chemical decomposition, physical decomposition, and the ability to enter the food web. Based on their investigations, students learn how the properties of plastic create pollution that significantly impacts the environment and ecosystems.

Lesson: Plastic in the Water Column
From Monterey Bay Aquarium, 2014
Grade level: 6-8
Summary: What happens when plastic enters the ocean? Students find out by exploring the densities of different types of plastic. They then investigate feeding strategies and locations (surface, pelagic and benthic) of various ocean animals and predict how plastic will affect marine food webs. The activity ends with students brainstorming actions to reduce the amount of plastic that ends up as waste.

- Density Table: This 2-page PDF lists plastics #1-7 by name, common uses, density, and where they end up in the water column.

Product Life Cycle

Lesson: Life Cycles – Teach Engineering, 2008
Grade level: 6-8
Summary: Students extend their knowledge of matter and energy cycles in organisms to engineering life cycle assessment of products. They learn about product life cycle assessment and the flow of energy through the cycle, comparing it to the flow of nutrients and energy in the life cycles of organisms.

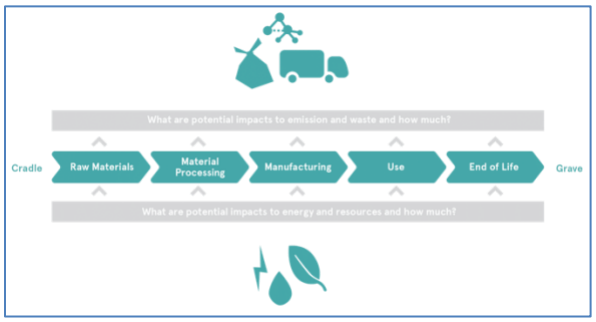
Hands-on Activity: Product Development and the Environment – Teach Engineering, 2008
Grade level: 6-8
Summary: Students investigate the life cycles of engineered products and how they impact the environment. They use a basic life cycle assessment method that assigns fictional numerical values for different steps in the life cycle. Then they use their analyses to compare the impacts of their products to other products and suggest ways to reduce environmental impact based on their analyses.

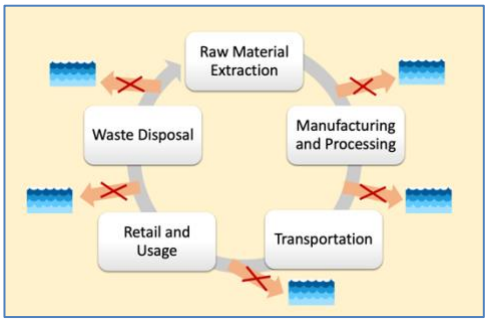
Background Reading: Sustainable Materials Management Basics, Environmental Protection Agency, Feb 2022

Background Reading: Guidance on Life-Cycle Thinking and its Role in Environmental Decision-Making - Sustainable Materials Management Coalition, 2014

Life Cycle Graphics

https://www.megapixl.com/plastic-recycling-cycle-illustration-illustration-45615334





Infographic from Pratt Center for Sustainable Design Strategies