



Source Reduction

Activity M.o

Grades 7 - 8

STUDENT HANDOUT 1

Name: _____

What is Source Reduction?

Source reduction is a way both individuals and companies can act to reduce MSW. For individuals, “Source reduction” means making decisions about using less of a particular item or about using it at all. Some examples of what individuals can do to reduce what is thrown away at the source include: reduce how much you use of an item, decide whether you need an item at all, purchase and use durable goods responsibly (such as clothing, appliances, and recreational equipment), use a product to its fullest extent before throwing it away (for example, writing on both sides of your paper). One important additional way individuals can accomplish source reduction is by purchasing products that have themselves been source reduced.

The remainder of this lesson is about what companies are doing to accomplish source reduction. For business, “source reduction” means generating less waste in manufacturing and distributing products. It also means designing products that use the least amount of packaging while maintaining product safety and quality and meeting consumer needs.

Of course, not all consumer packaging has been source-reduced as much as possible and packaging in general has become a controversial issue. Yet some companies have spent considerable time, effort and money to reduce product packaging.

Reducing Waste in Manufacturing

Waste means inefficiency, and inefficiency increases the cost of doing business. Therefore it makes good business sense to reduce waste. Many businesses now look for ways to limit or re-use the waste and by-products of their manufacturing processes. This industrial process waste often includes manufacturing scrap and rejected products and packaging.

Designing Responsible Product Packages

Another way to reduce waste is to design product packages differently. Here are six ways that companies are working to reduce waste at the source by changing how packages are designed:

- “lightweighted” containers
- large or “economy-size” containers
- concentrated products
- combination products
- refillable containers
- packages with more efficient “geometry”
- “Lightweighted” Containers

Industry is moving rapidly to reduce the weight of packaging used in products. Companies reduce weight in packages by making them thinner and lighter. This is called “lightweighting.”

Package developers balance the solid waste accomplishments that can be made through lightweighting with the need to provide packages strong enough to meet warehousing and distribu-

tion and home use needs.

Research shows that lightweighting has helped to manage MSW. In a recent excavation of landfills undertaken by “garbologist” William Rathje from the University of Arizona, the total weight of plastic found in landfills – which he determined to be 7% of all the trash there – has remained constant since 1970.

A typical quart-size plastic bottle used for soft drinks sold in 1970 weighs more than a bottle produced today.

Lightweighting like this reduces the amount of material used in a package while maintaining its size and strength.

Lightweighting has taken place not only in plastics but also in the manufacture of paper, glass, steel and aluminum packaging. Aluminum beverage cans are now 26% lighter than they were in 1972. Plastic 2-liter soft-drink containers are 21% lighter than in 1977 and 16-oz glass beverage bottles are now 30% lighter than 10 years ago.

Large or “Economy Size” Containers

Large or “Economy Size” containers are nothing more than products packaged in bigger sizes. Purchasing products in larger containers reduces solid waste as long as the products is not wasted. When food is produced in quantity—for example, in your school cafeteria—the products are purchased in large containers. Each of us can also purchase economy size products for our own use.

Concentrated Products

“Concentrated products” are those from which water has been removed. Some concentrated products have been around a long time. Examples include: evaporated milk, powdered salad dressing and dried spices.

Industry is also responding to concerns about the environment by developing new types of concentrated products. One example is concentrated fabric softener. You keep the large plastic bottle of fabric softener and then buy concentrated refills in smaller containers.

One drawback to concentrated products is that they mean more work for the consumer. Often not a great deal of work is involved, but this is a trade-off.

Combination Products

“Combination products” are those that put together two or more ingredients. An old-fashioned example is sweetened powdered drinks. Some newer products also have been combined so one only has to buy one bottle or package instead of two. Combination detergent and bleach products are examples of this approach, as are combination shampoos and hair conditioners.

Refillable Containers

“Refillable packages” reduce the amount of solid waste because they can be used over and over again. Milk and some of the first soft drinks used to be provided in returnable glass bottles that were refilled by the manufacturer. One drawback to these products was that they were heavier. Heavier products require more energy for transportation and more work for the consumer. On the other hand, refillable packages require fewer resources to produce. Today, you can buy products such as window cleaners and hair sprays that come in packages that you can refill on your own.

Packages with More Efficient “Geometry”

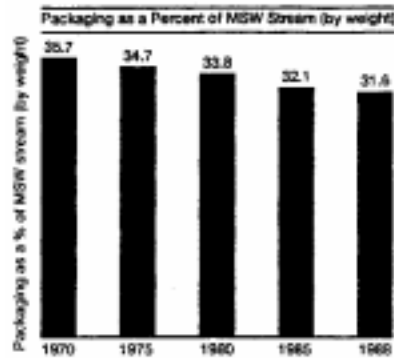
Packages that have more efficient “geometry” take up less space while containing the same amount of product. These products are often packaged in the shape of a cube or a rectangle. Some ice cream, detergent, and mayonnaise products are packaged in this way. Interestingly, plastic packaging often allows products to have more efficient geometry. This is because plastic can be shaped more easily than glass into shapes like a cube or a rectangle.

Sometimes products with efficient geometry are less easy to use because they don’t have handles

due to their square or rectangular shape.

The Result of Source Reduction

As a result of all these kinds of source reduction, the amount of discarded packaging has declined from a high of 35.7% by weight of all material discarded in 1970 to 31.6% of all material discarded in 1988.



Packaging as a Percent of MSW Stream (by weight)

The Importance of Food Packaging

As we seek to reduce municipal solid waste further, we must remember that packaging plays very important roles in assuring the quality of our foods. Packaging:

- assures consumer safety
- minimizes food waste by increasing shelf-life and preventing spoilage
- provides valuable environmental, nutritional and product use information
- permits nationwide, year-round distribution
- helps keep U.S. food costs low
- provides evidence of product tampering
- offers convenience to consumers



SUPERMARKET SEARCH: LOOKING FOR “SOURCE REDUCED” PRODUCTS

Activity M.o
Student Handout 2

Directions: Source reduction in product packaging isn't always easy to find. Sometimes the easiest way is to look for the same type of product in different packages. Take this worksheet with you and look for the different types of source reduction you learned about: “lightweight” containers, large or “Economy Size” containers, concentrated products, combination products, refillable containers and packages with more efficient “geometry.” List ten source-reduced products in the column labeled “Product.” Indicate with a check mark which type of source reduction the product demonstrates. (Hint: Some products may demonstrate more than one type of source reduction!)



FOOD PACKAGING WORKSHEET

Activity M.o
Student Handout 3

Name: _____

An example has been provided for each of the following benefits of food packaging. Add a similar example of your own for each food packaging benefit.

A food package that assures consumer safety:

Example: Milk in plastic or glass containers is safer than milk that comes directly from the cow.
Your example

A food package that minimizes food waste by increasing shelf-life and preventing spoilage:

Example: Meat in plastic packaging from a refrigerated case lasts longer than fresh meat.
Your example:

A food package that provides valuable environmental, nutritional, and product use information:

Example: A cereal whose package lists the percentage of minimum daily adult vitamin requirements in the product provides valuable nutritional information.
Your example:

A food package that permits nationwide, year-round distribution:

Example: Frozen strawberries in a package that makes them available during any season of the year and in any part of the country.
Your example:

A food package that helps keep U.S. food costs low:

Example: Orange juice is less expensive in this country, where it can be purchased in a package, than in a country where oranges are not grown and packaged orange juice is not available.

Your example:

A food package that provides evidence of product tampering:

Example: Yogurt containers with foil inner-seals under the cap show that they have not been opened are safe for you to eat.

Your example:

A food package that provides convenient products for consumers:

Example: Squeezable maple syrup for your pancakes comes in a package that is convenient and less messy.

Your example:



TRADEOFFS IN SOURCE REDUCTION

Activity M.o
Student Handout 4

Name: _____

Directions: For each of the types of source reduction listed below, provide an example of a product that has been source-reduced. (You may take examples that you found in doing the Supermarket Search in Student Handout 2). Then think about some of the tradeoffs that are involved with each source reduced package. We have given you an example to get you started.

Type of Source Reduction	Common Examples	Tradeoffs
“Lightweighted Containers”	<i>Example: Aluminum soft-drink can</i>	<i>Example: Possible loss of package durability</i>
“Economy Size” Containers		
Concentrated Products		
Combination Products		
Refillable Containers		
Efficient “Geometry”		