



PDHonline Course C318 (8 PDH)

Reducing Solid Waste

Instructor: Jim Newton, P.E., DEE

2020

PDH Online | PDH Center

5272 Meadow Estates Drive
Fairfax, VA 22030-6658
Phone: 703-988-0088
www.PDHonline.com

An Approved Continuing Education Provider



Introduction

Until recently, you might not have paid much attention to the municipal solid waste¹ your company produces. Many businesses have been content simply to establish and manage an efficient system for removing trash. Times have changed, however, and so has waste management. In many areas of the country, companies are seeing a dramatic increase in the complexity and costs of managing their waste. At the same time, public concern over the effects of all this waste has grown significantly. Today, more and more customers are taking environmental considerations into account when purchasing products and services.

In response, innovative companies are incorporating waste reduction principles into their daily operations. What exactly is waste reduction? Waste reduction includes all actions taken to reduce the amount and/or toxicity of waste requiring disposal. It includes waste

prevention, recycling, composting, and the purchase and manufacture of goods that have recycled content or produce less waste. Some companies are adopting simple waste reduction options such as reducing paper consumption through the use of electronic mail. Other businesses are reviewing their entire operation to identify and implement as many opportunities for reducing waste as possible. Whether simple alterations or large-scale initiatives, companies are finding that waste reduction offers impressive dividends,

The Benefits of Waste Reduction

In addition to saving money through lower waste removal costs—sometimes thousands of dollars annually—waste reduction makes good business sense in other ways, too. Waste reduction can help reduce expenditures on raw materials, office

Waste Reduction Approaches

- *Waste prevention, or source reduction, is the design, manufacture, purchase, or use of materials and products to reduce the amount and/or toxicity of discarded waste.*
- *Recycling is the collection and use of materials that would otherwise have been discarded as the raw materials in the manufacture of new products.*
- *Composting is a natural process by which food scraps, yard trimmings, and other organic materials are collected and allowed to decompose under controlled conditions into a rich, soil-like substance called compost.*
- *Purchasing is the procurement of products made from recycled materials and/or designed to result in less waste after their useful life.*

¹For the purpose of this guide, municipal solid waste includes all materials typically disposed of in dumpsters and removed for offsite disposal by private or municipal haulers.

supplies, equipment, and other purchases. Streamlining operations to reduce waste often can enhance overall efficiency and productivity as well. Furthermore, waste reduction measures can help demonstrate concern for the environment, increasing customer loyalty. For many companies, therefore, waste reduction is rapidly becoming an important component of their long-term business planning,

Waste reduction can help protect the environment, too. Waste reduction slows the depletion of natural resources, helps reduce pollution associated with the extraction of raw materials and the manufacture of products, and conserves valuable landfill space. Some waste reduction efforts also serve to reduce hazardous constituents in solid waste.

Waste Prevention

The most effective way to reduce your company's waste is to generate less in the first place. Companies can adopt a wide range of waste prevention strategies, including:

- Using or manufacturing minimal or reusable packaging. **Encourage suppliers to minimize the amount of packaging used to protect their products or seek new suppliers who offer products with minimal packaging.** Work with suppliers to make arrangements for returning shipping materials such as crates, cartons, and pallets for reuse. In restaurants and company cafeterias, using bulk food and beverage dispensers instead of individual-serving containers also will help prevent waste. (When opting for reusable containers, be sure to take steps to ensure proper hygiene is maintained.) In addition, examine the packaging used for your own products to determine if it is possible to use fewer layers of materials or to ship merchandise in returnable or reusable containers.
- Using and maintaining durable equipment and supplies. **Purchase quality, long-lasting supplies and equipment that can be repaired easily, and establish regular**

Johnson & Johnson Cashes In On Waste Reduction

Long-term waste reduction efforts at large companies can yield big savings. Johnson & Johnson, a Fortune 100 company primarily in the business of manufacturing health care products, began developing its waste reduction program in 1988. Since then, the company has reduced its packaging by 2,750 tons per year, including a reduction in its use of paper by 1,600 tons, plastic by 1,000 tons, metal by 100 tons, and other materials by over 50 tons. Over the first 2 1/2 years of the program, these reductions saved Johnson & Johnson an estimated \$2.8 million in material costs alone.

The company began its program by comprehensively reviewing its product packaging, looking for ways to cutback on the amount of materials it purchased, as well as the amount of waste associated with the manufacture and use of these products. One measure Johnson & Johnson adopted was to reduce the weight of paper used to package one of its gauze products. Since millions of these particular products are sold every year, the company realized that even a small change would make a big difference. Simply by changing from 30-pound paper to 28-pound paper, Johnson & Johnson realized some dramatic results: a reduction in waste of 115 tons of paper, saving \$450,000 annually.

Johnson & Johnson also has initiated more complex waste prevention initiatives. In one example, the company eliminated an aluminum pouch that surrounded a plastic film layer used to contain medical sutures. Since doctors and nurses used the pouch as part of their standard sterilized procedures, Johnson & Johnson worked with a health care organization to develop a new procedure that would retain a sterile environment without the need for the aluminum pouch. This coordination with the users of the product paid off, saving Johnson & Johnson 83 tons of aluminum foil and \$300,000 in material costs each year.

Before You Throw It Out...

Often, companies dispose of materials that other businesses, nonprofit organizations, or community groups could use in their operations. Instead of being thrown away, these materials can be traded, donated, or sold.

Materials exchanges are an effective waste reduction measure your company might want to consider to transfer items that would otherwise become waste. Materials involved in these exchanges include building supplies, manufacturing remnants, old equipment, and many other items. A company producing animal feed, for example, might use stale baked goods from a bakery as a feed supplement. The plastic wrapping used to protect paper shipments to printing companies typically gets tossed in the dumpster. In a materials exchange, instead of paying for its disposal, a company could give it to a local plastic bag manufacturer.

Your company also might participate in donations programs, giving away items such as office equipment and building supplies to charities and other nonprofit organizations. Some donations programs specialize in food donations,

Increasingly, businesses and state and local governments across the country are developing or participating in these kinds of programs. Contact your state or local solid waste or environmental agency for information on tapping into these networks (see Appendix B),

maintenance schedules for them. These items will stay out of the waste stream longer, and the higher initial costs are often justified by lower maintenance, disposal, and replacement costs. In addition, these items are replaced far less frequently, offering further cost savings.

- Reusing products and supplies. **Using durable, reusable products rather than single-use materials is one of the most effective waste prevention strategies. Consider adopting simple, cost-effective measures such as washing and reusing ceramic mugs in place of disposable cups, Another idea is to reuse common items such as file folders and interoffice envelopes.**
- Reducing the use of hazardous constituents. **Often, substitutes for the standard cleaning solvents, inks, paints, glues, and other materials used by graphics and maintenance departments are available free of the hazardous ingredients that otherwise could end up being disposed of with the rest of your company's solid waste, Ask suppliers to direct you toward reformulated products such as toners with no heavy metals and water-based paints and cleaning solutions.**

- Using supplies and materials more efficiently. **There are many strategies that your company can adopt to reduce waste and conserve materials, including double-sided copying. In addition, purchasing and inventory practices that generate waste unnecessarily can be eliminated, For example, some companies might order large quantities of an item to receive a discounted unit price, only to have a portion of the order end up unused and discarded, Be cautious about over-ordering products with a limited shelf life.**

- Eliminating unnecessary items. **When reviewing your company's operations for opportunities to reduce waste, don't overlook the obvious. Your company may routinely use items that contribute little or nothing to your product or service. A number of effective waste reduction measures may involve simply eliminating the use of unnecessary materials and supplies,**

While most of these waste prevention strategies involve daily facility operations, manufacturers also can consider lowering costs and preventing waste" by altering the design of products or changing their manufacturing processes. Among the strategies to consider are:

- Using less raw material in a product that you manufacture.
- Avoiding or minimizing the use of hazardous substances in your manufacturing processes.
- Increasing the life span of your products by making them more durable and easier to repair.
- Cutting back on the amount of packaging associated with your products.
- Making your products' packaging reusable.

Recycling

The next preferred alternative for waste reduction is recycling. Recycling offers businesses away to avoid disposing of the waste that cannot be prevented. Many businesses are collecting bottles, cans, paper, corrugated cardboard, and other materials for recycling. If your company is interested in recycling, you will need to design a system to collect the recyclable materials. In many cases, these items also must be sorted and stored. Sometimes a company is responsible for transporting the collected materials to the recycling facility, too. It might be possible, however, to contract with your waste hauler or a local recycling company so that it is responsible for cleaning, transportation, and other steps in the recycling chain. Participation in

existing municipal collection efforts also might be an option.

composting

composting and "grasscycling" are other effective ways to reduce the amount of waste materials that your company must dispose of. Simply by leaving grass clippings on the lawn, your company can significantly reduce waste that would require management and disposal, while conserving nutrients and reducing the need for fertilizer. Companies with other yard trimmings such as leaves and branches may also consider collecting them into a pile and composting them on site. Such programs typically require limited space and attention. In some cases, food scraps, mixed paper, and other organic matter may also be composted with yard trimmings.

composting can make a significant contribution to achieving your company's waste reduction goals, especially if organic waste comprises a large proportion of its solid waste. In addition, the resulting compost can be used on company grounds as a soil amendment or mulch. If the quality of your compost is high enough, you might also be able to sell it to help cover expenses.

Environmental Practices Can Enhance Public Image

Waste reduction can be an effective way for your company to demonstrate its environmental awareness. At College Park Bicycles, a small bicycle retail and repair shop in College Park, Maryland, recycling and reuse have long been a priority. In the past few years, however, the store has started promoting waste reduction in the community, helping residents protect the environment and generating positive publicity in the process.

Over the years, the owner of College Park Bicycles and his 10 employees have devised dozens of creative, cost-saving ways to reduce waste, from reusing old inner tubes to encouraging vendors to minimize packaging whenever possible. In 1988, the shop had an opportunity to spread the message into the community. In cooperation with the county government, College Park Bicycles organized a contest to promote aluminum can recycling. The shop offered prizes to the children who dropped off the most cans at the store, eventually collecting a total of 34,000 cans for recycling.

The shop has received two awards from a county-sponsored civic group interested in promoting responsible solid waste management for its role in sponsoring the contest. In addition, the company has earned praise throughout College Park for its internal and community-wide efforts. The waste reduction efforts at College Park Bicycles saves the company several hundred dollars each year and provides immeasurable earnings from good will.

If your company is interested in composting, assistance can often be obtained from state solid waste or environmental agencies (see Appendix B); contacting these agencies is particularly important in those states where standards for composting have been established. These agencies, as well as county extension services, also can be helpful in identifying new composting techniques and equipment. Businesses also might

participate in municipal or county composting programs. Contact your local department of public works for more information.

Purchasing

Many waste prevention activities will invariably change the way you purchase supplies and equipment. For example, a switch to reusable

Reducing Waste Cuts Disposal Costs

The reductions from waste prevention, recycling, and other measures can be impressive. In four years, the Brown and Sharpe Manufacturing Company, a multinational manufacturer of precision measuring tools, cut its Rhode Island plant's annual waste disposal rate by 60 percent—from 400 to 160 tons. At the company's headquarters, a 380-employee facility in North Kingstown, a comprehensive waste reduction program was launched in 1988. Through the program, the company now saves over \$12,000 a year in disposal and transportation fees, as well as several thousand dollars in annual purchasing costs.

Brown and Sharpe began by zeroing in on the largest components of its waste stream. After discovering that wooden pallets and shipping crates account for over half of the company's annual discards by weight, Brown and Sharpe decided to reuse most pallets that arrive with incoming shipments, thereby eliminating the need to buy new ones. Irreparably damaged pallets and crates are sent to a New Hampshire mill, where they are burned to create steam for power. Shipping the wood to the mill costs two-thirds less than the cost of landfill disposal.

As another way to reduce packaging waste and save money, Brown and Sharpe no longer throws away the mounds of foam packing peanuts that come with most deliveries. Now, after an incoming shipment is unpacked, the peanuts are transferred into 55-gallon drums lined with plastic bags, which then are sent to the shipping department for reuse. The company reused more than 190 cubic yards of packing peanuts in 1992, saving several hundred dollars in avoided purchase costs.

Brown and Sharpe's paper recycling program has further reduced the company's waste. Nearly 35 tons of paper were recycled in 1992, more than half of which was white and colored office paper. Since the recycling company pays Brown and Sharpe for this high-quality paper, the paper recycling program pays for itself.

Simple Measures Can Help, Too

Waste reduction does not necessarily entail extensive planning and effort, as demonstrated by Taylor Equipment Company. Four years ago, this freezer equipment distributor in Forestville, Maryland, realized that it could reduce the amount of waste paper it discarded with one simple purchase: the company bought a paper shredder for about \$250 and began replacing foam packing peanuts with shredded waste paper. Taylor is saving \$1,500 to \$2,000 a year by reducing its waste disposal costs and avoiding the costs of purchasing the packing peanuts. Other simple steps the company has taken include reusing shipping crates it receives to package its own products and giving delivery pallets away as scrap wood.

plates in your cafeteria will eliminate the need to buy single-use plates. In addition, purchasing products with recycled content is another important element of waste reduction. An important complement to your recycling efforts, buying recycled products helps ensure that collected recyclable will actually be used in new products and kept out of disposal facilities. Furthermore, when your company buys a product or package that was manufactured with recycled

material, natural resources and energy often are conserved. And many companies have found that recycled products are now priced competitively with products made from virgin materials. To be sure your company is purchasing recycled products whenever possible, it might be necessary to review purchasing specifications to ensure that they do not unnecessarily discriminate against products made from recycled materials.

About the Guide

The remainder of this guide presents practical information to help companies design and implement a waste reduction program. To assist companies in gathering the necessary information, a series of worksheets are included at the back of this manual. Each worksheet is introduced in the text of the guide. The purpose of these worksheets is to help companies determine the types and amounts of waste generated by their company and identify potential waste reduction options. Companies need only complete those worksheets that are appropriate for their waste reduction needs.