Packaging Waste Management

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When once packaging was as simple as using a cardboard box, in today's sophisticated society thousands of packaging components have been introduced to meet the needs of demanding consumers. Consequently, a huge amount of waste is created by the multi-billion dollar packaging industry. However, the industry is aware of its responsibility to both the consumer and the environment, and is constantly striving to improve the waste situation and rectify the problem.

Defining the Problem

It has been estimated that Americans generate more than 150 million tons of waste each year. While this figure by itself is high, it does not take into account the millions of tons of waste that are generated by industrial operations. Of the 150 million tons of residential waste generated per year, 60 million tons represent paper and paper-related products, 14 million tons are glass and glass products, 13.5 million tons are metal (steel, aluminum, etc.), 10 million tons represent plastic products (film, sheet, containers, molded products), and 2 million tons are of a mixed, multi-material type. The balance is composed of every conceivable type of waste excluded in the previous categories.

Estimates indicate that approximately 33 percent of the 150 million tons of waste generated is waste that is associated with packaging and related materials.

The current packaging waste problem can be broken down into six components:

1.) The growth in municipal waste and one-way packaging;
2.) Consumer demand for convenience packaging;
3.) The trend toward outdoor living which requires special packaging;
4.) The preference for fast-food packaging;
5.) The accompanying increase in littering; and
6.) The decreasing municipal and state budget funds which have shifted the cost of waste disposal to industry.

Are Landfills the Answer?

New disposal capacity in landfills cannot keep pace with the increasing volume of waste. Projections indicate there will be a 20 percent increase in the rate of solid waste production within the next 10 years. With packaging accounting for 33 percent of the weight or 60 percent by volume of the total waste stream, it is no wonder that the packaging industry is viewed as the "prime culprit" of the solid waste problem.

The problem created by years of indiscriminate filling of landfills is now out of control. Landfill space is becoming scarce. Landfills are being constructed farther away from metropolitan population centers. Toxic products from landfills are leaching into our underground streams contaminating our food and water supplies. And the basic premise — "We need landfills, but don't put them in my backyard" — is the order of the day.

Challenge to Industry

Most of the industries that supply the various packaging components are actively working to reduce the amount of packaging waste entering the solid waste stream. These projects are being carried out in both corporate and independent laboratories in conjunction with academic institutions. In an attempt to reduce packaging waste, the aluminum, glass, plastic, food and beverage industries have all become involved in the need for and the creation of "recyclable and environmentally friendly" products and packages for the consumer.

The reduction of large amounts of scrap (glass, plastics, metal, paper) and off-grade materials produced by basic manufacturing concerns and the elimination of excess components for a specific package are resulting in "source reduction." Discovering new and unique applications for packaging waste is continuing at a rapid pace. Paper companies are constantly developing new technologies to recycle paperboard, which was formerly sent to landfills. Waste plastic is now recycled into useful products and is equal in quality to virgin polymer.

Recycled plastic containers have now become a large part of the recycling industry. The recycling of aluminum cans has increased steadily in the past 30 years, to the point where almost 70 percent are now recycled to become new cans. Glass companies have long recycled glass for the manufacture of new containers.

The packaging industry has been singled out for criticism, based on the huge amounts of packaging waste we see every day. This false image is based on our society's lack of knowledge of the importance of packaging in our industrial complex. The huge volumes and cost of packaging waste disposal have also contributed to this erroneous image. Through their efforts in packaging reduction, recycling and reuse, companies representing the paper, plastic, metal and glass industries have somewhat dispelled the mistaken image inherited by the packaging industry.

Environmentalists, the consuming public, Congress and state legislators are looking to the packaging industry for a significant reduction in packaging waste materials produced and the maintenance of higher levels of recyclable products and packaging components. The creation of new landfills was once viewed as a possible solution to the problem; however, the possible leaching of toxic by-products into ground water reduced this option's viability.

Incineration

Another alternative to coping with the packaging waste problem is the use of incineration to eliminate the created waste. This process, however, has met with stiff opposition and rightfully so, when the by-products of incineration are reviewed. These products, entering the atmosphere, play havoc with the air we breathe. At present, projects are being studied to use discarded packaging as a fuel that

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would provide heat to run boilers, etc. Economic criteria will determine whether this is a feasible process.

Bio- and Photodegradation

In the past few years, the creation of bio- and photodegradable packaging products has been viewed as the ideal solution, but this has proven to be only a fantasy. It has been shown that bio- and photodegradable products do not break down as specified and theorized by the suppliers of these products.

Recycling

It is a monumental waste to create a product, use it once and then discard it. There is a limit to the amount of raw materials we have available throughout the world. Therefore, to continue to squander these resources, depriving future generations of these raw materials, is definitely not the direction we should pursue.

The process of recycling is accelerating annually, with a realistic goal of 25 percent of solid waste to be recycled this year and beyond, due to major developments in marketing, technology and transportation.

Recycling can be broken down into the following phases:

1.) Packaging waste is picked up at residential and industrial sites;
2.) It is separared into different types of wastes (metal, plastic, paper, etc.);
3.) It is transported to centrally located facilities where it is automatically sorted to the type of waste within a single category, such as types of plastics, types of metals, etc.;
4.) It is then processed and returned as recycled packaging raw materials to various suppliers.

During the 1970s, hundreds of millions of dollars were spent on resource recovery studies and projects. Many facilities were built, and while some succeeded, many failed. These failures were due in part to technical flaws, economic inconsistencies, institutional problems and environmental emissions.

Sometimes highly technical facilities were created and were successfully started up, but they produced a product for which there was no existing market. What is required is a working cooperation among packaging material manufacturers, converters of various materials and the ultimate users to cope with the environmental problems created by packaging waste.

Legislation

The development of legislation to regulate packaging waste has evolved into a very important factor that influences the actions of suppliers and manufacturers in deciding what type of packaging components are to be used, under what conditions and for what products. Hopefully, some order will come from the chaos created.

On March 29, 1988, legislation was passed by Suffolk County, New York, to bar non-biodegradable food packaging and plastic food utensils. The law took effect on July 1, 1989, and made Suffolk County the first municipal entity in the nation to ban this type of packaging. The intent of the legislation was to reduce the total amount of waste, and was based upon the reasoning that, at the time, packaging materials that were biodegradable were thought to disintegrate into fragments and ultimately end up as carbon dioxide and water with no toxic effect on humans, animals or the environment.

Minnesota introduced a one cent per package waste reduction initiation fee on distributors of finished packages or packaged goods. The tax was to be placed on all containers except those that are recyclable or made from 50 percent by weight of recycled material. Vermont introduced a five cent tax on each package created at the wholesale level, if the specific packaging involved and sold in the state is less than 50 percent recycled.

New Jersey advocated a two-cent deposit on plastic beverage bottles. Under this provision, if the rate of plastic beverage bottle recycling does not equal that of glass bottles, the legislature could impose the partial bottle bill requirement on plastics. Maine signed a bill into law that prohibits the use of nondegradable individual food and beverage containers by food service installations, at state facilities or state functions. Maine also passed a bill that prohibits the sale of foam products containing chloroflurocarbons. This has now become national policy.

A few years ago, Iowa signed legislation that provides sales and use of tax incentives for the use of degradable packaging materials.

Associations

Legislation within the last three years has spurred efforts by various suppliers and manufacturing associations and companies to work on and carry out projects that include reducing the amount of packaging waste and responding to the various regulations created by legislation. The Society of the Plastics Industry has created a coding system for plastic containers according to resin type. The objective is quite simple: By using the codes, recyclers will be able to segregate different types of plastics, thus intensifying container recycling.

Another important association formed to work on the reduction of packaging waste is the National Association for Plastic Container Recovery, a coalition of chemical and packaging companies that have joined in a developmental campaign to encourage the recycling of plastic bottles. All of these activities are in response to the attacks on the packaging industry.

Possible Solutions

What must be done to address the problems for a more conscientious packaging program and to promulgate an effective packaging

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waste management protocol? I submit that it will require all of the following steps:

1.) We must use recyclable components when possible, and when not possible, use bio- and photodegradable packaging;
2.) The recycling rate for packaging materials must be improved;
3.) Consumers must be educated about the advantages of bulk buying, which helps eliminate small-size product packaging;
4.) The consumer must learn to reject over-packaged products;
5.) We must learn how to do without products sold in single serving units and seek refillable containers instead;
6.) We must use reusable tote bags to eliminate the use of paper bags;
7.) We must try to buy only products in containers and packages that are constructed of recycled materials or those that can be recycled;
8.) Packagers must reduce the volume of multi-material packages that are difficult to recycle;
9.) We must sacrifice the convenience of throwaway packages;
10.) The packaging industry must provide the consumer with sound, intelligent packaging choices.
11.) It is the responsibility of government regulators to ensure that they do!
12.) Solutions will demand a change in our lifestyles.

Conclusion

In my opinion, the process of recycling stands out as a logical and realistic approach to the packaging waste problem. The reuse, through recycling, of various materials that go into packaging is both reasonable and economically feasible. The directions we take now will surely affect future generations, our environment, our health and our ability to exist and cope with nature for years to come.

What faces us, in the very near future, is the need to reduce, recycle and to regulate packages and available packaging materials and processes. The price of a product will reflect its cost of disposal. The direction we take will require thought, review and analysis of existing data and the determination to succeed in solving the waste problem.□

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