

Products in Perspective

Grades: 5

State Standards: Grade 5, Science; Resources 6. Sources of energy and materials differ in distribution, usefulness, and the time required for their formation. Students know the different natural energy and material resources, including air, soil, rocks, minerals, petroleum, and wildlife, and know how to classify them as renewable or nonrenewable. Investigation and Experimentation 7, Scientific progress is made by asking meaningful questions and conducting careful investigations. Students should develop their own questions and perform investigations.

Preparation Time: 25 minutes

Activity Time: 1 hour

Key Words: Organic, inorganic, source, renewable, nonrenewable, impact

OBJECTIVE

Students will (1) trace some products from their source to the consumer; (2) identify the impact those products and their processing have on landfills and the environment in general; and (3) recommend, with explanations, some consumer habits that could benefit landfills and the rest of the environment.

MATERIALS

Writing and drawing materials.

BACKGROUND

Lifestyle choices made each day have some impact on landfills and the environment. Many of those impacts are indirect and are, therefore, less obvious. The types of purchased items people use each day, for example, have many implications for local landfills and the environment.

The places and ways in which some products are made can have a negative environmental impact. Development, industrial, commercial, and residential uses decreases the amount of land available for wildlife habitat and landfilling. Given that people need goods for their daily lives, the path in which the items are processed, packaged, and marketed are important when looking at generated waste, greenhouse gases and non-renewable resources.

PROCEDURE

1. Select a typical manufactured household item. Identify the item's components. In a discussion with students, trace the items components all the way back to their origins. Include where and how it was manufactured, transported, packaged, and marketed to the consumer.

For Example, Noodle Yum (name has been changed), produces instant noodles in a cup (ramen noodles). Noodle Yum's traditional business is through air and ocean freight. Noodle Yum has established offices and factories in various countries. Exhaust emissions

from ships are considered to be a significant source of air pollution, with 18-30% of all nitrogen oxide and 9% of sulfur oxide pollution.

See <http://www.guardian.co.uk/environment/2009/apr/09/shipping-pollution>

Ramen noodles are typically sold in foam cups, made of polystyrene. A 1986 EPA report on solid waste named the polystyrene manufacturing process as the 5th largest creator of hazardous waste. The National Bureau of Standards Center for Fire Research identified 57 chemical byproducts released during the combustion of polystyrene foam. The process of making polystyrene pollutes the air and creates large amounts of liquid and solid waste.

As a marketing concept, ramen noodles are typically targeted towards students. They cook in under five minutes and have a whole sale price of 0.12 cents. Ramen noodles are easily mass produced. The noodle dough is forced through eighty nipples into continuous rows, and cut into uniform lengths. The eighty curly noodles, cut to length, are then folded over once before being dropped into a mold, lightly fried in palm oil, dried, and packaged with a flavor packet insert.

2. Ask the students to generate a list of items they eat for lunch on a typical day. Include all packaging materials the product came in.
3. Ask each student to pick one lunch item that has packaging to trace all the way back to its original manufacturer. Include where and how it was put together, transported, packaged, and marketed to the consumer (the student). Ask the students to make simple flow diagrams of the path the product takes. The student may need to do some research to obtain additional information.
4. Ask the students to report and illustrate on how their item is disposed of when it is no longer useable. Explain the effects this has on our waste stream and local landfills.
5. Ask the students to think of changes they could make in their own purchases, use and after life of their product to minimize the amount of material landfilled and increase the recyclability of the products packaging. Describe the reasoning for this change, and evaluate its consequences. Suggest that the students implement their changes work for a week. At the end of the week, ask the students to report. Were they able to stick with the change? If no what happened, did they think of any other possible options? Help students evaluate their methods and change their plans if necessary.

Extensions

1. Choose a commonly used household product. Create a resources flow chart displaying the transportation methods used to get the manufactured good to the consumer.
2. Include the impact on other specified natural resources along the way.
3. Distinguish if the product is renewable or nonrenewable in any way.

4. Compose a written observation about recycling their product and alternative resources to the original manufactured good.

ANALYSIS

Students trace purchased goods from sources, diagram landfill environmental impacts, and apply the knowledge they gain by making changes in some of their consumer use choices.