



**Title:** Precycle – the First Step

**Grade:** 3

**Subjects:** Science, Social Studies, Language Arts

**Time:** 50 minutes

### **Objectives**

Identify and describe how manufacturer's action in regards to waste management can affect change and improve the environment.

Identify and describe the life cycle of consumer products.

Communicate their ideas in writing and inform readers about their actions to reduce waste by precycling.

Explain the need to reduce the amount of trash they generate, and describe ways in which they can make changes in their actions to support waste reduction.

### **Standards**

Geography Standard 16: Understand the changes that occur in the meaning, use, distribution and importance of resources.

- Benchmark # 5: Know advantages and disadvantages of recycling and reusing different types of materials.

Geography Standard 18: Understand global development and environmental issues.

- Benchmark # 2: Know ways in which resources can be managed and why it is important to do so (e.g., conservation practices, recycling non-renewable resources).

Language Arts Standard 8: Use listening and speaking strategies for different purposes.

- Benchmark # 3: Respond to questions and comments (e.g., gives reasons in support of opinions).

### **Materials**

- Computer
- PowerPoint or PowerPoint Viewer
- Assorted lunch materials:
- Lunch 1: Sample items for not green lunch (paper bag, can or bottle, plastic wrap, foil, zip lock bag, etc.)
- Lunch 2: Sample items for green lunch (reusable lunch bag, thermos or reusable drink bottle, reusable containers, piece of fruit, etc.)
- "High Five" PDF of worksheet provided below
- PowerPoint

**Overview:** The average US citizen generates approximately one ton of trash annually, but seldom gives it any thought once they throw it away. So what happens to it all? Well, it goes into the waste stream where it is collected and hopefully, disposed of in a manner that least impacts the environment. This process is known as solid waste management.

The Environmental Protection Agency has designed a plan for this process, which they refer to as "integrated solid waste management", and has identified five ways to properly handle waste materials: a) source reduction and reusing, b) recycling, c) composting, d) converting to energy, and e) burying it in a sanitary, engineered site. The EPA emphasizes that there is no definitive approach to waste management and encourages communities to combine these five methods to effectively address the issue.

In most communities across the country waste materials end up in at least one of three locations: a) a materials recovery facility, b) a waste-to-energy facility, or c) a landfill. A materials recovery center is where recycled materials are sent. Once at an MRF glass, metal, plastic and paper are sorted, separated, and baled. Then they are transported to manufacturers, processed, transformed into useful items and placed back on the shelves for consumers to purchase once again. A waste-to-energy facility burns the



waste material and converts it to energy. The trash is used as fuel to produce heat energy, turning water into steam. The steam is channeled to turbine generators, which in turn produce electrical power. A landfill is a long-term disposal solution that buries trash in as safe and sanitary manner as possible. In a landfill trash is deposited and compacted overtime, burying layer upon layer of waste material and leaving it to decompose. The EPA recommends land filling as a last resort, after all other methods have been exhausted; however many communities find the other options too costly or impractical, and use a landfill solution as one of their primary methods of disposal.

While the technologies driving these methods have greatly improved in recent years, they still present a number of environmental problems; so the most desirable methods for reducing waste are composting and source reduction/reuse. According to reports from the EPA almost 70% of solid waste consists of organic materials, such as paper, food and yard waste. These materials can be composted by individuals or on the community level, using municipal solid waste composters. Either way, the result is a product that can be added to enrich and improve the quality of soil. Compost is a valuable agricultural resource.

Packaging materials are a major contributor to the waste stream. Packaging materials are used to protect the product from the environment, reducing the risk of damage and contamination. Packaging is also used to safely and efficiently transport the product from the manufacturer to the consumer, as well as to provide customers with product information and usage instructions, some of which are required by law.

Packaging, to a large extent, was developed in response to social and economic changes that affect consumers. The trend towards urbanization in the last century, created longer distances between food producers in rural areas and the consumers that lived in the cities, resulting in a greater demand for packaging. Other contributing factors were the increase in working families and smaller family units, resulting in greater use of microwaves, freezers and products of convenience. As these factors illustrate, to achieve a change towards more sustainable products, it is not just the packaging that needs to be addressed, but also lifestyle changes and consumption habits.

Source reduction is, by far, the most preferred method of solid waste management. It uses fewer resources, less energy and is economical. Unfortunately, it is also the most difficult concept to communicate to consumers. For manufacturers, source reduction means looking at and reducing the waste they generate during production, and the materials they use in packaging products. For individuals, it means reevaluating current practices, learning to do more with less, using what already exists responsibly, and recognizing the difference between needs, wants and what is ultimately best for the environment and the future of mankind.

#### **Before Precycle Activity:**

- Teacher will use provided PowerPoint presentation "Precycle- the First Step" to establish prior knowledge of 3 R's: reduce, reuse, and recycle.
- Teacher will introduce the concept of precycle.
- Teacher will present 3 main tips for precycling.
- Class will discuss ways to implement each step.

#### **Precycle Activity:**

- Unpack the **LUNCH 1**: It's in a bag that needs to be recycled. Bring a single serving drink and snack. Wrap sandwich in plastic wrap or zip lock bag. Bring another item wrapped in foil. A paper napkin and plastic utensils can also be included. Discuss you would dispose of each item when you were finished your lunch. On the chart (like the example below) write LUNCH 1. Count and record the number of items that would be recycled and number of items that would go into trash basket.
- Unpack **LUNCH 2**. It's in a reusable lunch bag. Drink is in reusable bottle or thermos. Sandwich and snack is in reusable containers. A cloth napkin and reusable utensils can be included. A



piece of fruit is included. On the chart write LUNCH 2. Count and record the number of items that would be recycled and number of items that would go into trash basket. Explain to students that the remains of the fruit are biodegradable materials. They can be recycled in a special way called composting and do not have to go into trash. (**Compost** is made by layering organic materials in a pile and letting it decompose. A balance of "browns" and "greens" ensure a healthy and odor-free compost. Browns include carbon materials such as dried leaves and broken twigs, and the greens constitute fruit and vegetable peelings, green plants, etc.)

**Waste Reduction Chart:**

Waste Reduction Method	Lunch 1	Lunch 2
Trash Can		
Recycle Bin		
Compost Bin		
Total		

**Conclude activity with a discussion:**

- How was Lunch 1 different from Lunch 2?
- Why should precycling be the first step in waste reduction?
- How can third grade students make a difference? Answers may include:
- If parents pack snacks and lunches, students can encourage or remind parents to include reusable containers.
- Students can encourage or remind parents to buy in bulk and put in reusable container rather than buying single serving packages.
- Remind students that all "stuff" starts somewhere. If we precycle and don't use plastic wrap, plastic water bottles, zip lock bags, or foil to begin with we don't have to throw any away.
- Stress that each student can help make a difference by making good choices and reminding families and friends to do the same.

**After Precycle Activity:**

- Students will cut out the provided "High Five" hand pattern.
- On the palm students will write: Precycle. Also they will create an illustration of precycling on the palm.
- Flip the hand over to the other side. Students will write 5 tips that will help them as they try to precycle. Write one tip on each finger. An illustration can also be added to this side of the hand.



- Students can share precycle tips during a classroom discussion time.
- Students can share precycle tips at home with their families. Perhaps they could hang the hand on the refrigerator to remind family members to make good choices when shopping and disposing of waste.

**Adaptations:**

- Conduct lesson using a printed copy of PowerPoint. The PowerPoint presentation is provided.
- If you do not have PowerPoint you can download a free PowerPoint viewer at Microsoft download center.

**Extensions:**

- Keep a journal of lunch and snacks. Record each day for a limited time period the types of containers and method of disposal used each day. Evaluate personal waste reduction habits at end of time period. Have habits changed?
- Become proactive. Find products with excessive packaging. Write to manufacturer explaining your thoughts and concerns about the packing of their product.