



# Eco-Link

Linking Social, Economic, and Ecological Issues

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## Consumer Choices: Greening Your Purchases

As consumers we are faced with choices every day. Paper or plastic? Bottled or tap water? Sirloin or pasta? Standard or hybrid? Incandescent or compact fluorescent? It has long been the case that such decisions have environmental implications, but only recently has much attention been given to the environmental impacts of consumer choices.



Today, consideration of the environment in daily living has moved into the mainstream, presenting environmentally conscious consumers with a bewildering array of decisions. So, what can you do to become an environmentally responsible consumer? It turns out that making environmentally sound decisions is both easier and harder than you might think.

### Responsible Consumption

The key to responsible consumption is to think before making a buying decision. The first step is to ask the question "Do I really need this thing that I am about to buy?" If the answer to that question is "Yes" then there are a few more things that are important to consider<sup>1</sup>:

- Is it worth the time that I worked to pay for it?
- Could I borrow, rent, or buy it used instead?
- Is this product over-packaged?
- How long is it likely to last?
- If it breaks, can it be fixed?
- How will I dispose of it?
- Is it made of renewable, recyclable or bio-degradable materials?
- What is its environmental cost?



It can be hard to answer all of these questions, but making a habit of thinking about such things as part of every buying decision can go a long way toward reducing the environmental impacts of your consumption.

<sup>1</sup> These questions are presented in the form of "The UnShopping Card," a credit-card-sized reminder that fits neatly into a billfold or purse, that was developed by the Oregon State University Extension Service (<http://www.cof.orst.edu/cof/extended/sustain/pdf/orderform.pdf>).

## Environmental Costs

The last question - what is a product's environmental cost - is an important question. It can be difficult to answer though, because figuring out the environmental cost, or impact, of any product requires thinking about every step in making it.

For example, what is the environmental cost of a pencil? To understand this we need to think about each of the parts of the pencil: the wood, the lead inside, the eraser at the top, and the metal cap that binds the eraser to the rest of the pencil. Each of these pieces have their own manufacturing processes to consider. We need to think about the mining and processing of iron ore and lead, the gathering of latex from which the natural rubber eraser is made, and the harvesting, sawing, drying, and shaping of the cedar wood. The same thought process is needed for whatever might be used instead - say a ballpoint pen.

Understanding the environmental costs of consumption requires that you give some thought to what you are about to buy, and that you learn a bit about where the things that you use every day come from.

### Where Materials Come From

Think for a moment about everything you have used in the past week: books, clothes, bed, toothbrush, dishes, utensils, house, sidewalk, automobile, locker, desk, computer, and so on. Then think about what these things are made of. Now think about which of those things that you have used are produced by these activities:

- Mining (including drilling)
- Farming (including fishing)
- Forest harvesting



Other than the water and air you use, is there anything else you can think of that doesn't begin with mining, farming or forestry? The fact is that we rely every minute of every day on the basic materials brought to market through the work and ingenuity of miners, drillers, farmers, fishing crews, foresters and loggers.

### Making Choices about Materials

Every basic raw material we use is produced with some degree of environmental impact. In addition, there is no one material that is better than all others for every use. To minimize the environmental impacts of our consumption the trick is to understand the options available for each use, and to then choose materials with the lowest impact for a particular use.

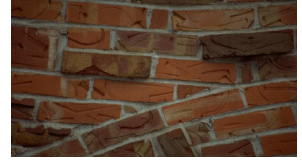
Choosing wisely takes us back to the question of environmental cost. If understanding environmental costs are difficult when considering a pencil, what about the materials used in constructing buildings? It turns out that this is very complex, and special techniques are needed to understand the environmental impacts of building materials. A technique known as Life Cycle Assessment (LCA) has been developed. Using LCA, scientists carefully consider every part of every product from raw materials extraction through manufacturing, use, maintenance, and disposal. All inputs (raw materials, air, and water) are measured as are all outputs (products, by-products, and emissions to air, water, and ground). Careful analysis then considers the environmental impacts of each of these.

LCA results tell a great deal about environmental cost. They can also be surprising. Suppose, for example, you want to build a doghouse for your Great Dane, and you want to do it with the least possible impact to the environment.

## Making Choices About Materials Continued

First question: what material should you build the walls out of?

- Wood?
- Steel?
- Recycled-content steel?
- Concrete block?
- Plastic?



What would you guess is best? The material with recycled content perhaps? At this point you need to be careful. As pointed out a number of years ago:

It isn't what you don't know  
that gets you into trouble.

It's what you know  
that just ain't so.

-Will Rogers

You might, for instance, assume that a material that is recycled should always be better for the environment than a material that is not. But as shown in the Table below, recycled doesn't always mean better.

Net Carbon Emissions in Producing a Ton of Material: 1/ 2/

Material	Net Carbon Emissions (kg C/metric ton)	Carbon Emissions in Comparison to Framing Lumber
Framing lumber	33	-
Medium density fiberboard (virgin fiber)	60	1.8X
Brick	88	2.7X
Glass	154	4.7X
Recycled steel (100% from scrap)	220	6.7X
Concrete	265	8.0X
Concrete block <sup>3/</sup>	291	8.8X
Recycled aluminum (100% recycled content)	309	9.4X
Steel (virgin)	694	21.0X
Plastic	2,502	75.8X
Aluminum (virgin)	4,532	137.3X

1/ Values are based on life cycle assessment and include gathering and processing of raw materials, primary and secondary processing, and transportation.

2/ Source: USEPA (2006).

3/ Derived based on EPA value for concrete and consideration of additional steps involved in making blocks.

All materials, even recycled materials, require energy when they are manufactured. Consideration of carbon emissions is informative because such emissions are a good indicator of fossil fuel use. There is great interest today in reducing releases of carbon because of concerns about the impacts on the earth's climate. Note that the carbon emissions are far lower for wood products than any other product. Carbon emissions associated with production of steel, including 100 percent recycled steel, aluminum, concrete, and plastic are from 6 to 137 times higher than for wood products.

Not only does low energy consumption mean lower carbon emissions, but low emissions of a number of other materials as well. For instance, building a dog house wall out of recycled content steel leads to emissions of suspended solids, non-ferrous metals, cyanide, phenols, ammonia, halogenated organics, and sulfides that are as much as 41 times higher than when the wall is constructed from wood.

At some point in the not-too-distant future, product labels that include information about carbon and other environmental impacts may be used to inform shoppers of the environmental costs of various products. Like the labels on food items that include information about calories, vitamins and other nutrition facts, environmental labels would provide information about total energy consumption, global warming potential, emissions to air and water, and solid wastes.

In addition to differences in emissions linked to various materials, another important difference is that only two products listed in the previous table (framing lumber and medium density fiberboard) are renewable. As long as forests are managed sustainably, the material removed in periodic harvests is replaced again and again by new growth. All other products listed are made from non-renewable raw materials.

The bottom line is that an environmentally conscious consumer thinks about whether a product is really needed before buying it, and then thinks about the environmental impacts linked to that product. In addition, it is important to recognize the limits of intuition in assessing products and to not make assumptions about a product's impacts. Developing awareness of LCA and similar tools are essential to becoming an environmentally smart shopper.

### Glossary of Terms\*

**Framing lumber** - Lumber used as structural members in a house or other building.

**Greenhouse gases** - Compounds found in the Earth's atmosphere that allow sunlight to enter the atmosphere freely, but which absorb heat reflected back towards space. These compounds include water vapor, carbon dioxide, methane, nitrous oxide, and human-made compounds such as gases used for aerosols.

**Halogenated organics** - Highly stable and chemically inert compounds used as solvents in a wide range of industries including metal processing, electronics, dry cleaning and paint, paper and textile manufacturing. Highly useful, these compounds are slow to degrade once they are released into the environment.

**Kg/C** - kilograms of carbon. A kilogram is equivalent to 2.2046 pounds.

**Life cycle assessment (LCA)** - A systematic process to evaluate the environmental impacts associated with a product, process, or activity by identifying energy and materials used and wastes released to the environment. LCA is often used to identify opportunities for making environmental improvements.

**Medium density fiberboard** - a medium weight panel product made of wood fiber and bonded with resin.

**Nonrenewable resource** - total physical quantity does not increase significantly with time and is consequently diminished through use.

**Renewable resource** - supply becomes available for use at different time intervals and in quantities such that present use does not diminish future supply.

**Suspended solids** - Small solid particles which tend to remain in suspension in water.

**Virgin fiber** - pulp produced directly from pulpwood that contains no recycled fiber.

\* A number of definitions based on Helms, J. 1998. The Dictionary of Forestry. Bethesda: The Society of American Foresters.



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