

WASTE EDUCATION SERIES

Minnesota Extension Service, University of Minnesota

Life Cycle of a Consumer Product

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*We do not inherit the land from our ancestors.
We borrow it from our children.*

—Native American proverb

Every day we make choices that determine how much garbage we will produce. As consumers, we typically see a product for only a short phase of its existence—that phase in which the product is useful to us. We may purchase a Styrofoam™ cup, use it for a hot beverage, and throw it away. We do not see how the raw materials needed for the cup are extracted from the natural environment. We do not see the manufacturing process or the transportation of the product. Then, after we throw the cup into the garbage, it seems to disappear.

To understand how much garbage we produce and its financial and environmental costs, we must consider all phases of a consumer product, not just the phase when the product is useful to us. This publication describes those phases of a product's existence we normally do not see. It

examines a consumer product from its origin in the natural environment to its eventual disposal.

A paper milk carton can illustrate the entire life cycle process: (1) harvesting wood, (2) making paper, (3) processing paper into a labeled container and filling the container with milk, (4) transporting the milk carton to the store where it is purchased and used by the consumer, and (5) disposing of the empty milk carton.

If we see a product only from purchase to disposal, we can easily forget that it was using energy and resources before we purchased it and will continue to do so long after we have disposed of it. We should consider that all products we purchase or use are dependent on energy resources before and after they come into contact with us.

Typically, products can be used many times or recycled, or parts of a product may be reclaimed for other uses.

Perhaps a new use for a product can be found by selling it at a yard or garage sale, sharing it with someone, donating it to a charity, or taking it to a recycling center. In this way, a product continues to serve a useful purpose.

Eventually, repair or recycling may no longer be possible. Then, some form of disposal is needed. Virtually all forms of disposal return the product or its parts back to the earth. Returning a product to the earth occurs when we bury garbage in a landfill, burn combustible materials to recover energy (air emissions and ash disposal), or compost materials (carbon dioxide, water, and "soil-like" materials).

Choosing the best method of disposal will depend on the materials the product is made of and the options available at a specific location. We should choose the disposal method that has the lowest impact or least negative impact on human health and environmental quality.

Life Cycle Steps

Step 1

All consumer products begin their life cycles with a dependence on the natural environment. Some form of energy is always required to extract the natural resources from the earth or its atmosphere. To produce fiber, trees must be grown and harvested. To produce plastic coatings, petroleum and natural gas must be extracted from the earth.

Step 2

Raw materials are processed or refined. For example, wood fiber is processed into cardboard and natural gas is processed into plastic resin. Energy is required for the processing and refining.

Step 3

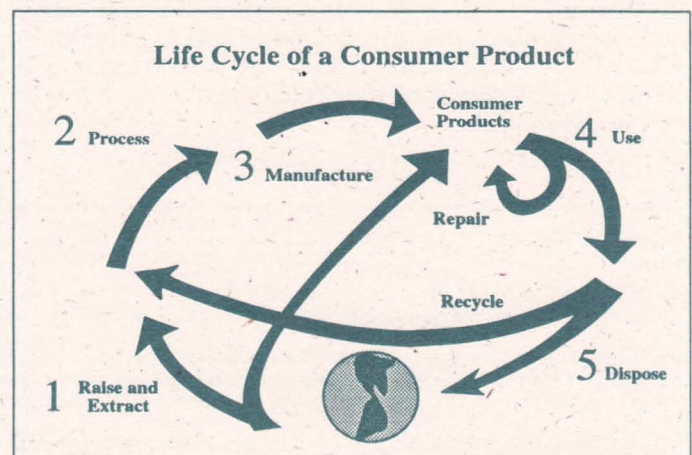
Additional energy is required as processed or refined materials move through the manufacturing and assembly processes.

Step 4

Consumer products are transported to stores (consuming additional energy) and are ready for purchase. Consumers purchase, transport, and use the products. Products remain at this stage as long as they are usable or repairable.

Step 5

The product is no longer of use to us and we dispose of it.



Trade-offs

Each choice we make in the product life cycle involves trade-offs. A product that is more convenient in the short run may use more energy or cause more disposal problems than a product that initially seems less attractive. A product that is less expensive at the point of purchase may have hidden costs in terms of high energy use or low potential for reuse. As consumers we tend to be focused on that portion of a product's life cycle that occurs in our own households. However, if we look at the bigger picture, the relationship between consumerism and natural resources is a critical one. We need to be aware of the trade-offs at each step of a product's life cycle.

Definitions

Ecoconsciousness: How one thinks about the entire ecosystem, including how the ecosystem is affected by the life cycle of a consumer product. To be ecoconscious is to select products and services that will result in less waste and use less energy.

Ecosystem: "Eco" means how living organisms relate to their environment as a whole. A "system" is a group of parts interacting and interrelating together as a whole.

Life Cycle: The total process of creating, using, and disposing of consumer products made from the earth's resources.

Precycle: Precycling is how one considers waste implications before deciding whether to buy, make, or utilize an item or service.

Recycle: The reuse of a material to produce the same product repeatedly.

Reduce: To generate less waste.

Reuse: To use a product more than once.

Reduce, Reuse, Recycle

Reducing unnecessary product purchases is one way to reduce the consumption of resources. Another way to use fewer total resources is to purchase products that can be used many times. Recycling can change our buying habits and save precious resources and energy. Remember that what happens to a product before we obtain it and after we use it helps determine the product's cost and its impact on our environment.

Our consumer decisions determine what wastes are produced and how they are returned to the air, water, and land. Is everything we throw away really garbage?

As consumers, we make choices that affect the earth's natural resources including its energy supplies. Whether our choices have positive or negative effects may depend on our understanding of the consumer product life cycle.

Check Your Ecoconsciousness

Before you buy products, goods, services, and equipment for your home and family, consider these questions:

- ✓ Have you read reliable sources of information about this specific product or service?
- ✓ Do you really need the product or service? If you had to, could you do without it?
- ✓ What is an alternative product or service? Does it have a lower life cycle cost?
- ✓ Are there legal concerns, such as liability, in household hazardous waste?
- ✓ How does this product or service compare in terms of:
 - use of the earth's resources?
 - use of energy throughout the product's life cycle?
 - performance?
 - life expectancy?
 - repairability?
 - durability?
 - what parts can be recycled?
 - cost of disposal?
 - environmental impact of disposal?
 - purchase cost or cost over the life cycle?
 - availability of the product or its materials?

Suggested References on Ecoconsciousness

Hogan, M. Janice, and Beatrice Paolucci. "Energy Conservation: Family Values, Household Practices and Contextual Variables." Michigan State University. *Home Economics Research Journal* (March 1979): 210-218.

Koenig, H.E. and T.C. Edens. *Energy, Ecology and Economics: Elements of a Thermodynamically Based Economy*. Michigan State University, Department of Electrical Engineering and Systems Science, East Lansing, Michigan. 1979.

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This fact sheet is based on a slide set (also available in video cassette format) by the same name. Contact your local county extension office and ask for NR-SS-5568 (slide set) or NR-VH-5634 (video format).

NR-FS-5569-B
1993

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