

Chapter 1

Introduction to Packaging

by Marion D. Schafer & Michael R. Williamson This book is primarily about responsible living in a bottled water world. Intended as a text for the Foundational Studies course on ethics and social responsibility, the focus here is on environmental concerns of packaging. This chapter will contain elementary information about packaging, followed by a study of ethical systems and ways of viewing environmental issues in chapters 2, 3, and 4. Most people do not give much thought to packaging unless they are compelled to do so, maybe for reasons of difficulty in handling it. Otherwise, people tend to look at packages only to see the product that is inside, not the package itself. In some ways this is good, because the package exists only for the product that it contains. It is nevertheless important for businesses to think about the need for efficient and responsible packaging, considering environmental impacts of adopting or ignoring certain packaging related choices. Packaging has become an essential part of life today. Without modern packaging, food would spoil and be contaminated, products would be damaged while being transported and handled, many products would be difficult to store and use, and information about products would not be readily available. As true is the fact that packages and packaging have no practical purpose or value without a product that needs it. Functions Ideally, packages must be developed to perform certain specific functions. If a package fails to perform its functions effectively, it is obviously not a proper package for the intended product. The following are the primary functions of a package: • Containment • Protection/Preservation • Information/Motivation • Utility/Ease-of-use/Transportability Containment is the most basic function of a package. Containment describes the ability of a package to hold a product within itself. Every package must be able to contain, or hold something to enable moving it from one place to another. The ability of a package to contain one product does not necessarily mean its ability to do so for another product. For example, a cloth bag may be perfectly capable of containing apples, but is not capable of containing water. Likewise, a cup will contain water, but will not contain compressed air. Thus it is evident that the characteristics and form of the product must be considered when determining which packaging forms and materials are suitable for each product. Protection and preservation take the containment function to a higher level. Protection takes many forms. Protection for an automobile tire may involve

adding material to locations so that the tire sidewalls do not get scuffed while being handled, stored, and transported, or blocking and bracing to hold tires in place so they do not move during transport, or fall and injure those handling them. For pharmaceutical products, protection involves several layers that seal these products in a container—maintaining their sterility, preserves the integrity of the products, and provides tamper-evidence so the purchaser can know that the product has not been altered since manufacture. In addition to protecting the product from harm, packaging may also perform the function of protecting consumers from the product, such as with poisons, pesticides, and other hazardous items. Preservation is critical for most food products to ensure that they do not spoil before consumption. Sometimes preservation can be accomplished by simply choosing certain materials, for instance in case of lettuce salad mix in a bag, plastic that maintains a certain balance between oxygen and carbon dioxide within the package, to maintain freshness. Product information is important for many reasons. Basic information informs the consumer about the product that is contained in the package. It can be as simple as a label on a can that says “beans” or as elaborate as that of a pharmaceutical package with a label that states the brand name of the drug, the generic name, the manufacturer, the quantity/amount of drug in the package, the date of manufacture, the lot number of the batch, the last date by which the product can be safely used, list of active ingredients and amount of each, list of inactive ingredients and amount of each, recommended dosage and interval between doses, cautions for users, and a fold-out pamphlet that lists all the information about the drug to comply with FDA requirements. Motivation takes information to another level. Motivation involves making the package attract the attention of the consumer to entice a purchase. There are several things that provide motivation: type font and size, type color, background colors, pictures and drawings of the product and of other images, orientation of images and printing, shape of the package, size of the package, and many other factors that help the package stand out amidst the competition so the consumer will want to purchase this product instead of others. Utility, which also implies ease-of-use or transportability, is the function that makes a product more useable for the consumer. Examples include indentations formed into a bottle that makes it easier to hold without slipping out of the hand, a screw-on cap or flip-top cap that allows the consumer to reseal the bottle if the product is not used at one time, a handle that makes it easier to carry or pour from heavy containers, a pour spout on a carton or jug, and other such features. These features are all built into the package

so that the product is more user-friendly. It is important to understand that it is possible to have packages that include all four of these functions, but not all packages are required to perform all four. It is critical that every package contains its product, even if that is all it does. For example, a pitcher may be used as a package that will hold liquid and allow it to be transported from one place to another. For a consumer who needs more than mere containment, protection may be added to the packaging function. A sealable plastic bag can add a level of protection for a sandwich so that it does not dry out while being stored or transported. It can also help in preserving the sandwich by keeping out germs and other harmful things. Date of production and type of sandwich printed on the bag serves the function of information. If this bag can be opened and then resealed, the criterion of ease-of-use is fulfilled. Definition At this point, a definition of packaging is appropriate. A proper package must perform its intended functions throughout its useful lifetime. Thus, the following is offered as a definition of proper packaging: Packaging is a system that provides containment of a product, protection of a product, and from a product, information about the product, and features that provide ease of use and transportability for a product, from the point of manufacture—or the initial placement of the product into the packaging system—to the point of final use—or the final separation of the product and the packaging system.

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Significantly, the above definition includes the four functions explained above, while adding the parameters for how long the packages are expected to perform those functions. If the package fails to perform its functions throughout the entire time for which it is needed, it has failed as a package and must be changed.

Materials There are many materials used in packaging systems. Commonly used materials for packaging may be divided into some basic categories: a) Materials made from renewable item such as paper, paperboard, and corrugated paperboard made from plant and tree fibers, b) Materials made from mined minerals, such as steel made from iron ore, aluminum made from bauxite ore, and glass made from silica sand, c) Materials made from non-renewable resources, such as plastics made from petroleum and natural gas. Additionally, there are now plastics made from renewable resources like corn and soy. Disposal Packaging always has a limited lifetime. Since the usefulness of any package is tied to a product, when it is no longer needed for the product, it is necessary to make a decision about what to do with the package. The options available for facilitating this decision follow along with the list that is widely known as the “Three Rs,” which are reduce, reuse, and

recycle. Most people seem to focus only on the last one—recycle. It is important to know what these three terms mean in order to understand why they are stated in the order mentioned. To “reduce” means to use less packaging, or to use less packaging materials. This sounds simple on the surface—just use less—but it is not actually so. The amount of packaging and packaging materials needed to efficiently perform the necessary functions for the product depends on the form and nature of the product.

To “reuse” can mean several things. A package can be used to hold something else, thus getting a second life. A bag can be used to carry other things, or to hold trash for disposal. A bottle can be reused to hold another liquid. A box can be used to store things, or when moving to a new home. All these help a package go beyond the single use it was designed for. To “recycle” normally means to send packages to a facility that will break down the package so that it can be remade into a new package, or some other item. For plastic soda bottles, that could result in new bottles or containers for other materials, or the plastic could be made into other items, such as toys or furniture. For boxes and cartons, the pieces are put into a large vat with water and a rotating arm. In this vat, the boxes are decomposed into the cellulose fibers. These fibers are then processed to form them back into paper-based materials again, and formed into new boxes or cartons. A fourth “R” is “recover”. To “recover” usually means to recover the energy contained in the packaging material by burning and harvesting the heat energy to use for various purposes, such as generating electricity and heating buildings. Basic Understanding of Packaging by University Students Students at a university typically have the following knowledge about packaging and the environment. While they have been exposed to environmental issues related to specific packaging, they often do not understand the complexity of the packaging industry. The general understanding is for what is good and what is bad for the environment. Students overwhelmingly believe that cardboard products are good for the environment due to the wide recyclability of the product. Students also feel that recyclable materials are good for the environment without any consideration for the resource depletion or other environmental effects they may cause.

One particular product that students feel is bad for the environment is plastic, due to the publicity of the garbage island in the Pacific ocean and the adverse effects on wildlife. Many people are now envisioning plastics as bad for the environment, while other products such as the aluminum can are seen as good by students who feel that when recycled, the can has an overall positive effect. Websites about

Packaging http://www.packagingdigest.com/sustainable-packaging/4-sustainable-truths-impacting-food-packaging-today-2018-03-29?ADTRK=UBM&elq_mid=4131&elq_cid=27738 http://www.packagingdigest.com/personal-care-packaging/loreal-paper-bottle-is-easy-on-the-earth-but-tough-in-the-shower-2018-04-30?ADTRK=UBM&elq_mid=4131&elq_cid=27738 https://interestingengineering.com/new-patch-can-detect-harmful-bacteria-in-packaged-food?_source=newsletter&_campaign=oLr314m7pQlym&_uid=QBeXYloayK&_h=b774cfc62da2f61c3cc131dbbabc04e24beea7ef&utm_source=newsletter&utm_medium=mailing&utm_campaign=Newsletter-06-04-2018 https://interestingengineering.com/the-engineering-behind-the-modern-glass-bottle?_source=newsletter&_campaign=yIEx7VJPe-VQgp&_uid=QBeXYloayK&_h=b774cfc62da2f61c3cc131dbbabc04e24beea7ef&utm_source=newsletter&utm_medium=mailing&utm_campaign=Newsletter-03-04-2018 https://www.youtube.com/watch?v=HpvMdShE_m8 <http://www.conicet.gov.ar/2015/05/14/botellas-descartables-para-casas-sustentables/> <http://www.packagingdigest.com/sustainable-packaging/com-postable-packaging-claim-doesnt-wow-most-brand-owners-2016-03-16?cid=nl.x.pkg04.edt.aud.packdgst.20160401>

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Questions

1. What is packaging?
2. What makes a package good, in your opinion?
3. What are some examples of poor packages, in your opinion?
4. What more would you like to know about packaging that you do not understand now?
5. Which of the packaging websites listed did you find most interesting? Why?
6. What ideas do you have to improve packaging?