

A Second Grade Project

Where Do Things Come From?

Where Do Things Come From: A Second Grade Project
The East Baton Rouge Recycling Program

Benchmarks:

Science

SE-E-A4 understanding that the original sources of all material goods are natural resources and that the conserving and recycling of natural resources is a form of stewardship.

Language Arts:

- Connects life and personal experiences to text by sharing and discussing.
- Applies connections to real life reading and writing in a variety of contexts.

Objectives:

- To learn about the original source of material goods such as glass, aluminum, steel cans, paper, plastic, motor oil, and yard waste.
- To learn how materials can be recycled.
- To learn more about recycling.

Materials:

- One (1) set of "Teacher Resource Sheets" including 1 each on glass, aluminum, steel cans, paper, plastic, motor oil, and yard waste.
- One (1) copy of *Recycle News* per student.
Recyclables as examples.

Time Frame: One-class period

Procedure:

1. Conduct a class discussion. *Discuss the meaning of recycling. Make a list of things that can be recycled at home or at school. Discuss the reasons for recycling. Ask students if they know what is the source of the original material.*
2. Many students do not know the actual origin of materials and how material is recycled. Use the teacher resource sheets to sequence the steps from original product to recycling for each material.
3. Draw storyboards with the students about where material comes from. Display stories.
4. Allow students to complete "Where Do Things Come From?" Student Sheet.

**2ND
GRADE**



**ASSOCIATED
FOOD STORES**



Georgia-Pacific



Materials provided by the
City of East Baton Rouge-
Parish of East Baton Rouge
Recycling Office

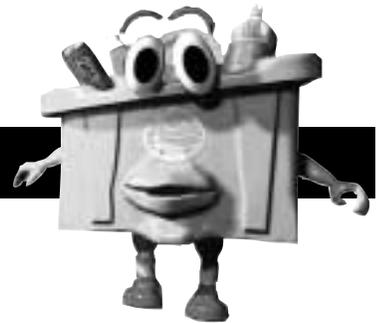
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TEACHER RESOURCE SHEETS

ALUMINUM is made from *bauxite*, an ore or rock that must be mined from the ground. It takes a great amount of energy in the form of electricity to produce aluminum. Nature cannot decompose or break it down, so disposal is a problem. When recycled, aluminum is melted down and then shaped again into new cans and other items. Making aluminum cans from old aluminum takes only 5 percent as much electricity as making cans from bauxite. Recycling aluminum uses 95% less energy than production from bauxite. Recycling aluminum to make cans eliminates 97% of associated water pollution. Recycling aluminum also provides savings in air quality. Aluminum can be recycled indefinitely.

POSSIBLE ALUMINUM PRODUCTS: Coke cans, Pepsi cans, aluminum foil, pie tins. Students will certainly have other ideas.

GLASS is made from soda ash, sand, and lime. It can remain in a landfill indefinitely and does not break down into its organic components. To be recycled it must first be sorted by color and crushed into small pieces called *cullet*. The cullet is melted down into a liquid and then molded into glass containers. Other products made from recycled glass bottles are insulation and road construction materials. Recycling glass instead of making new glass reduces mining wastes by 80%. Recycling glass produces 20% less air pollution than making new glass. Recycling glass uses 50% less water than making new glass.

POSSIBLE GLASS PRODUCTS: mayonnaise jar, pickle jar, vinegar jar, drinking glasses. Students will certainly have other ideas.

TIN-PLATED STEEL CANS are made of iron ore and tin, both nonrenewable resources mined from the earth. The cans will eventually rust and break down, but throwing them away is a waste of valuable metals. In the recycling process, the cans are put into a huge container with holes in the bottom. This container is immersed in a *caustic* solution that dissolves the tin from the cans. Then the steel cans are washed and sold as high-grade steel. The dissolved tin is then removed from the caustic solution by *electrolysis* and made into *ingots*, which are sold to companies requiring tin. Steel recycling saves the US over \$2 billion a year in landfill disposal costs alone. Recycling tin also provides savings in air and water quality while reducing energy costs.

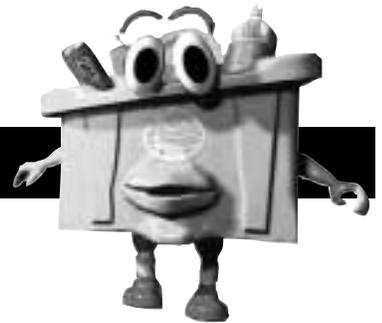
POSSIBLE TIN-PLATED STEEL CAN PRODUCTS: green bean cans, corn cans, pet food cans. Students will certainly have other ideas.

PAPER is made from trees. Paper is recycled by first shredding it into small pieces and mixing it with water. This mixture is beaten into a mush-like *pulp* which flows onto a moving screen through which most of the water passes. The wood or paper *fibers* remain. The fibers are pressed through heavy rollers that remove more water and then are sent through steam-heated dryers. The result is recycled paper. Recycling paper saves more landfill space than recycling any other material. Using recycled paper in manufacturing reduces air pollution by 74%. Recycling paper reduces the need to clearcut forests thereby saving natural resources. Recycling tin also provides savings in air and water quality while reducing energy costs.

POSSIBLE PAPER PRODUCTS: paper for school, newspaper, magazines, scrap paper, cardboard. Students will certainly have additional ideas.

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PLASTIC is made of petroleum. Petroleum comes from the by-products of oil that is mined from the ground. Oil rigs pump oil and gas from the ground. This material is then sent to refineries for processing to create petroleum. Separating plastic by type enables manufacturers to produce higher quality recycled products, or those closer to what could be produced from original materials. PET- soft drink containers, and HDPE – milk containers are the plastics most commonly used in beverage containers and the types most easily separated and recycled. In the recycling process, plastics are melted down and reshaped into the recycled products. Some of the common uses for recycled plastics are fiber, structural molding, and plastic containers. Plastics can also be recycled into bottles, toys, pipes, crates, and a variety of other products. Products of mixed batch plastic recycling include garbage pails, manhole covers, park benches, plastic lumber, and railroad ties. Recycling plastics provides energy savings and helps maintain air and water quality.

POSSIBLE PLASTIC PRODUCTS: milk jugs, detergent containers, juice containers. Students will certainly have additional ideas.

MOTOR OIL is made from oil that is mined from the ground. Oil rigs pump oil and gas from the ground. This material is then sent to refineries for processing. Some of the material ends up as motor oil that is used to make cars run. Motor oil can be collected from people who change the oil in their cars. Either cleaning the used material or re-refining reprocesses motor oil. Cleaned oil can be used as fuel to be burned in asphalt plants or cement *kilns*. Re-refined motor oil can be reused in cars. This is a much cheaper and easier process than drilling for new oil. Recycling oil provides energy savings and helps maintain air and water quality.

ORIGINAL MATERIAL: motor oil

FINAL PRODUCTS: re-refined oil

YARD WASTE includes grass, food wastes, leaves, shrubs, flowers, weeds, wood chips, pine needles, fruit and vegetable scraps and tree clippings. Louisiana currently discards nearly one million tons of yard waste into landfills. Landfills are expensive to maintain and difficult to locate. This yard waste can be turned into compost, mulch and soils through a process called *composting*. Composting is nature's way of recycling. Bacteria, fungi, worms, and insects break down organic wastes into compost. Compost, which is a valuable soil amendment, can be used as fertilizer for landscaping, gardening, or other agricultural uses. These organic materials are easily composted at home rather than being sent to landfills where the material currently takes up as much as 30% of the landfill space. Compost utilizes valuable natural resources instead of wasting them.

ORIGINAL MATERIAL: grass, leaves, shrubs, flowers, weeds, wood chips, pine needles, fruit and vegetable scraps and tree clippings

FINAL PRODUCT: compost, mulch, and soil amendments

Create storyboards with students' help.

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