

CHAPTER 19 WASTE – Section 2

E.Q.: What makes up solid waste in the U.S. and what characteristics make a material biodegradable in a landfill?

E.S. STANDARD: SEV5. Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

- a.) Describe factors affecting population growth of all organisms, including humans. Relate these to factors affecting growth rates and carrying capacity of the environment.**
- b.) Describe the effects of population growth, demographic transitions, cultural differences, emergent diseases, etc. on societal stability.**
- c.) Explain how human activities affect global and local sustainability.**
- d.) Describe the actual and potential effects of habitat destruction, erosion, and depletion of soil fertility associated with human activities.**

Section 2 – Reducing Solid Waste

Preview

- **Bellringer**
- **Objectives**
- **Reducing Solid Waste**
- **Buying Less and Lasting Longer**
- **Recycling**
- **Recycling: A Series of Steps**
- **Composting**
- **Changing the Materials We Use**
- **Degradable Plastics**
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Objectives

- **Identify three ways you can produce less waste.**
- **Describe how you can use your consumer buying power to reduce solid waste.**
- **List the steps that an item must go through to be recycled.**
- **List two benefits of composting.**
- **Name one advantage and one disadvantage to producing degradable plastic.**

Reducing Solid Waste

- **Source reduction is any change in the design, manufacture, purchase, or use of materials or products to reduce their amount of toxicity before they become municipal solid waste.**

- **Source reduction also includes the reuse of products or materials.**
- **If we produce less waste, we will reduce the expense and difficulty of collecting and disposing of it.**

Buying Less and Lasting Longer

- **Consumers can influence manufacturers to reduce solid waste by buying products that have less packaging or that can be used more than once.**
- **For example, you could purchase dish towels instead of paper towels.**
- **Manufacturers could also reduce waste and conserve resources by redesigning products to use less material and to last longer.**

Recycling

- **Recycling is the process of recovering valuable or useful materials from waste or scrap. Recycling also refers to the process of reusing some items.**
- **Making products from recycled materials usually saves energy, water, and other resources. For example, 95% less energy is needed to produce aluminum from recycled aluminum than from ore.**
- **About 70% less energy is needed to make paper from recycled paper than from trees.**

Recycling: A Series of Steps

- **The steps of recycling include:**
 - **collecting and sorting discarded materials by type**
 - **taking the materials to a recycling facility**
 - **cleaning the discarded materials so that they can be shredded or crushed**
 - **reusing the shredded or crushed material to manufacture new products**
 - **selling the new products to consumers**
- **If more people purchase products made from recycled materials, there would be an increase in demand for these products.**
- **Manufacturers would then build more facilities to make recycled products and, in turn, make it easier for communities to recycle.**

Composting

- **Compost is a mixture of decomposing organic matter, such as manure and rotting plants that is used as fertilizer and soil conditioner.**
- **Compost provides several benefits.**

Benefits of Composting

- keeps organic wastes out of landfills
- provides nutrients to the soil
- increases beneficial soil organisms, such as worms and centipedes
- suppresses some plant diseases
- reduces the need for fertilizers and pesticides
- protects soil from erosion

Composting

- **Yard waste often makes up more than 15% of a community's solid waste.**
- **Composting can be an effective way of handling biodegradable waste from businesses and homes.**
- **If all biodegradable wastes were composted, the amount of solid waste going to landfills could be reduced.**

Changing the Materials We Use

- **Simply changing the materials we use could eliminate much of the solid waste we produce.**
- **Recycling other common household products into new, useable products could also help eliminate solid waste.**
- **For example, plastic beverage containers can be recycled to make nonfood containers, insulation, carpet yarn, textiles, fiberfill, and more.**

Degradable Plastics

- **Photodegradable plastic, unlike nonbiodegradable plastics, is made to become weak and brittle when left in the sun for many weeks. Eventually, it breaks into pieces.**
- **Green plastic is made by blending the sugars in plants with a special chemical agent to make plastics.**

- **The production of green plastics requires 20 to 50% less fossil fuel.**
- **This plastic has also been engineered to degrade within 45 days of being thrown away.**
- **When green plastic is buried, the bacteria in the soil eat the sugars and leave the plastic weakened and full of microscopic holes.**
- **The chemical agent then gradually causes the long plastic molecules to break into shorter molecules.**

Problems with Degradable Plastics

- **The main problem with degradable plastics is that the plastic parts are only reduced to smaller pieces, not eliminated.**
- **Degradable plastics can help reduce the harmful effects that plastic litter has on animals in the environment.**
- **Although this type of plastic can help reduce the harmful effects of plastic litter, the plastic itself will remain just as long as regular plastics.**