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Renewable Resources
& Eco-Enthusiasts

WRAP STAR
Green Materials & Smart Design
Campaign to Reduce Packaging
www.MatterOfTrust.org

Want less plastic in our oceans?
BE A WRAP STAR!

Info for Teachers

Overview:

- Discuss packaging materials, unnecessary packaging, plastic trash in the ocean, and the realities of recycling.
- Identify environmentally friendly/unfriendly packaging.
- Re-design existing packaging.
- Present ideas to class.

Part 1: Handout and homework activity:

- Handout describes recycling/composting issues.
- Homework activity is to bring two examples of packaging (one "green" and one "not") to the next class.

Part 2: In-class activity.

- Form groups
- Rate packaging examples
- Discuss results
- Answer post-activity group questions
- Redesign the packaging with the highest score
- Present to class

We'd love to see pictures of your students' work! Please email them to us at team@matteroftrust.org—we'd especially love to see "before" and "after" pictures with the students —and we'll put your photos on our website!

Tons of Trash

So much of what we buy—food, household items, hygiene products, electronic equipment, and much more, comes in wasteful, bulky, non-reusable packaging. Much of this packaging is plastic, which is made out of petroleum—an oil-based, environmentally unfriendly material. In fact, about 8% of the world's oil supply goes toward making plastics.

Other kinds of packaging materials include paper, Styrofoam, and aluminum, which all require energy to produce and create waste. Containers and packaging made up the biggest fraction of American trash in 2007—nearly 78.4 million tons. While half of that trash was recycled, the rest—nearly 40 million tons—was sent to landfills.

What about the trash that doesn't get recycled *or* deposited in landfills? A lot of it winds up in the ocean. In the Pacific, between California and Hawaii, circular currents create a *gyre*, or whirlpool, that traps floating trash in an area the size of Texas. Scientists call it the "Great Pacific Garbage Patch." Much of this trash is plastic. It takes plastic *500 years* to break down, and even then it just becomes smaller bits of plastic—still harmful to the fish, sea turtles, and marine mammals who eat these morsels, mistaking them for other fish and plankton.

What Can We Do?

Recycling is a great way to reuse materials, but it's not as straightforward as many people assume. There are many different kinds of plastics, and not all are easily recyclable.

Look at the bottom of a plastic product. You will see a number surrounded by a triangle of arrows. That number is called the *resin identification code*, and it tells us what kind of plastic the product is made with. Most recycling facilities are able to process code 1 and code 2 plastics (PET and HDPE, respectively). But relatively few communities have the facilities to recycle plastics that are code 3, 4, 5, and 6, so these are often landfilled. In fact code 3 plastic—PVC, or polyvinyl chloride—can be quite harmful if mixed in with other plastics at recycling centers, as PVC can ruin the structural integrity of more easily recyclable plastics.

For these reasons, many companies choose to use materials other than recycled plastic when designing packaging for their products.

Paper will eventually decompose, and so it doesn't persist in the environment as long as plastic does. But recycling paper requires a significant amount of water and energy use. Ideally, compostable materials also biodegrade, leaving no trash and enriching the soil. But they have to be disposed of properly to achieve this effect—very little biodegrading can happen in a tightly sealed landfill. And composting manufactured materials does not harness the energy used to make that material in the first place. Furthermore, very few communities have composting programs.

Many facilities exist to recycle glass and aluminum containers, which have been in use for years. But using glass and aluminum in the first place requires a great deal of energy—for example, glass bottles are heavier than plastic bottles and thus use more energy to transport. And while plastics are becoming more and more commonly recycled, most communities don't recycle at all, or recycle only selectively. For example, no widespread facility can recycle foam polystyrene, or "Styrofoam," a plastic-derived product.

Your Assignment

Take a look around your house and in your trash and recycling. What kind of packaging do you see? Find a package that you think is smart and eco-friendly. Find another that you think is wasteful and bad for the environment. Make sure it is clean and, if it is made with plastic, that it has a number with a recycling sign stamped on it.

Gather into groups of 4 or 5. Each student presents the packaging they brought. Students rate the packaging using the attached chart.

	Item 1: _____	**Item 2**: _____	**Item 3**: _____	**Item 4**: _____
Amount of material: 1 pt: less than avg* see example below 2 pts: average 3 pts: excessive				
Source of Material: 1 pt: entirely recycled 2 pts: some recycled 3 pts: none recycled				
Fate of Material: 1 pt: commonly recyclable (aluminum, glass, paper, plastics #1 and #2) 2 pts: less commonly recyclable (all other plastics) 3 pts: compostable 4 pts: not compostable OR recyclable				
Bulkiness 1-5pts (1 is not bulky at all, 5 is very bulky)				
Ease of opening 1-5pts (1 is really easy to open, 5 is really hard to open)				
Effectiveness of packaging 1-5 (1 is very effective, 5 is not very effective (product might get damaged)				
Reusability 1-5pts (1 is easily reusable, 5 is not reusable)				
Total Points				

San Francisco-based design company, Knoend, produced this lamp, whose packaging turns into the lamp itself.

Post-Project Discussion:

1. Which item received the highest score? Which received the lowest? Did the results surprise you? Why or why not?

2. Pick the item in your group with the highest score and create a better design. Explain why your design is better.

5. Rescore it—How many points did you knock off?

Draw a picture of your new design below:

Sources used for this handout:

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