# Waste Reduction and Recycling:

## A Guide for Commercial, Institutional and Industrial Establishments


Prepared by the
**Professional Recyclers of Pennsylvania**

Supported by
**Pennsylvania Department of Environmental Protection**

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# Acknowledgements

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As one famous person once said, plagiarism is the sincerest form of flattery. Many organizations have prepared excellent guides for waste reduction and recycling in commercial establishments, and it would be foolish to ignore their efforts. We tried to select the best of what others had to offer, tailor it to Pennsylvania, add recently obtained information, and edit the text where appropriate. We acknowledge the following organizations whose efforts have contributed to the development of this guide:

- The **Lancaster County Solid Waste Management Authority** (Pennsylvania), whose ***Waste Reduction/Recycling Manual for Commercial, Industrial and Institutional Operations in Lancaster County, Pennsylvania*** and ***Developing an Office Paper Recycling Program*** served as the models for this guide. In most cases, we shamelessly copied their format, which was very clear and easy to follow.

- The **Ohio Department of Natural Resources'** ***Waste Reduction Guide for Ohio's Business and Industry.***

- The **Project Team for the Metropolitan Commercial/Industrial Waste Management Guide's** (Minnesota) ***Resourceful Waste Management*** contributed much of the material contained in the "boxed" tables throughout the text of this guide, as well as information about procurement and resources.

The information gleaned from these publications was invaluable in preparing this guide and the authors are eternally grateful for having the opportunity to use these excellent source documents.

On behalf of the Professional Recyclers of Pennsylvania
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# Foreword

Solid waste professionals and environmental groups for several decades had been adamant in their statements that the United States was heading for a solid waste management crisis. Most problems were ignored because disposal was generally easy and inexpensive, and the attitude seemed to be one of "out of sight, out of mind." It wasn't until the late 1980's, however, that the international travels of the Mobro - the infamous "garbage barge" - began to draw a great deal of public attention to the problem. Since that time, solid waste generation has increased, the number of permitted disposal facilities has decreased, the cost of disposal has risen and there are increasing concerns regarding environmental damage resulting from waste disposal. All these issues have combined to heighten societal awareness of the need for a change in the status quo. This desire to change remains even though more recent indications are that disposal capacity appears to be adequate and prices have begun to level off and even decline.

The U.S. Environmental Protection Agency has adopted a hierarchy of solid waste activities which calls for reducing the amount of waste generated as its first priority, reusing or recycling as much of the remaining waste stream as possible, and relying on ultimate disposal facilities (ie. landfill or incinerators) only as a last resort. Pennsylvania was one of the first states in the country to address solid waste management on a holistic basis by adopting both very stringent landfill permitting regulations and mandatory recycling legislation. The landfill regulations have been a major factor in the increased cost of disposal while a goal of the recycling law is to remove material from the waste stream in order to extend the useful life of landfills and to assist in stabilizing costs.

While much of the public recycling focus has been on the residential sector, commercial, municipal and institutional establishments must also be involved in addressing the solid waste management problem. Pennsylvania's Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101) mandates that municipalities with populations greater than 5,000 and population densities greater than 300 persons per square mile must include commercial, institutional and municipal establishments in their recycling ordinances. This mandate stems from the fact that these non-residential establishments are responsible for the generation of approximately 50% of the total municipal waste stream. These establishments must recycle aluminum cans, corrugated cardboard, high grade office paper and leaf waste at a minimum. The local recycling ordinance may include additional recyclable items.

Therefore, the challenge presented to each commercial, industrial or institutional generated waste produced in the facility and to reuse and recycle as much of the remainder as possible. The purpose of this document is to assist solid waste managers in that task, and hopefully, will move a few steps closer to solving some of the aspects of society's solid waste problems.

# Why Should Your Business Implement a Recycling Program?

Chapter 1

**1. Waste Management in Pennsylvania**
- Disposal Issues
- Act 101
- Waste Composition Study

**2. Why Recycle?**

**3. The Benefits of Recycling**
- Avoided Cost
- Energy and Natural Resource Conservation
- Pollution Reduction
- Legal Requirements

## Waste Management in Pennsylvania

• Disposal Issues

Waste generation became a significant issue in Pennsylvania in the mid to late 1980s for several reasons. Like many other states, Pennsylvania had experienced a decline in the number of landfills available for disposal of municipal wastes. Some landfills had been closed for environmental reasons, while others had reached the limit of their permitted capacity.

Declining disposal capacity, along with increasing generation, raised concern that Pennsylvania would face a disposal crisis--a shortfall in disposal space, with an attendant increase in disposal cost.

In fact, Pennsylvania never really experienced the predicted shortfall in disposal capacity, but the cost for disposal did rise drastically through the late 1980s and early 1990s. At their height, tipping fees (the rate paid per ton for disposal of waste) ranged from around $40/ton in western Pennsylvania to nearly $100/ton in the eastern part of the state. The reasons for the rising costs were often attributed to:

(1) the perception that there was a shortage of disposal capacity;

(2) more stringent regulations for landfill permitting, construction and operation enacted in 1988;

(3) fees imposed under the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101).

In an unexpected turn of events, tipping fees began to fall, beginning in late 1993. Increased competition, possibly attributable to overcapacity appeared to be the driving force behind the declining rates. At present, prices appear to have stabilized.

• Act 101

All of this activity in recent years has raised public awareness about municipal solid waste and the problems associated with its management and disposal, and alerted our society to the need for a change in the status quo. Pennsylvania's response was the enactment of Act 101 in 1988.

The Act was designed to ensure proper management of wastes generated in the Commonwealth, including recycling and waste reduction and assurance of sufficient disposal capacity. Comprehensive in its scope, Act 101 addressed all facets of waste management in Pennsylvania, and its requirements affect people both at home and where they work.

• Waste Composition Study

Act 101, its grant programs, and planning requirements has promoted comprehensive solid waste management and extensive recycling and composting programs.

In order to push the Commonwealth to a higher level of success, the Pennsylvania Department of Environmental Protection has just completed a year long statewide waste composition study.

The study was designed to classify the state's waste stream by demographic categories to determine what recyclables remain in the trash. The study was conducted in each of the six regions of the state.

Following the conclusion of the study, results will be posted on the PA DEP's website. The study hopes to give insight on Pennsylvania's waste generation and what measures can be taken to further improve recycling and waste programs.

## Why Recycle?

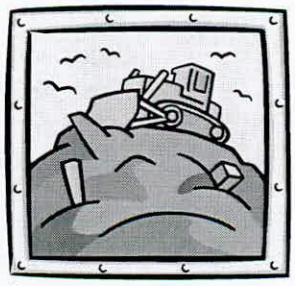
Waste reduction and recycling are environmentally responsible and generally cost-effective methods for reducing the wastes generated by businesses.

Recycling, which has been around in various forms for many years, is a method of removing reusable materials from the waste stream and remanufacturing them into new products. While recycling provides the benefits of reducing the waste stream and conserving landfill capacity, it also does much more. It may result in a cost savings for waste disposal, known as avoided cost, and some revenue may be generated through the sale of the separated materials. Reusing materials generated through recycling programs conserves valuable natural resources. Reclaimed materials are often less expensive than virgin materials and require less energy when used in manufacturing. Lower energy usage generally results in reduced emissions to the air and water.

Until recently, recycling has not been a major part of the waste management system. The primary reason is economics. However, this was not always the case. Before and during World War II, many people recycled out of necessity and because it was the patriotic thing to do.

But after the war, the economy grew rapidly and a multitude of new--and often disposable--products began to flood the markets. Some industries, such as the food industry, developed around disposable packaging.

Expansion in numbers of printers, copiers and similar equipment made duplication cheap and easy, and with the increased duplication came mountains of waste paper. It was easier just to throw away broken or unwanted products and buy new ones because both the products and their disposal were relatively inexpensive. With all this newly created waste, existing landfills swelled.



Along with the reduction in landfill space came groundwater pollution problems. The first landfills were merely holes in the ground, with no systems to protect the environment.

As awareness of the problems caused by landfilling grew, governments began to pass environmental legislation and regulations that resulted in an increase in design, construction and operation costs of new landfills. Since these costs are paid through tipping fees to those who dump trash, these fees began to rise dramatically. It has taken increases in disposal costs and a new law--Act 101--to make most of us aware that recycling and waste reduction can and should (and sometimes must) be a part of our waste management programs.

Because of their contribution to overall waste generation (roughly 50% of the municipal waste stream), commercial, municipal and institutional establishments are affected more drastically by increases in disposal costs than are individual households, and therefore may have the most to gain by implementing recycling programs. The purpose of this manual is to help you--as a business or institution--look more closely at your waste generation and disposal habits and begin efforts to deal with your wastes in a more effective and appropriate manner.

Commercial, municipal and institutional establishments usually have more to gain by implementing or expanding waste reduction and recycling programs than individual residences because of their typically high waste generation rates. The following helps to explain why this is so.

## The Benefits of Recycling

- Avoided Cost

As noted in an earlier section, disposal costs, known as tipping fees, have increased over the past few years. Most businesses do not pay these fees directly, but through their waste haulers. Haulers must increase their charges whenever tipping fees rise. Tipping fee increases have been considerably larger than annual inflation rates, so increases in waste disposal budgets for businesses have been quite obvious.

Many businesses could reduce the amount of material that must be disposed as waste by implementing aggressive recycling and waste reduction programs. For example, more than 90% of the waste generated by an office may be paper. If much of this material could be diverted from the waste stream by recycling or reuse, disposal costs would be reduced as well. Avoided cost savings are more dramatic for larger businesses, but can benefit any business. In fact, cost avoidance is often the biggest benefit of a waste reduction and recycling program.

- Energy and Natural Resource Conservation

The aluminum industry estimates that 95% less energy is used to produce new cans from old cans. Why is this? Making aluminum cans from virgin materials requires that bauxite ore be extracted from the earth and processed. This is a much more energy intensive process than collecting used beverage cans (UBCs) and reprocessing them to make new cans. Using UBCs also conserves bauxite, a non-renewable natural resource, thus preserving the mineral for future uses and future generations. Finally, using UBCs reduces waste, by reducing the waste by-products generated during the extracting and processing of bauxite to manufacture aluminum.

Recycling has similar effects within other industries as well. It has been estimated that recycling one ton of paper saves 17 trees. Although trees are a renewable resource, much energy is expended to convert them into paper. Reducing energy alone is important, because it reduces the demand for limited fossil fuels, thus reducing demand for foreign energy sources. In every case, reusing materials will help to preserve often dwindling supplies of important natural resources and/or make these resources available for other purposes.

- Pollution Reduction

Environmental degradation caused by logging, mineral extraction and extra emissions into the air, land and water usually accompanies the transformation of the raw materials into useful products. The additional energy, pollution control, and waste handling costs must be covered in some way. These costs are typically incorporated into the cost of a product, but society as a whole pays for the costs of damage to the environment from pollution and mismanagement of resources

through increased taxes, increased health problems, and reduced quality of life. Recycling reduces some pollution simply because the recyclable material has already gone through a manufacturing process.

- Legal Requirements

On July 28, 1988 the Municipal Waste Planning, Recycling and Waste Reduction Act (Act 101) was enacted. Chapter 15, Section 1501 (c)(i)(iii) of the Act requires "...persons to separate high grade office paper, aluminum, corrugated paper and leaf waste and other materials deemed appropriate by the municipality generated at commercial, municipal or institutional establishments and from community activities to store the material until collection".

The only exception is that the Act does not require industrial (manufacturing) operations to recycle from the portion of their waste that is considered to be residual. They are, however, required to recycle from office, lunch room waste, and any other portions that are considered to be municipal waste.

Though recycling from residual wastes is not required, this manual is also written to include information on handling of residual wastes designed to guide these businesses as well.

Some of the most significant waste reduction and recycling efforts have actually been undertaken in these industrial settings.

The Act 101 commercial recycling requirements apply only to the commercial, municipal and institutional establishments located in municipalities that are mandated to recycle under the Act. Included are all municipalities with populations greater than 5,000 and with population densities greater than 300 persons per square mile.

Act 101 directs mandated municipalities to adopt recycling ordinances that incorporate Act 101 requirements, including the requirements for commercial, municipal and institutional establishments. Under the Act, mandated municipalities must notify these establishments concerning specific requirements, with a provision that they may be exempted from the requirements of the ordinance if they are already recycling the designated materials in some way and can provide documentation verifying the tonnages and materials recycled.

Regardless of whether or not the municipality in which your facility is located is mandated to recycle, you may want to consider implementing a recycling program for the other reasons outlined above.

FIGURE 1

## WASTE CAN BE A VALUABLE RESOURCE

Reducing waste and recycling are sound business practices that can make economic sense. Waste is not always garbage--in many cases it can and should be considered a valuable resource.

Here are some things to consider:

Glass

- Every ton of glass recycled saves the equivalent of nine gallons of fuel oil needed to make glass from virgin materials.
- At least 30% of glass containers on grocery store shelves have been recycled.
- Container glass can be recycled repeatedly with no loss of quantity or quality.

Metals

- Every three months, the U.S. throws away enough aluminum to rebuild our entire commercial air fleet.
- Recycling aluminum uses 95% less energy than making new aluminum from bauxite ore.
- We throw away enough iron and steel to continuously supply all of America's auto makers.
- Metal is melted down and reformed into new products such as cans, automobile parts, siding, appliances and building materials.

Paper

- Making new paper from old paper uses 30% to 55% less energy than making paper from trees, and reduces related air pollution by 95%.
- Each day American businesses generate enough paper to circle the globe at least 40 times!
- Newspaper is recycled into newspaper, game boards, egg cartons, gift boxes,animal bedding, insulation and packaging material.
- Office paper is recycled into office paper, tissue paper, paper towels and toilet paper.
- Corrugated cardboard is recycled into new cardboard and cereal boxes.

Plastic

- 35% of the polyester carpet sold in America contains recycled PET (polyethylene teraphthalate) bottles (primarily soft drink bottles).
- Recycled plastics are made into fiberfill, bottles, shower stalls, recycling bins, scouring pads, paint brushes, industrial strapping, drainpipes, plastic lumber and flowerpots. Markets are expanding and developing daily.

# Planning a Recycling/Waste Reduction Program

Chapter 2

**1. Start at the Top**

**2. Appoint a Coordinator**

**3. Conduct a Waste Audit**

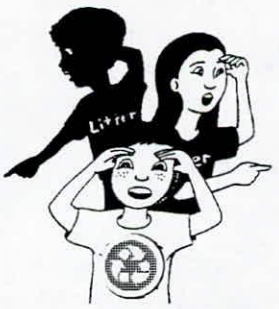
**4. Interpret the Data and Make Program Decisions**

A great many questions must be answered before an organization can establish a waste reduction and recycling program. And while recycling and waste reduction are not difficult, careful thought should be given to the organization of a program in order to ensure its success. A step-by-step approach for planning a program that will meet your organization's needs and goals is presented below.

## Start at the Top

Support for recycling and waste reduction, along with the incentives for employee involvement, must come from the upper levels of management. While the initial impetus to recycle may come from individuals or groups who are remote from top management, management must be made aware of the will be able to commit the time and attention necessary to ensure a successful program.

If the organization has a significant number of employees and/or is organized by departments or sections, it may be helpful to have a committee to assist the coordinator in carrying out his or her duties. Such a group should include representatives from departments most familiar with the waste potential for savings and the good will that can accrue to the business by implementing a program. The effectiveness of your recycling and waste reduction program is very likely to be proportional to the level of support and direction provided by the top levels of management. However, as with any idea, recycling and waste reduction also need to be addressed through the entire chain of command and endorsed as an organization-wide concept before they can be fully used as waste management tools.



## Appoint a Coordinator

Once management has made the decision to implement a recycling and waste reduction program, a recycling coordinator should be appointed to carry out the activities necessary to make the program work. The coordinator could be anyone from within the organization, but should be someone who has a thorough understanding of the organization and its waste stream and waste management system. Preferably, the coordinator should also be someone who is dedicated to the concepts of waste reduction and recycling, and who management system, such as maintenance or environmental quality, and would benefit from having representatives from each major division, such as production, administration, engineering, etc. In this type of structure, the coordinator should be someone who, with the support of upper management, can provide direction and leadership.

## Conduct a Waste Audit

This step should be taken before any other decisions can be made. The waste audit will tell you what is in your waste stream and how it is being handled, including: (1) composition of the waste stream; (2) the weight or volume of the various components; (3) sources of the wastes; (4) the system used for in-house collection and removal for disposal; and (5) current costs of operating the system. The waste audit will assist in determining which materials can be recycled or reused and areas where waste can most probably be reduced.

In order to generate a realistic picture of the waste situation in your facility, you must look critically and objectively at your organization's operation, purchasing and disposal habits, as well as all other factors that may affect your waste management program. You must also quantify, or assign values, to each factor in order to make cost comparisons. Document what you find, ask hard questions, determine why things are done the way they are done. All this information is vital to making decisions that will reduce waste and potentially save money.

Appendix A contains four forms that can assist you in gathering data about your operation. They will help you to quantify the weights of potentially recyclable materials and to under stand your current waste management program.

Explanations of how to use the forms are included in Appendix A.

## Interpret the Data and Make Program Decisions

Once you have completed all the previous steps, the coordinator (and committee, if applicable) must evaluate what was learned and develop a waste reduction plan. The audit should have helped to highlight opportunities to reduce the waste your company is generating. The primary areas for consideration include: (1) source reduction, or elimination of waste by not generating it in the first place; and (2) recycling or reuse. If you are in a municipality that is mandated to recycle under Act 101, you must recycle high grade office paper, corrugated paper, aluminum cans and leaf waste. Other potential materials, which include glass, steel cans, newsprint, mixed office paper, phone books, magazines, plastics, ferrous and nonferrous scrap metals, etc., are listed on Audit Form 2 in Appendix A. Many municipal ordinances, in fact, mandate the recycling of some of these materials.

Some less common materials may be recycled as well through very specialized markets. Some of these markets may exist locally, some may not. Most county recycling coordinators maintain local lists. Earth 911 also lists special collections by zip code by contacting 1-800-cleanup or www.cleanup.org. The DEP maintains a list of recyclers in Pennsylvania and the materials they accept, and can provide copies from its central and regional offices or its toll-free hotline (800-346-4242).

Companies may need to spend time on market investigations to search out uses for uncommon waste materials. The National Materials Exchange Network is a potential resource for waste exchange information. They can be contacted on the web at www.cftech.com/BrainBank/MANUFACTURING/WasteExchgs.html. The NMEN is a partnership of industrial waste exchanges that increases recycling opportunities within the industry.

For information about how to contact the DEP or your county recycling coordinator, see Appendix B.

FIGURE 2

**HOW CEOs AND BUSINESS MANAGERS CAN HELP SOLVE SOLID WASTE PROBLEMS IN THEIR ESTABLISHMENTS**

- Take a public stand against waste and pollution.
- Adopt a corporate policy that waste reduction, reuse and recycling are preferable to waste disposal, incineration or treatment.
- Set a positive tone for corporate waste reduction, reuse and recycling.
- Assist in selecting an appropriate waste reduction and recycling program for the company.
- Ensure an adequate budget and staff to execute the program.
- Provide high visibility for recycling programs.
- Provide incentives for various corporate subdivisions to cooperate with the program.
- Provide incentives to encourage employees to participate in your waste reduction and recycling program.
    - Give rewards to employees for waste reduction and recycling efforts.
    - Give recognition, bonuses, or other financial awards to employees who offer innovative approaches to waste reduction and recycling.
- Document your company's waste reduction and recycling accomplishments.
- Document your company's waste reduction and recycling cost savings.
- Consider the true cost of a product in cost accounting (Avoided Cost + Real Cost = Actual Savings). Avoided costs are often difficult to quantify, but including them will provide a truer financial picture.
- Stimulate development and use of products that result in reduced waste.
- Promote development and expansion of markets for recyclables by Buying Recycled.

# Implementing a Recycling and Waste Reduction Program

Chapter 3



Once you have completed all research and planning as outlined in Chapter 4, it is time to design and implement your recycling and waste reduction program. There are a number of steps that should be followed. This chapter describes each step from determining how to reduce waste at the source to implementing a complete program.

## Source Reduction

Source reduction is reducing the volume of waste generated within your establishment. Source reduction may, in fact, be the most cost effective measure you can take.

Unless your establishment has been very attentive to waste generation and waste management issues in the past, your waste audit will probably reveal at least some wasteful practices, and may in fact indicate areas where wastes do not even need to be produced. Here are some of the areas to look for source reduction opportunities:

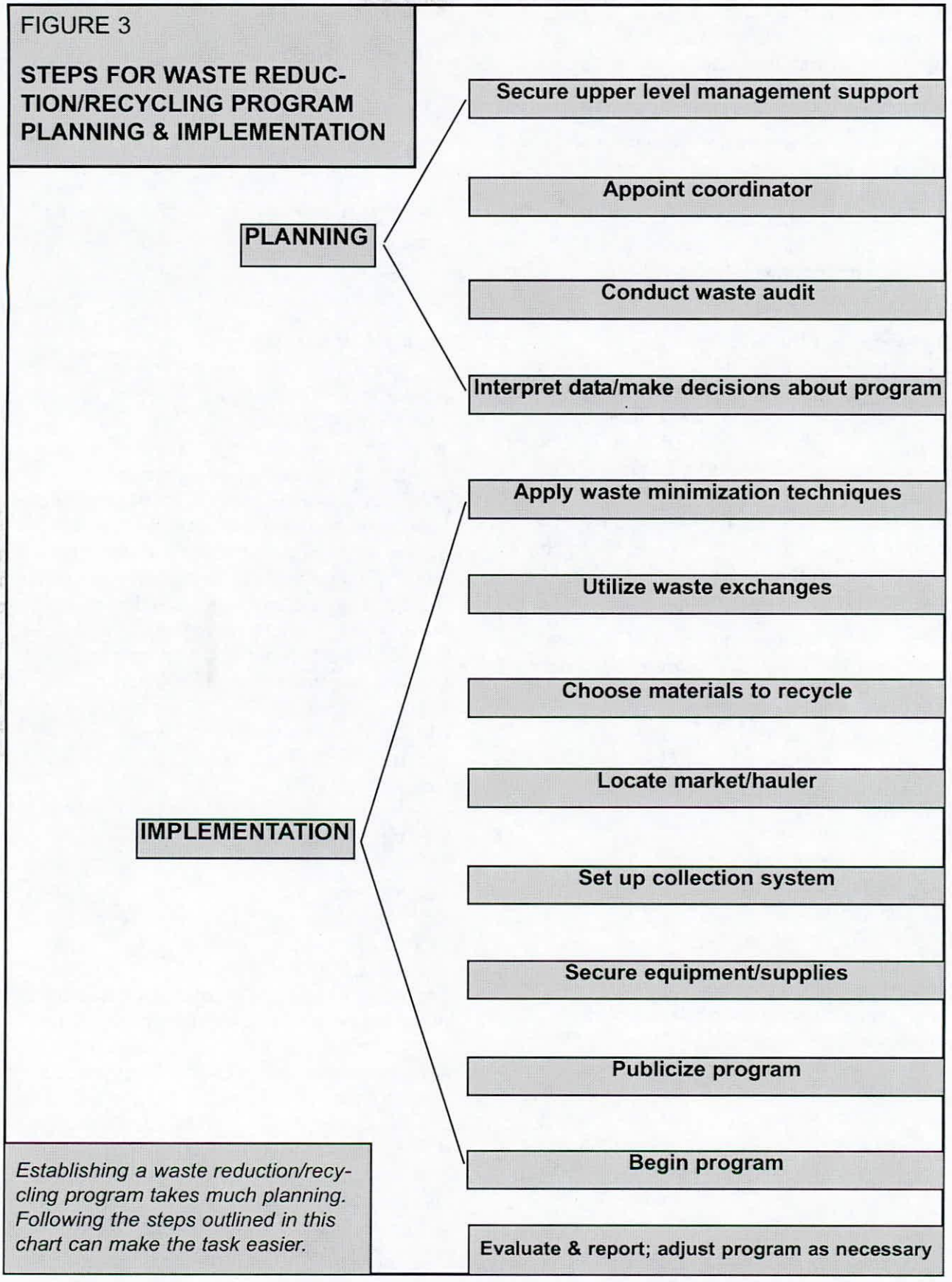
• Operations Equipment

A critical analysis of process equipment and manufacturing/ operations procedures may uncover areas where material is wasted. It may help to look into ways of being more efficient with the use of process materials, supplies, and equipment. Containers, such as boxes, etc. could be reused internally or even externally with regular customers or suppliers.

Copies of papers, letters, etc., can be printed on both sides, or paper with blank back sides can be used for scratch paper.

FIGURE 3

**STEPS FOR WASTE REDUCTION/RECYCLING PROGRAM PLANNING & IMPLEMENTATION**




*Establishing a waste reduction/recycling program takes much planning. Following the steps outlined in this chart can make the task easier.*

• Inventory Management

How you handle inventory management will vary depending on the materials you use. For materials that have a finite shelf-life, order only what you need and can use within the stated life span. What sounds like a good price for a large order is not so good if you must pay to dispose of expired stock. For items that have a long or infinite shelf-life, however, ordering in bulk will probably be more cost effective, and generally results in less packaging waste.

• Purchasing

Consider the recyclability or reusability of materials and equipment you purchase, and whenever possible, choose the recyclable or reusable alternative. Many of the products and equipment you use may be available with recycled content. Choosing products with recycled content promotes recycling, because it strengthens the markets that purchase the materials we recycle and "closes the loop."

Look also for products that are durable and will last through multiple uses, rather than products that are disposable or for short term use. In many cases, repairs and replacement parts for durable goods will be less expensive and less wasteful than disposable products.

• Packaging

Packaging is one of the largest components of the waste stream, and most packaging, with the exception of corrugated cardboard, is difficult to recyclable. When purchasing products for your company, look for suppliers that use little or no packaging. If you make products that must be packaged for distribution or sale, determine the minimum amount of packaging needed to protect your product and reduce the packaging to that amount. Excess packaging probably adds cost to your product, and certainly results in added customer cost for disposal. If possible, use returnable containers and/or other shipping materials that can be reused or recycled.

A key for targeting the materials for source reduction is to begin with products that:

- make up a significant portion of the waste stream;
- may have a negative effect on the environment;
- are packaged in more than the necessary amount of packaging to adequately protect the product.

## Waste Exchanges

Further waste reduction may be achieved through the use of waste exchanges. Some of the waste materials you generate may serve as feedstock for other industries. Materials like waste fuel, lubricants, plastics, wood waste, chemicals, etc., can often be used by other establishments. Users may be found if you put some effort into finding markets for your waste materials, and the effort may pay big dividends in waste disposal savings, particularly if the waste material you exchange must be disposed of as hazardous. The National Materials Exchange Network (mentioned in Chapter 4) is a potential resource for waste exchange information. (See Appendix B for contact information.)

## Recycling Options

• Contamination

Audit Form 2 (Appendix A) lists the standard materials that can be recycled, and completing this form will help you to determine the amounts of these materials in your waste stream. Armed with this information, you can decide what, if anything, to recycle. Of course, if you are in a mandated municipality, you must recycle the materials required in Act 101 and any additional materials mandated by local ordinance. You may decide to recycle other materials once you have considered several other factors, the most important generally being cost avoidance. Your facility

may be able to achieve significant savings on disposal costs by recycling materials if they are clean or have a minimal level of contamination. Check with potential recyclers to find out the quality level required for the materials you are considering. If you cannot meet the quality requirements for non-mandated materials, it may be better if your facility does not try to recycle those materials. Loads with high levels of contamination may end up in a disposal facility, and you will have incurred costs for separate collection, processing and disposal that will be much greater than if the material had not been separated in the first place.

• Volume

Does your facility generate enough volume of the material to interest markets? If a market requires large amounts of a given material, you may be forced to store the material until you have a marketable volume. This could be a problem for some small businesses with limited storage space.

One way around the problem, however, may be to work with other small facilities in order to arrive at a marketable level of material.

• Transportation

How will materials be transported from your facility to a processor or market? Will the processor or market pick up materials? Will you need to haul the materials to market, and is there equipment available for moving it?

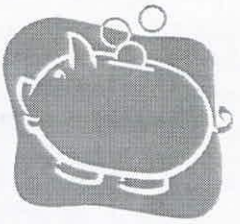
• Storage Space

Do you have adequate space available at the places of generation or in a holding area so that materials can be held until there is a sufficient amount for market? Will you be able to set aside internal space, or must you provide for external storage?

• Source Separation

How easy will it be to separate the desired material? Will recycling of the material require behavioral changes by individuals or changes in internal handling procedures? Will you need additional containers or pick-ups?

• Finance



Changes to your waste collection and disposal system may result in unanticipated costs. Will funds be needed to provide new equipment, containers, or personnel time? What is the payback period? Don't forget that cost avoidance (i.e. savings of disposal costs) should be considered in your cost calculations.

• Revenue

Can you expect to achieve financial return for the sale of materials, or must the material be given away? Is there a processing fee or some other similar fee? While no one wants to pay to recycle, in some cases, it may be financially advantageous to pay to recycle materials rather than to pay disposal fees.

• Maintenance

Will the additional equipment used in your program (if any) require additional expense for maintenance? Who will be responsible for that maintenance?

• Productivity

Will your facility's efforts to separate and collect recyclables disrupt your routines, thus affecting productivity? In most cases, little additional effort is required because the amount of waste being handled does not change, only the way it is handled. If the generator (each individual or group) can separate the material into appropriate categories, those who collect and deliver the material(s) to the storage area will have little additional work.

FIGURE 4

**WASTE REDUCTION CHECKLIST**

This checklist is not intended to be all inclusive. The suggestions here are designed to stimulate additional ideas as you ponder how they might apply in your specific situation. While the focus is primarily on municipal waste, some items refer to manufacturing/industrial wastes. By examining your waste producing processes, you may find more opportunities for source reduction and recycling. The amount of waste reduction these changes will accomplish will depend on how many you implement and the degree of attention given to each.

_____ Establish a company-wide commitment to making waste reduction a part of doing business.

_____ Identify the points at which waste is generated in production or work processes.

_____ For ease of comprehension, determine quantities of each waste generated per specific time period; i.e. hour, day, month.

_____ Identify one or more alternative ways that wastes can be reduced at each point in the process.

_____ Evaluate the raw materials you use for ways to reduce their toxicity and volume of disposal. This might include using different raw materials that are easier to reuse or recycle.

_____ Reduce the materials in your waste that are likely to have a negative impact on the environment. (See Appendix B for information sources concerning hazardous materials.)

_____ Reduce those materials that appear in your waste in large quantities.

_____ Use supplies and equipment efficiently. Reduce inefficiencies by substituting raw materials which result in waste with those can be reused or recycled.

_____ Designate an office supply exchange area for unneeded supplies.

_____ Sell or donate scrap materials, used furniture and fixtures. Donate useful materials.

Magazines to libraries and hospital/clinic waiting areas.

_____ Scrap materials to school art departments.

_____ Overstocked merchandise to local nonprofit organizations.

_____

Stop junk mail by contacting the Direct Marketing Association online at www.the-dma.org/consumers/offmailinglist.html

_____ Invest in durable products and equipment that can be easily repaired and/or recycled. Extended equipment life is further guaranteed if you routinely practice preventive maintenance.

## WASTE REDUCTION CHECKLIST—continued

_____ Where practical, use reusable or washable rather than disposable items such as coffee mugs, towels, or screens and filters.

_____ When reusable items are not available, buy products made from recycled materials: paper, containers, packages, etc.

_____ Improve quality monitoring systems to improve production efficiency. This will result in fewer rejected products and less waste.

_____ Work with suppliers to reduce the amount of packaging they send you. Ask suppliers to haul back their containers and packing materials and not leave them with you. Ask about replacing corrugated containers with two-way reusable containers.

_____ Buy in bulk and ask vendors to eliminate unnecessary plastic wrapping or foam padding. If a package does need cushioning, ask vendors to consider using shredded paper or other materials that you can reuse or recycle. If your company has enough storage area to hold larger quantities of supplies, ordering in greater amounts will often save on packaging and shipping costs as well as reduce the cost of the supplies themselves (however, don't forget to consider shelf-life of the products you order--ordering products that will not be used within their shelf-life span may result in waste as well).

_____ Check waste exchanges for materials you may use as raw materials in your production processes.

_____ Develop waste reduction goals with measurable objectives.

_____ Develop decision criteria by which to determine the optimum waste reduction process for you (e.g. benefit/cost analysis).

_____ Develop a plan which specifies waste reduction objectives and sets targeted completion times for their accomplishment.

_____ Develop a waste reduction budget. Be sure that funds will be available for equipment, educational materials and other necessities.

_____ Establish a waste reduction task force to implement your plan. The task force should be coordinated by an enthusiastic person.

_____ Develop employee education programs on waste generation, reuse and recycling.

_____ Train employees in waste reduction techniques. Hold staff meetings and post employee announcements on bulletin boards rather than distribute individual copies of notices and memos.

_____ Improve worker training to reduce production of inferior products.

FIGURE 5

## WASTE REUSE

Reuse is a simple concept that does not require a great deal of elaboration. In reuse, an item is repeatedly used until its utility is exhausted. Reuse is similar to recycling, except that in reuse the form of the item is not changed as it is in recycling.

Examples of Reusing Waste

- Reusable pallets and containers. These may cost more in the short run, but should result in long-term disposal cost savings.
- Remanufacture. This industrial process restores worn-out products to a like-new condition. A new product is assembled from old parts of discarded products, such as automobile parts, after usable parts are cleaned and refurbished.
- Product design. Design products for reuse, and actively market and buy items which are reusable instead of disposable. Napkins, dinnerware, placemats, tablecloths, coffee mugs and condiment containers are some restaurant items that can be reused. In the office, use refillable pens, the second side of scrap paper for drafts, memos, scratch pads and telephone messages. Retailers can package sales in returnable or reusable containers. Manufacturers can reuse packing materials and pallets.
- On-site recovery. Recover cooling waters, used solvents, waste heat, plastic scrap, trimmings and other production materials for reuse where possible to save energy, materials and money. Participate in a waste exchange so others can reuse by-products that you cannot.
- User removal. Give unneeded shipping boxes to employees or customers for their own use.

FIGURE 6

## WASTE SAVING TIPS FOR SPECIFIC TYPES OF BUSINESSES

### Retail Waste

Packaging materials, particularly corrugated cardboard, make up a large portion of any retail store's waste. Because much of this waste is generated outside the retail establishment, reduction efforts must be made in cooperation with vendors.

Incoming packaging such as bags and boxes can be reused as packaging for customers. However, while this reduces disposal requirements, it does not solve the problem of unnecessary packaging. If vendors ship products in unnecessary or non-recyclable packaging, ask them to reduce packaging or switch to materials that can be recycled or reused.

### Restaurant Waste

Restaurants that use disposable napkins, utensils or placemats can reduce waste volume by switching to reusable items. Many restaurants also generate sufficient quantities of aluminum, glass, steel/tin cans and plastic to justify recycling as a cost control measure. Some tips for effective handling of restaurant waste include:

- Recycle corrugated cardboard, glass, metals and plastic. If space is a problem, specially designed equipment such as can, glass and plastic crushers are available to reduce the volume of your recyclable materials.
- Replace beverage bottles and cans. Most beer and soft drinks can be served on-tap, reducing both the cost of buying beverages and disposing or recycling cans and bottles. Even wine can be stored in bulk in some circumstances.
- Replace disposable items (cups, utensils, trays, dishes and single-serving condiment packages) with reusable items.
- Eat-in restaurants and hotels can use reusable napkins and dinnerware, placemats and tablecloths. Switching from disposables may add to dishwashing and laundry costs, but will save on the purchase of paper goods and avoid waste disposal costs.
- For carryout and fast food, select the minimum appropriate packaging for food.
- Buy in bulk to reduce container waste, but avoid buying too much of a product that might spoil. Buy locally to minimize transportation costs.
- Some fast food chains are operating recycling programs for polystyrene containers. Contact your container supplier about the feasibility of such a project. (NOTE: In Pennsylvania, DART Container works with its customers to recycle polystyrene.)
- Ask suppliers to provide you with products that are packaged in materials such as recyclable or reusable paper, glass, steel, aluminum or plastic.
- Donate useful, outdated stock and leftover foods to food pantries, charities and shelters.
- Collect and send used grease to a renderer.

### Maintenance Waste

- Use washable rags for cleaning--commercial laundry services can provide an economical regular supply.
- Use non-toxic or biodegradable solvents and cleaners.

FIGURE 7
**INDUSTRIAL WASTE**

Few generalizations can be made about the composition of industrial waste because it is usually specific to the industry that produces it. Many industrial wastes can be reused or recycled in-house or off-site. They can also be put on waste exchanges.

Production line workers, foremen and plant engineers can be helpful in identifying wastes that can be targeted for reduction and recycling. Some ideas for industrial waste reduction include:

- Extending the life of equipment to avoid discarding it. Negotiate service contracts for equipment and consider remanufacturing worn-down equipment instead of buying new.
- Switching to reusable pallets and containers. Sturdy, two-way pallets can cost more than inferior ones, but should result in savings over purchasing new pallets. By using reusable pallets, you will avoid disposal costs of broken pallets.
- Reusing waste through in-house reuse/recycling or waste exchanges. One department's waste can be another department's or company's raw material.
- Reducing the amount of packaging that is sent to you. Ask your suppliers to eliminate unnecessary packaging.

In the shipping/receiving area:

- Reduce the generation of corrugated cardboard waste by working with suppliers to provide returnable and reusable containers. Ask suppliers to provide packing materials that are recyclable, reusable or returnable.
- Distribute your products in returnable containers to reduce your consumption of raw materials.
- Recycle corrugated cardboard, metals, glass, plastics and other recyclable materials. Compact or bale these materials if quantities are large and space is limited. Share compactors and balers with neighboring businesses if your recyclable quantities are small.
- Buy items in bulk where practical and where it will reduce waste.
- Reuse and recycle pallets.

On the production line:

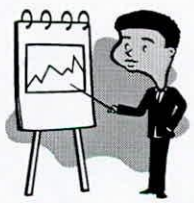
- Substitute non-hazardous ingredients for hazardous materials where possible.
- Mix only the volume of material required to fill an order.
- Implement a collection system for recoverable/recyclable materials. Recover oils, solvents and other cleaning materials.
- Purchase efficient equipment, train and motivate employees, and install quality monitoring systems to reduce production line rejects.
- Educate employees about source separation and encourage employee suggestions as to how it might be made more efficient.
- Reduce production scrap by modifying production equipment and processes.
- Recycle on-site scrap by modifying or adding equipment.
- Evaluate pay-back of the recycling programs in terms of reduced input costs and reduced disposal costs.

In the maintenance/storage area:

- Identify storage needs and segregate and recycle all recyclable materials.
- Use reusable containers that are collapsible, "nestable" or stackable for efficient storage and handling.
- Use compactors or balers to reduce volume of recyclable materials. This conserves storage space, reduces transportation costs and generally increases marketability of the material.

## Locating a Hauler/Market

Establishing your market(s) is a crucial step. You must have a market ready to accept your materials before you begin your recycling program. This can be done directly with a broker or end user or you can market your materials through your waste hauler, many who provide collection marketing services. If you cannot market your materials, you are not recycling, because recycling requires that the materials be remanufactured into new products. Unfortunately, markets fluctuate based on the laws of supply and demand, which are affected by regional, national, and even international trends. Sometimes, these fluctuations can have a dramatic effect on price, or even on whether or not the materials are accepted at any given time. In some instances, there may be no market value at all for certain materials you wish to recycle. If you only generate certain materials sporadically, you should consider calling various markets (if there is more than one) to determine who has the best price at the time you wish to sell.



How you work with markets should depend on the amount of material you generate. For large volumes generated on a regular basis, having a contract with the market may be to the benefit of your facility, giving you a specific price and guarantee of acceptance. Of course, quality remains an issue. Contamination must be kept within acceptable levels in order to maintain the market relationship.

If you can find no local buyers for a material that you wish to recycle, you might consider consulting your local county recycling coordinator or the DEP's statewide directory of markets. If you have unusual materials, you may wish to contact the Northeast Industrial Waste Exchange. Appendix B provides information on how to obtain these directories.

## Establishing Your Collection System

Collection systems for commercial recycling are not a "one size fits all" proposition. Elements to consider include:

- Space availability
- Equipment/container requirements
- Labor demands
- Physical layout

Source separation, that is, setting aside recyclables from waste at the point of generation, is a must for an efficient system. Design of the system must begin at the source(s) of generation. You will need to provide appropriate containers throughout your facility for collecting the materials that you are recycling. For aluminum cans, for example, you would need to provide collection containers in lunchrooms or next to vending machines. It may be advisable to place paper collection containers at copiers, computers, or other areas where waste paper generation is high. Separate containers are required at workstations; however, some offices that generate mostly paper may elect to use their existing wastebaskets as recycling containers and place central waste containers throughout the workplace for disposal of non-recyclable items (e.g. food and candy wrappers, food waste, etc.). Regardless of the container system used, containers should be clearly labeled with a recycling symbol and the material to be placed in the container.

In addition, some staff scheduling changes may be necessary to accommodate collection of recyclables. This is not because there is more material to be handled--the volume is typically the same. However, because waste and recyclables must be handled separately, the materials may need to be collected at different times and in different containers. Generally the changes do not require extra staff.

Consider the physical layout of your facility and the amount of materials you expect to generate when developing your collection program. Once you have started collection, you may find that "fine tuning" is required until you arrive at a system that is best for your facility.

If your business is located in a building or complex managed by a separate organization, that organization is generally responsible for waste collection, and in most cases will also be responsible for the handling of recycling collection. You should work with the managing entity to find out about materials to be recycled, preparation requirements, and collection procedures in order to develop an internal collection system that fits with the collection program set by the site managers.

## Equipment and Supplies

The exact equipment needed to facilitate your collection, storage and delivery program is also somewhat dependent on the size of your organization, layout, the types and volumes of materials recycled, and on the requirements of your building management if the management is responsible for establishing a program in your building. In many cases, the equipment used for wastes may also be used for recyclables, so additional equipment needs may be minimal. In general, some type of container will be needed at individual workstations, larger containers will be needed at various sites throughout your facility to collect from workstations, and bulk central storage containers may be needed to hold materials until they are collected by a hauler or delivered to a market.

Small offices may even be able to juggle the equipment on hand to make it work. On the other hand, larger operations that generate great volumes of material such as corrugated cardboard may want to consider purchasing a baler and a forklift and assigning an employee to collect, bale and market the cardboard. The recycling coordinator should work with the appropriate personnel to ascertain equipment needs.

Much of the equipment may be available through your existing suppliers. In some cases, markets or haulers may be able to provide equipment or make recommendations.

## Publicity and Promotion

Getting the word to employees may be the most critical element in developing a successful recycling program. Employees must understand the program and actively participate or the program will never reach its full level of success.

A variety of mechanisms is recommended to get the word to your employees. Brochures, newsletters, posters, memos and meetings are all techniques that can be used. Having the information disseminated from the top levels of management will help in getting the attention of all employees.

Some of the information that should be shared with employees is:

- why recycling is important;
- what each employee should recycle;
- procedures for recycling;
- the name of the recycling coordinator or entity responsible for overseeing the program;
- how the program is progressing

This type of information should help employees to become effective and enthusiastic participants.


Strategically placed posters or displays throughout the workplace can provide constant reminders about recycling. Containers that are clearly labeled and perhaps color-coded can perform the same function, and should also help in keeping contaminants out. Reducing contamination is important because clean high

quality materials can usually be marketed easily, while contaminated materials may not be marketable or may require staff time to remove the contaminants. Program costs will almost certainly be higher if materials must be disposed or if additional handling is needed before marketing. Specially printed or labeled containers with corporate recycling logos can promote employee pride and demonstrate your commitment to recycling both to employees and the general public.

Staff meetings are a useful means of teaching employees about the facility's recycling program, and the Act 101 guidelines for commercial recycling require annual meetings of this type for mandated entities to remind employees about the program requirements (Act 101 Guidelines are contained in Appendix C). Meetings are probably the easiest way to instruct employees about the materials to be separated and demonstrate how they should be prepared for collection. This type of forum gives employees the opportunity to ask questions, can help to ensure that all employees receive consistent information, and may help to avoid the need for additional effort and explanations after the program is implemented.

Persons responsible for collecting the recyclables and transporting them to a storage site or to market will also need to be instructed about their role. A separate meeting should be scheduled to discuss procedures, and heavy emphasis must be given to the need for keeping the materials free from contamination. The persons involved in the collection process should be involved in determining appropriate procedures, and need to understand the program thoroughly because their cooperation is instrumental in making it work. They may be in the best position to suggest improvements or adjustments in the program.

If possible, your facility should consider allowing employees to benefit directly from the recycling program. Channeling program revenues into positive benefits for employees, such as a picnic or other employee programs, may encourage greater participation.

Appendix D provides examples of printed educational materials.

## Implementation

Once you have completed all the steps described above, you are ready to begin your collection program. Because the program will require a change of habits for most employees, the recycling coordinator and supervisors will need to monitor the program closely to ascertain whether or not employees are participating and if they are doing it correctly. While the aim of the program is to recycle as much material as possible, peer pressure and positive reinforcement, rather than punishment, should be used to encourage participation. Some may take longer to learn than others, but in time most will participate as required.

## Office Paper Programs

Many facilities that are primarily involved in services or support--law firms, corporate headquarters, government offices, etc.--may be dealing mostly with the recycling of office paper. As much as 93 percent of all office waste is paper, most of it recyclable. As noted earlier, recycling of high grade office paper is required in commercial establishments located in mandated municipalities in Pennsylvania.

Ideally, office paper should be source separated. However, the amount of separation performed and the costs involved in this separation should be balanced if possible by revenues from sale of the materials and avoided disposal costs.

Different markets will accept different grades of paper and various levels of separation. Your office could choose to recycle only high grade office paper, i.e. only white papers such as com -puter paper, letterhead, copy paper, bond paper, etc., or it could choose to recycle a mixed grade

of paper that may include other colors, file folders, or whatever materials the market will bear. There are pros and cons for each. Consider the following:

**High Grade Paper**

| | |
|---|---|
| **Pros** | More easily recycled because it generally has longer fibers and no difficult-to-remove dyes--commands higher prices in the marketplace. |

| | |
|---|---|
| **Cons** | Less paper can be removed from the waste stream. |

White paper that is not considered high grade may be included by employees. This creates a contamination problem,which may reduce the price paid for the paper.

**Mixed Office Paper**

Easier for employees because most paper waste can be included, and most markets can tolerate staples, paper clips,window envelopes and other small contaminants.

| | |
|---|---|
| **Pros** | Removes a significantly greater portion of the paper from the office waste stream, which can result in greater avoided disposal cost. |

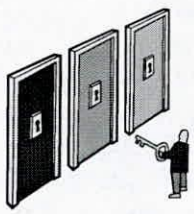
| | |
|---|---|
| **Cons** | The market price for mixed paper is considerably lower than for high grade paper. |

Mixed paper is often used to make products with lower economic value, such as tissues.
Some offices may choose to employ a separation system that takes advantage of the pros on both sides.

An example is an office that chooses to separate paper into two grades (plus corrugated paper). One grade could be white pinfeed computer paper only, and the other grade all other recyclable paper. This system takes advantage of the high price paid for white computer paper and the more significant level of reduction that can be achieved by including a greater range of papers. Separation is easy because white pinfeed computer paper is easy to identify and is generally not mixed with other papers during its use.

While the system for establishing an office paper recycling program is basically the same as for other materials, some special considerations may need to be made. A basic list of considerations should include:

- Choosing a Waste Paper Dealer



While your waste or recycling hauler may provide this service, it could be to your advantage to use a paper broker rather than hauler to get a better price for your paper, especially if your workforce generates a large amount of paper and you have the means to transport it to the broker's place of business.

Whether or not requests for bids to sell your paper are required, obtaining bids is the best way to determine where you can get the best price for your paper. Some specifications you may want to incorporate in your bid request are as follows:

- Scope and term of the contract
- Description, grade and location of paper to be sold
- Estimated generation rates
- Packaging and delivery procedure
- Storage capabilities and minimum shipment quantities
- Services and equipment to be provided by the contractor
- Services and equipment to be provided by the facility
- Mechanism for establishing purchase prices

• Collection and Transpost System

The system you choose should be that which is simplest for employees and cost effective for your office. It will depend heavily on your physical layout. A system that can be adapted to many offices is outlined as follows:

• **Workstation separation.** Employees are provided with a container into which they place paper to be recycled. This is easiest and most efficient for employees because separation is at the point of generation. Containers may be desktop, such as folders or file trays, or may be containers which fit under or beside the desk. These containers are usually available from the same companies that supply commercial maintenance equipment.

• **Central collection containers.** Large, easily identifiable recycling containers are located strategically throughout the offices. Limited access lids may help deter employees from placing trash in the The other considerations for an office paper recycling program are basically the same as for other commercial recycling efforts. Consult earlier portions of this chapter for additional information on selecting coordinators, developing educational materials, educating employees, implementation and follow-up. Some examples of educational materials used in office paper recycling programs are contained in Appendix D.

• **Employee efforts.**

Employees can empty workstation containers into nearest large recycling container. Existing maintenance staff then empties large recycling containers into appropriate storage containers, such as canvas hampers on wheels, dumpsters, gaylord boxes, etc. This generally only needs to be done once or twice a week.

• Number and Placement of Paper Containers

Each department should have containers that are convenient to all employees. There should be sufficient containers to prevent them from overflowing by mid-day, but not so many that it takes weeks to fill them. The number you use should be determined by the amount of paper you expect to generate.

Placement is important. Some suggestions for placement are as follows:

⊘ DON'T place paper containers near refrigerators, soft drink or snack machines, or in lunchrooms. It is too easy for paper to be contaminated by food waste or other non-recyclable materials.

⊘ DON'T place paper containers in high traffic areas where employees can run into them or trip over them.

⊘ DON'T place paper containers in areas where the general public has access. Individuals outside the office will not be familiar with the program and may mistake them for trash containers.

☑ DO place paper containers, wherever possible, near copiers, computers, or other areas where paper generation is high. It is much more convenient for employees to place bad copies into a recycling container near the copier than to take the paper back to their desks.

FIGURE 8

**FACTS ABOUT OFFICE PAPER**

- 77 percent of paper waste generated in offices is recyclable.
- Typical business offices generate about 1.5 pounds of waste paper per employee each day. Financial businesses generate more than two pounds per employee daily.
- Nearly half of typical office paper waste is high grade office paper.
- It is possible to achieve significant reductions in the cost of buying office paper by reducing paper use and reusing paper where possible.
- Eliminating office paper from your waste may reduce your waste bill by as much as 50 percent.
- Recycling one ton of paper typically saves about 6.7 cubic yards of landfill space. A cubic yard of stacked office paper weighs about 380 pounds. Cost savings may be estimated by multiplying the tons recycled by 6.7 times the cost per cubic yard for waste disposal (if by volume) or by cost per ton (if by weight).
- Commercial and residential paper waste accounts for more than 40 percent of waste being landfilled. Eliminating this paper from our waste would nearly double the lives of current landfills.

FIGURE 9

**REUSING CORRUGATED CARDBOARD**

While corrugated containers are recyclable, many businesses recognize the reuse value of these containers and keep them in circulation in a number of ways:

- Donate or sell cardboard containers to other firms. Most boxes can be given away, and there is a significant market for "gaylord" boxes in many areas. Gaylords are standard industrial strength containers (usually 4' x 4' x 4') used to transport and store bulk materials.
- Distribute corrugated boxes internally. Businesses frequently give these boxes to employees or others to use for moving, wrapping gifts, etc. These boxes may also be reused by the firm to store and ship recyclable materials.

RECYCLING CORRUGATED CARDBOARD

It is necessary to determine how much of the corrugated cardboard can be recycled before decisions can be made on the level of recycling service desired. Some considerations are:

- Location and capacity of potential buyers.
- Current and historical prices paid per ton by the buyers.
- Minimum and maximum quantities acceptable for pick up.
- Whether the buyer will pick up loose sheets or will require compacting or baling.
- Price differentials for different levels of service.
- Whether the buyer will furnish collection containers without charge.
- Contamination restrictions.

Consult other businesses that are currently recycling corrugated cardboard for handling suggestions or information about experience with buyers.

• Ordering Containers

Every employee should have his or her own workstation container, and as noted above, every department or work area should have at least one large container.

• **Workstation containers.** Possible types of workstation containers were identified above. However, special containers are not required. If possible, give employees a choice of workstation containers. Giving employees a choice will give them the opportunity to select the method that will be most comfortable and convenient. Regardless of the type of container(s) chosen, however, each container should be clearly distinguishable by color or labeling from trash or other types of containers.

• **Large containers**. Many container suppliers now offer large containers designed specifically for recycling. While these containers may be preferable for reasons of appearance, they can be costly. It is simple to purchase less expensive garbage containers and convert or label them for recycling.

Labeling of containers is very important. Use of a specially designed label which incorporates the company's name and/or logo may help to build employee pride in the program and represent the company's good will for the general public. However, if budgets are limited or if special labels are not important, some industrial label companies supply ready-made labels that may be applied to office paper recycling containers.

# Evaluating Your Recycling and Waste Reduction Program

Chapter 4

**1. Contamination**

**2. Market Fluctuations**

**3. Internal Logistics**

**4. Waste Monitoring**

**5. Disposal Costs**

**6. Progress Reports to Participants**

Program evaluation should be an integral part of your recycling and waste reduction program, and should begin immediately upon implementation. Because each facility's layout and waste stream are unique, programs must be tailored to the specific needs of the facility. Obviously, it is impossible to anticipate all problems that might arise, and constant monitoring will be needed to determine problem areas and make adjustments to the program. The program should be flexible to accommodate necessary changes, but not so loose as to confuse employees about program requirements.

## Contamination

You will probably find that there is some initial confusion about materials to be recycled. Containers must be monitored to ensure that only the acceptable materials are separated for recycling. Contamination may lead to rejection by your market, and may lead to your program becoming a high priced means of collection and disposal. Personal contact with employees in the areas where contamination is found can help to educate employees about contamination and reinforce program requirements. Sometimes employees can be educated by leaving "sorry cards" at contaminated containers to explain that the materials could not be collected for recycling because of contamination. Such cards can employ a check-off system to note the contaminants. A sample is contained in Appendix D.

## Market Fluctuations

Because recyclables are subject to the same laws of supply and demand as other commodities, the recycling coordinator will need to stay in touch with the markets to monitor changes in market demands. Preparation requirements may change from time to time, and some materials may be added or eliminated from the range of acceptable materials.

## Internal Logistics

The persons responsible for handling recyclables internally should be consulted about how the program is working and asked for suggestions to improve the internal handling system. Possible areas for change are timing/scheduling of collection, equipment needs, and container placement. All employees should be consulted concerning convenience of participation. If containers are not conveniently placed, participation may be low. Solicitation of employee ideas can lead to changes that foster greater cooperation and teamwork.

FIGURE 10

**REDUCING OFFICE PAPER WASTE**

- Perform a "waste basket audit" to evaluate office recycling potential.
- Purchase only the quantity of supplies needed, especially letterhead, envelopes and business cards, to reduce the need to dispose of outdated stock.
- Ask suppliers to reduce unnecessary packaging or packing materials
- Limit computer printouts. Use electronic mail where possible to send and receive business messages. Review text on screen to limit mistakes on drafts.
- Minimize the use of colored, glossy and special thickness papers that are difficult to recycle.
- Use reusable or two-way envelopes to post your inter-office correspondence.
- Make two-sided copies. Develop a policy to copy reports, letters, memos, etc. on two sides rather than one to conserve paper. Purchase or lease copiers designed to copy on both sides without jamming or malfunctioning.
- Cut down on paper for memos. Place memos on central bulletin boards for everyone to read or use. Routing slips also provide a record of who received and acknowledged a memo.
- Keep mailing lists current.
- Maintain central files instead of multiple files. This option saves not only paper but also Reduces the time, space and money spent for filing.
- Actively encourage all employees to use less paper.
- Boost employee participation in office paper recycling programs through incentives and training.
- Locate large containers for paper recycling near copiers, printers and other areas where large volumes of waste paper are generated.
- Maintain copiers, computers and other equipment to minimize scrap generation and prolong the life of these machines.

**REUSING OFFICE PAPER WASTE**

- Encourage reuse of paper for scrap paper. Employees can put old paper in bins and reuse it for memos, messages, calculations, etc. Reuse of scrap paper incurs virtually no added costs and saves on both disposal fees and the cost of new paper.
- Set aside special cartridges in copy machines for draft paper that is the other side of already used paper.
- Convert scratch paper into memo pads, telephone answering slips and similar items.

**RECYCLING OFFICE PAPER WASTE**

- Almost all types of paper used in the office can be recycled. It can be separated into various grades ranging from high to low. High-grade papers generally include but are not limited to white computer paper, bond, letterhead, and ledger. Lower grades may include mixed grades, file stock, ground wood papers, newsprint, and colored paper.
- Mixed paper is generally considered low grade even if it contains high-grade paper. Easily identifiable high-grade papers (such as computer printout) should be kept separate if possible to take advantage of its higher market value.

## Waste Monitoring

As the program becomes established, the levels of recyclable materials in waste containers should decrease. If this is not happening, talk to employees to find out why this is happening and ask what can be done to correct it. Offenders should be reminded about the purpose of the program and the need for their participation.

## Disposal Costs

Implementation of your recycling program should be followed by a second waste audit. If the program has significantly reduced volume and/or weight of waste, your establishment may want to consider reducing your collection schedule or even container size. Reductions in service should result in lower waste collection and disposal costs. Generally, these changes will need to be initiated by your establishment. Many haulers may not offer to reduce service and cost on their own because the hauler can benefit from providing you reduced service at the same cost.

## Progress Reports to Participants


Your employees should be informed about the results of your recycling program as a means of fostering pride and accomplishment. Reports which demonstrate successes can lead to additional ideas for waste reduction opportunities, and can help to promote feelings of comradery and team spirit. A sample letter appears in Appendix D.

# Procurement

Chapter 5

**1. Recycled Products**

**2. Enlist Support of Management**

**3. Become educated about recycled products**

**4. Develop Appropriate Specifications**

**If you are not buying recycled, you are not recycling!** The long term success of our recycling efforts depends on the demand for recycled content and materials. When you buy products made from recycled materials, you help maintain a market for your own recyclables.

## Recycled Products

Here are just a few of the items that may contain recycled content:

- Paper and paper products
- Packaging
- Construction materials
- Re-refined oil
- Lubricants
- Plastic benches, bumper stops, etc.
- Paper, glass, metal and plastic containers
- Recharged toner cartridges for copiers and printers
- Asphalt
- Pallets
- Retreaded tires
- Automotive batteries

Recycled products can be bought through standard purchasing channels or directly from the manufacturer. The following steps will help you to implement a procurement program that promotes the purchase of products with recycled content:

## Enlist Support of Management

Many purchasing agents are unfamiliar with or biased against recycled products. Therefore, a revised corporate procurement policy may be necessary to promote the acquisition of products with recycled content. A reasonable goal at the outset might be to require that at least 25% of all paper goods contain recycled material. Work with your purchasing department to establish company-wide rules for securing recycled products.

## Become educated about recycled products

Review current purchases. What purchases could contain recycled content, but do not? Where can you incorporate products with recycled content into your current product purchases?

Obtain information on the products of interest by speaking with other businesses, vendors, and manufacturers. One source of information is The Recycled Products Guide (RPG), a quarterly publication which offers a broad range of information on products made from recycled materials and the companies that produce them. For contact information about the RPG, see the resource list in Appendix B.

## Develop Appropriate Specifications

Review current purchasing specifications. In most cases, specifications will need only be revised, not completely rewritten.

Your company may have outdated or unnecessary specifications which impede the purchase of products with recycled content. Remove language such as "virgin materials only," "no recycled materials," or "no recovered materials." A preferable method for addressing quality concerns is to specify desired performance standards. Most recycled products meet or exceed even the most stringent standards.

To ensure that products contain a reasonable amount of recycled material, you may want to specify a minimum recycled content standard, and request that some portion be made up of postconsumer waste. For office paper, the U.S. EPA's recommended level of 50% recycled content, of which 10% percent is postconsumer material, is a reasonable request

Postconsumer materials are those materials that are recycled after their useful life--such as the paper and other materials that your company will be recycling. You should ask for a manufacturer's certification concerning recycled content. Some suppliers simply incorporate preconsumer materials such as trimmings and other by-products from production processes (as they always have) and now label these products as containing recycled materials. Purchasing products with high postconsumer content increases the market demand for
your recyclables and diverts waste from landfills.

Minimum content standards may help to convince manufacturers that you are serious about wanting to but recycled products.

Sometimes, unfortunately, the price you must pay for these products is greater than for products made from virgin materials.

In these cases, you may want to consider giving a small price preference to products with recycled content, such as five or 10%, in an effort to help promote the suppliers of these products.

Eventually, as sales increase, these products should become competitive with their virgin counterparts.


Modify your bidding procedures to encourage your suppliers to find supplies of all the recycled products you seek. You can encourage your suppliers by: allowing separate bids for items which have recycled content; breaking large orders into smaller orders to avoid shutting out manufacturers of recycled products who may be able to fill only part of an order; allowing introduction of competitively priced recycled products during contract bidding; and allowing for bulk purchasing of recycled products beyond the needs of specific jobs to decrease price.

**Promote your revised procurement policies**. Work with your current suppliers to obtain products that meet your new guidelines. Let other businesses and the public know that you have revised your policies and are buying recycled. Use recycled content products in your promotional publications and other publications that are distributed widely.

# Reporting the Results

Chapter 6

## 1. Benefits of Reporting

Reporting the results of your efforts is an important aspect of your program. Earlier sections describe the importance of reporting back to the workforce the results of employee efforts. These efforts keep recycling issues in the forefront and provide a sense of satisfaction to the employees that their efforts are appreciated.

Of equal importance is reporting results to local, county and state governments. All three entities have reporting requirements which have been mandated by Act 101. Reporting begins at the local level. The first step in participating in data collection is to contact your local municipal recycling coordinator and/or county recycling coordinator. They are familiar with local data reporting methods.

### Benefits of Reporting


Each commercial, industrial and institutional generator that recycles can benefit from cooperating in data collection and reporting programs. These benefits include:

- compliance with local recycling regulations
- documentation of the efforts put forth
- helps the government meet and exceed recycling goals
- increases performance grant funding for the municipality which, as a source of revenue, can help keep local real estate taxes down
- demonstration of community spirit to reduce waste
- may lead to local, county and state recognition programs

If the business is located in a mandated municipality that has a recycling ordinance, the business is likely to be required to report results to the municipality on an annual basis, usually in January/February each year. Reporting can be done numerous ways depending on the particular municipality or county involved. Generally, municipalities will forward a form to businesses for reporting annual results. These forms may also ask for documentation to verify the reported tonnage. Figure 11 illustrates a model municipal reporting form.

Documentation is required by the Pennsylvania DEP for all performance grant funding applications submitted by municipalities. Reports that have no supporting documentation are still acceptable in determining overall recycling within that municipality. However, municipalities applying for grant funds may request you to provide supporting information, like weight tickets, bills of lading, purchase orders, etc.

In cases where a waste or recycling hauler collects recyclable materials, the hauler may report on behalf of the business. For example, many

hauling companies run collection routes for commercially generated materials such as corrugated cardboard. Normally, the entire truckload is measured and, therefore, no individual documentation is available for each collection site. In these cases, municipalities may accept hauler documentation in lieu of individual business reports. Figure 12 illustrates a "hauler manifest" that is used to report truckload quantities to county government.

Since data collection methods vary, the first step in data collection is to contact local or county recycling officials to find out how data is managed in that jurisdiction.

**Figure 11 - Model Municipal Reporting Form**

## 2000 COMMERCIAL/INDUSTRIAL/INSTITUTIONAL ANNUAL RECYCLING REPORT

Due: February 16, 2001 (For January 1, 2000 - December 31, 2000)

**NAME OF ESTABLISHMENT:** _____

**ADDRESS:** _____

_____

**CONTACT PERSON:** _____ **TELEPHONE NO:** _____

**MUNICIPALITY NAME:** _____

Please note how your establishment handles Recyclables:

_____ Market/Broker/End User collects materials from Establishment

_____ Establishment delivers materials to market

_____ Other (please specify): _____

**MATERIALS RECYCLED**

Place an "X" in front of each material recycled at your establishment. Include weight (in tons) of material recycled, if known. If unknown, just write "N/A".

| | **Weight** |
|---|---|
| _____ Office Paper | _____ |
| _____ Corrugated Cardboard | _____ |
| _____ Glass Bottles | _____ |
| _____ Steel Cans | _____ |
| _____ Aluminum Cans | _____ |
| _____ Newspaper | _____ |
| _____ Commingled Glass/Cans | _____ |
| Other (Please Specify): | |
| _____ | _____ |
| _____ | _____ |

IMPORTANT

In order to verify weights reported, adequate documentation needs to be attached to this report. Acceptable documentation includes either (1) receipts, bills of lading or weight tickets, or (2) signature from Market/Broker/EndUser on this report which verifies that the Market accepted materials for recycling.

I certify, to the best of my knowledge, the above accurately represents recycling activity from above named Establishment. I further authorize the Municipality to use this report in their administration of all reporting and grant applications established under Act 101 of 1988.

_____

Signature of Contact Person Title Date

_____

Signature of Market/Broker/End User Title Date

_____

Signature of Market/Broker/End User Telephone Number

**Figure 12 - Hauler Manifest Form**

## LCSWMA MANIFEST FORM

### REGULATED MUNICIPAL WASTE, RESIDUAL WASTE & SOURCE SEPARATED RECYCLABLE MATERIALS

## A. GENERATOR INFORMATION

Origin Number _____

Generator Type: Single Family Residential ☐ Industrial ☐
Multi-Family Residential ☐ Commercial/Institutional ☐

Source Code: _____

Generator Name: _____

I certify this material is of the same type and composition as specifically approved by LCSWMA for disposal at LCSWMA Facilities.

Signature & Title _____ Date _____

## B. TRANSPORTER INFORMATION

LCSWMA License Number: _____

Driver Name: _____

I certify this material was received from the generator identified above and delivered to the Facility identified below in accordance with LCSWMA Rules and Regulations.

Driver's Signature _____ Date _____

## C. MATERIAL INFORMATION

| Type | Quantity | Units of Measure |
|---|---|---|
| _____ | _____ | Pounds, Cubic Yards, Items |
| _____ | _____ | Pounds, Cubic Yards, Items |
| _____ | _____ | Pounds, Cubic Yards, Items |
| _____ | _____ | Pounds, Cubic Yards, Items |
| _____ | _____ | Pounds, Cubic Yards, Items |
| _____ | _____ | Pounds, Cubic Yards, Items |

## D. FACILITY INFORMATION

**If delivered to non-LCSWMA Facility:**

Facility ID Number: _____

Facility Name: _____

I certify that the materials described above were received by the above-mentioned Facility and were processed, recycled or disposed in accordance with LCSWMA Rules and Regulations.

**FOR LCSWMA USE ONLY:**

☐ Frey Farm Landfill
☐ Transfer Station
☐ Resource Recovery

Transaction Number: _____

Signature & Title _____ Date _____

APPENDIX A

# Audit Forms

# AUDIT FORM 1

This form can be used to collect information on materials already being recycled or reused by your establishment. For each of these materials, you should document the material type, the market (hauler, broker, or end user), date of implementation, and monthly weight recycled or reused.

The information you will need is as follows:

1) Column 1 - "Material" - List all materials that are currently being or have previously been recycled or reused (such as corrugated cardboard, aluminum cans, scrap metal, etc.). (See #5 below)

2) Column 2 - "Recycler's Name" - List the name, address, telephone number and contact name of your current market(s).

3) Column 3 - "Date Recycling Began" - Document the date when you implemented recycling or reuse programs for each material.

4) Column 4 - "Weight/Month" - Review weight slips and/or payment receipts to determine weight of material recycled. List the average amount that would be recycled each month.

5) For materials where recycling or reuse has ceased, note the date when it ceased and why, as well as any other pertinent information.

Audit Form 1

# EXISTING MATERIALS RECYCLED

List each material that leaves your facility for the purpose of recycling or reuse

| MATERIAL | RECYCLER'S NAME | DATE RECY-CLING BEGAN | WEIGHT/ MONTH |
|---|---|---|---|
| | | | |
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List any of the above materials that you have stopped recycling or do not intend to continue recycling in the future. Explain why recycling was (or is going to be) discontinued and give the date when the program ended (or will end). Also explain how material is separated, collected, and removed from the facility.

# AUDIT FORM 2

This form is the heart of the audit process. Its purpose is to gather data on the weights of various materials in your facility that could be recycled or reused. All the materials listed are recyclable to some extent, and most can be recycled within Pennsylvania.

It is important to provide accurate data on weights and monthly totals prior to making marketing decisions. Accurate data is important for making reasonable estimates of materials costs and staffing needed to operate your program, as well as potential revenue and savings. This is especially important if your establishment must meet a specific payback period to justify capital expenses.

Generally, generation rates--i.e. volumes and weights--remain fairly constant unless there is a significant change in your operation. However, market prices fluctuate according to supply and demand. In order to keep a handle on your recycling program and its costs, revenues and savings, it is a good idea to measure weights/volumes of materials on a regular basis. Appendix E contains a conversion table to help you calculate weights and volumes of materials.

The information you will need is as follows:

1) Column 1 - "Recyclable Waste Material" - Lists the most common materials, and leaves space to list any materials that are abundant in your waste stream and may be potentially recyclable, such as process waste, production overruns and packaging materials. Don't impose arbitrary limits on materials listed--if you generate a material in volume, it may be worth considering for recycling or waste reduction measures.

2) Column 2 - "Weight (Tons/Month)" - Note the weight of each material you generate in volume. For example, if a vending machine dispenses 90 glass beverage containers per month, weigh one bottle and multiply by 90 to determine monthly weight. The conversion table in Appendix E may help in your estimations.

3) Column 3 - "Information/Remarks" - Record specific comments that relate to the materials audited. Your comments should provide additional information about the material that may be pertinent as you establish your program. Possible comments might include:
   - Where waste is generated (single location, multiple locations?)
   - Whether waste is commingled with other wastes, and ease of separation
   - Contamination level (markets need clean materials)--can it be kept free of contaminants?
   - Variations in generation rate (daily, monthly, seasonal, etc.)
   - Availability of space for separate collection of the material at the source(s) of generation

4) Box - "Total Weight (Tons/Month)" - Total the weights of all potentially recyclable or reusable materials. This total, compared with the total weight of your waste stream (determined in Audit Form 4), will illustrate the potential of your program. You may find that some products are not currently recyclable because of low volume or lack of markets, but knowing what you generate may help in the future as market or waste disposal conditions change.

Audit Form 2

# WASTE MATERIAL AUDIT

| RECYCLABLE WASTE MATERIAL | WEIGHT* TONS/MONTH | INFORMATION/REMARKS |
|---|---|---|
| COMPUTER PAPER (CPO) | | |
| HIGH GRADE OFFICE PAPER | | |
| MIXED OFFICE PAPER | | |
| CORRUGATED CARDBOARD | | |
| NEWSPAPER | | |
| GLASS CONTAINERS | | |
| FLINT (CLEAR) | | |
| BROWN | | |
| GREEN | | |
| ALUMINUM CANS | | |
| STEEL/TIN CANS | | |
| FERROUS METAL | | |
| NONFERROUS METAL | | |
| SCRAP WOOD | | |
| PALLETS | | |
| LEAF/YARD WASTE | | |
| PLASTICS | | |
| BATTERIES (1) | | |
| TIRES | | |
| DRUMS (2) | | |
| OTHER | | |
| | | |
| | | |
| | | |
| TOTAL WEIGHT (TONS/MONTH) | | |

*If weights are estimates, note "E" for estimate.

(1) Note whether automotive or consumer

(2) Note whether fiber, plastic, or steel

# AUDIT FORM 3

This form is a monthly waste pickup/pull worksheet. It will help you to determine the weight of your waste and the cost of disposal. Each pickup or pull must be documented. Completion of the worksheet will result in a monthly average summary of data which will be used in Audit Form 4. A separate form should be completed for each container.

The information you will need is as follows:

1) Line 1 - "Disposal Container - Type/Size" - Identify the type of container for which data is provided, based on the container sizes and types listed on Audit Form 4. Compactors, rolloffs and lugger boxes are hauled away as a unit, and that container may not return to your facility. Dumpsters are generally front or rear loaded onto a compactor truck and left at your facility. If you do not know the size of your container(s), ask your trash hauler or measure them and compute volume (cubic yardage).

2) Column 1 - "Date of Collection" - Record the date container was pulled or emptied.

3) Column 2 - "Percent Filled When Collected" - Provide an estimate of how full the container was when pulled or emptied.

4) Column 3 - "Front/Rear Load Dumpster Pickup Cost" - Record the cost for each pickup. If a flat monthly fee is assessed, enter the fee in the "Average" block at the bottom of the column in Line B, but continue to enter the collection dates. If billing is done by pickup, record the charge for each pickup.

Columns 4-6 relate to compactor, rolloff or lugger box containers.

5) Column 4 - "Weight of Waste" - Enter the weight (tons or pounds) of waste, which should be provided to you by the hauler. It should be provided on a weight slip that the hauler signs and receives.

6) Column 5 - "Landfill Tip Fee" - Enter the charge made to dump the contents of the container, based on weight provided on the weight slip. Do not include special charges, such as for tire disposal, in this column. Notes of special charges should be made on Audit Forms 1 and/or 2 or in the "Notes" column.

7) Column 6 - "Pull Charge" - Enter the charge made by your hauler to pick up your container, deliver it to the waste disposal facility, and drop off an empty container. This is usually a flat fee.

8) Column 7 - "Notes" - Enter any unusual fees or other information in this column.

9) Line A - "Totals" - Enter sums for Column 3, 4, 5, and 6--all weights and charges. Number of collections should also be counted and recorded.

10) Line B - "Averages" - Enter average costs and weights based on number of collections ("Total" divided by Number of Collections = Average).

Audit Form 3

# MONTHLY WASTE PICKUP/PULL WORKSHEET

Complete one of these forms for each type of container that is picked up or pulled from the facility.

Disposal Container Type/Size

| | | Front/Rear Load Dumpster | Rolloff/Lugger/Compactor | | | |
|---|---|---|---|---|---|---|
| Date of Collection | % Filled When Collected | Pickup Cost | Weight of Waste | Disposal Cost (Tipping Fee) | Pull Charge | Notes |
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| | | | | | | Line A - Totals |
| | | | | | | Line B - Averages |

# AUDIT FORM 4

This form provides a summary sheet for all the types of waste containers you use, thus providing for a container/collection cost audit. By entering data from all containers on this form, you should be able to determine total monthly disposal costs. It is essentially a summary of the information collected on Audit Form 3.

If more than one hauler is used or if your business self-hauls wastes, a separate form should be completed for each hauler. This will enable you to evaluate the economics of each arrangement.

Information gathered on each Audit Form 3 should be recorded on a separate line on Audit Form 4. Totals and averages to be transferred are found on Lines A and B of Audit Form 3.

Audit Form 4

# CONTAINER/COLLECTION COST AUDIT

Complete one of these forms for each waste contract and for waste hauled directly by your business.

| Disposal Containers | | | | Front and Rearload Dumpster | | Compactor/Rolloff/Lugger | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type | Size | Number of Collections Per Month | Percent Filled when Collected | Average Cost/ Pickup | Total Monthly Cost | Average Weight of Waste | Average Disposal Cost (Tipping Fee) | Average Charge per Collection | Total Monthly Cost |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Hauler Name _____

Containers

| Type | Size |
|---|---|
| Compactor | 30, 40 (usually 22 ft. long - height determines volume |
| Rolloffs (open tops) | 20, 30, 40 |
| Lugger Boxes | 8, 10 |
| Dumpsters | |
| Front Load | 2, 4, 6, 8 |
| Rear Load | 1, 1.5, 2, 3, 4, 6, 8, 10 |

APPENDIX B

# Guidelines for Recycling in Commercial, Municipal and Institutional Establishments

December 24, 1993

# ACT 101 GUIDELINES

## RECYCLING AT COMMERCIAL, MUNICIPAL, AND INSTITUTIONAL ESTABLISHMENTS

## PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

### 1. SCOPE:

This directive identifies requirements and responsibilities that apply to developing, implementing, and maintaining a recycling program at commercial, municipal, and institutional establishments as well as industrial establishments with lunchrooms or offices.

### 2. DEFINITIONS:

Aluminum: Refers to used cans comprised of 100% aluminum.

Buy-Back Center: A center where an individual may take recyclable materials and receive payment for them. Recyclables may be sorted and processed at such a center.

Commonwealth Agency: The Commonwealth and its departments, boards commissions and agencies, Commonwealth-owned universities, and the State Public School Building Authority, the State Highway and Bridge Authority, and any other authority now in existence or hereafter created or organized by the Commonwealth.

Commercial Establishment: An establishment engaged in nonmanufacturing or nonprocessing business, including, but not limited to, stores, markets, office buildings, restaurants, shopping centers and theaters.

Corrugated Paper: Any structural paper material with an inner core shaped in rigid parallel furrows and ridges.

Drop-Off Center: An area where an individual may deposit recyclable materials and where recyclables may be sorted. This does not include a processing center where recyclable materials are crushed, shredded, or pelletized.

High-Grade Office Paper: Any bond, copier, letterhead or mimeograph paper typically sold as "white ledger" paper; and computer paper.

Industrial Establishment: Any establishment engaged in manufacturing or processing, but not limited to, factories, foundries, mills, processing plants, refineries, mines, and slaughterhouses.

Institutional Establishment: Any establishment engaged in service, including, but not limited to, hospitals, nursing homes, orphanages, schools and universities.

Leaf Waste: Leaves, garden residues, shrubbery and tree trimmings, and similar material, but not including grass clippings.

Local Public Agency:

1. Counties, cities, boroughs, towns, townships, school districts and any other authority now in existence or hereafter created or organized by the Commonwealth.

2. All municipal or school or other authorities now in existence or hereafter created or organized by any county, city, borough, township or school district or any combination thereof.

3. Any and all other public bodies, authorities, councils of government, officers, agencies or instrumentalities of the foregoing, whether exercising a governmental or proprietary function.

Mandated Municipality: A municipality required to recycle under Section 1501 of the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101). This includes all municipalities with populations 5,000 or more people and which have population densities of more than 300 persons per square mile. Population shall be determined based on the most recent decennial census by the Bureau of the Census of the United States Department of Commerce.

Municipal Establishment: Any facility or building owned or operated by a local government or county government, local government or county government authority, State Government or agency, or Federal Government or agency.

Municipal Recycling Program: A source separation and collection program for recycling municipal waste or source-separated recyclable materials, or a program for designated drop-off points or collection centers for recycling municipal waste or source-separated recyclable materials, that is operated by or on behalf of a municipality. The term includes any source separation and collection program for composting yard waste that is operated by or on behalf of a municipality. The term shall not include any program for recycling construction/demolition waste or sludge from sewage treatment plants or water supply treatment plants.

Municipal Waste: Any garbage, refuse, industrial lunchroom or office waste and other material, including solid, liquid, semisolid or contained gaseous material, resulting from operation of residential, municipal, commercial or institutional establishments and from community activities and any sludge not meeting the definition of residual or hazardous waste in the Solid Waste Management Act from a municipal, commercial or institutional water supply treatment plant, wastewater treatment plant or air pollution control facility. The term does not include source-separated recyclable materials.

Municipality: A county, city, borough, incorporated town, township or home rule municipality.

Person: Any individual, partnership, corporation, association, institution, cooperative enterprise, municipality, municipal authority, Federal Government or agency, State institution or agency (including, but not limited to, the Department of General Services and the State Public School Building Authority), or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. In any provisions of this act (i.e. Act 101) prescribing a fine, imprisonment or penalty, or any combination of the foregoing, the term "person" shall include the officers and directors of any corporation or other legal entity having officers and directors.

Public Agency: Any Commonwealth agency or local public agency.

Recycling: The collection, separation, recovery and sale or reuse of metals, glass, paper, leaf waste, plastics and other materials which would otherwise be disposed or processed as municipal waste (other than through combustion) and creation and recovery of reusable materials other than a fuel for the operation of energy.

Source-Separated Recyclable Materials: Materials that are separated from municipal waste at the point of origin for the purpose of recycling. The term is limited to clear glass, colored glass, aluminum, steel cans, plastics, high-grade office paper, newsprint, corrugated paper, and other marketable grades of paper.

Waste Reduction: The design, manufacture or use of a product to minimize weight of municipal waste that requires processing or disposal, including, but not limited to:

1. design or manufacturing activities which minimize the weight or volume of materials contained in a product, or increase durability or recyclability; and

2. use of products that contain as little material as possible, are capable of being reused, recycled, or have an extended useful life.

3. use, to the greatest extent feasible, of products and materials which are made of postconsumer materials.

3. PROCEDURES:

Act 101 of 1988 requires recycling at all commercial, municipal, and institutional establishments located in communities with 5,000 or more people and population densities greater than 300 people per square mile. Population shall be determined based on the most recent decennial census by the Bureau of the Census of the United States Department of Commerce.

Materials required to be recycled include: high-grade office paper, corrugated paper, aluminum cans, and leaf waste. Leaf waste must be separated from all other wastes and composted or placed for collection. In addition, these establishments must recycle other materials specified by municipal recycling ordinance or regulation, which may include clear or colored glass containers, plastics, steel cans, old newspapers and other marketable grades of paper.

Where an establishment has operations in several locations throughout the state, only those located within mandated municipalities must implement recycling programs. Persons occupying establishments that are located within mandated municipalities must comply with the local recycling ordinance or regulation unless exempted by the governing body of the municipality. Establishments located outside of mandated municipalities are encouraged to implement recycling programs. For more information about your recycling responsibilities, contact your local or county recycling coordinator.

State owned institutions must implement a waste reduction and recycling program in accordance with Commonwealth Management Directive #205.22 of August 7, 1989. State owned institutions must comply with the local municipality's recycling ordinance or regulation, unless exempted by the governing body of the municipality.

This guideline does not apply to materials that are used to contain or come into contact with infectious wastes.

A well designed recycling program complies with the law, reduces waste, and saves natural resources. Source reduction combined with recycling can further reduce waste. Suggested guidelines for implementing a successful recycling program are summarized below:

## DESIGNING A PROGRAM:

**A. TOP-LEVEL MANAGEMENT SUPPORT:** The success of your recycling program hinges upon the support of senior management. Their enthusiasm promotes a similar attitude among employees and customers. Also, recycling programs often require outlays of start-up capital. Management approval of a budget for the recycling program can help ensure that resources will be available when needed.

**B. DESIGNATE A RECYCLING COORDINATOR:** Coordinators are often appointed to oversee the recycling program. Typically, their duties include preparing strategies for minimizing waste; identifying markets for collected materials; devising in-house collection procedures; conducting ongoing educational initiatives; developing specifications for equipment and supplies; advocating the procurement of items made with recycled content; maintaining records about the program; and evaluating program performance and costs.

**C. FORM A RECYCLING TASK FORCE:** For larger organizations, a recycling task force is often necessary to help manage the program. Participants generally consist of representatives from departments that will be most affected by the recycling program, such as building maintenance, purchasing, human resources and a spokesperson for employees.

**D. CONDUCT A WASTE AUDIT:** Knowledge of waste stream characteristics will be helpful in developing an effective recycling program. A waste audit will identify where wastes are generated as well as the types and quantities. Cafeterias, lounges, restrooms, copier/printing areas, offices or workstations, maintenance and storage areas are among the locations of highest waste generation. If the waste audit reveals that yard debris constitutes a large percentage of the waste stream, the feasibility of including on-site composting should be considered.

**E. PRACTICE WASTE REDUCTION:** During the waste audit, it is recommended to identify waste reduction opportunities. For example, creating two-sided memos and letters or reusing scrap paper for notes and rough drafts substantially reduces paper consumption and results in less production of waste. Also, many organizations have reduced wastes by substituting durable products for disposable items.

**F. IDENTIFY MARKETS:** Recyclables may be marketed directly to an "end user" (i.e. a manufacturer of a product) provided the quantity, quality and regularity of shipments is acceptable to the buyer. In most cases, waste management or recycling companies are relied upon to collect, process and distribute materials to the marketplace. It is highly advisable to obtain their input prior to adopting an in-house collection system.

**G. DEVISE A COLLECTION SYSTEM:** Systems that are convenient to use are the most successful. Factors which influence the design of a system include the generation rate of recyclables, availability of collection personnel (i.e. janitors, custodians, or others), the facility's floor plan, storage area availability, and other site-specific conditions. In some instances, materials may have to be specially prepared, such as flattening corrugated boxes or shredding confidential documents before being hauled off site.

Recyclable materials must be stored in accordance with all applicable codes and regulations (i.e. fire, safety, etc.) until hauled off site. Act 101 requires separated material to be removed from the establishment for the purposes of recycling at least once per month.

Building owners and managers, or, persons occupying commercial, institutional and municipal establishments shall provide for collection, transportation, processing and marketing of materials by:

1. Coordinating with local or municipal recycling programs; or

2. Undertaking the collection, transportation, processing and marketing of materials themselves; or

3. Entering into contracts with other persons for collection, transportation, processing and marketing of materials.

**H. PROMOTE THE PROGRAM:** The goal of promotion is to maximize participation and ensure compliance with the program requirements. Various communication mediums can be used to convey recycling policies. Usual methods for transferring such information include orientations for new employees, staff meetings, newsletters, fliers and posters. Recycling receptacles should be clearly marked to indicate the type of material(s) to be placed in them. High participation and good compliance can be attained by publicizing program successes and acknowledging individuals for exceptional performance.

**I. BUY RECYCLED:** Purchasing products that are made from, or, packaged in recycled materials creates stronger demand for materials that are collected. Under sections 1507 and 1508 of Act 101, local public agencies, are encouraged to revise procurement policies to specify the purchase of recycled items.

Several government agencies and national organizations provide helpful information relating to the procurement of recycled products. For a listing of these organizations contact the Pennsylvania DER at (717) 787-7382.

**J. EVALUATE THE PROGRAM:** As with any project, it is necessary to monitor its effectiveness and efficiency. Feedback on the program can be obtained from a variety of sources including: (1) custodial staff, for input regarding material quality and handling practices, (2) employees or customers, for opinions concerning convenience, (3) waste hauler or recycler, for data concerning the type and amount of material recycled.

Pursuant to Act 101, Section 304(f), a municipality's recycling ordinance or regulation may include provisions requiring commercial, municipal, and institutional establishments to submit recycling reports to the governing body of the municipality. The reports are to describe the type and weight of materials recycled by establishments in the preceding calendar year.

**K. EXEMPTION FROM MUNICIPAL RECYCLING ORDINANCE OR REGULATION:** Pursuant to Act 101, Section 1501(c)(iii), the governing body of a municipality shall exempt persons occupying commercial, institutional or municipal establishments within its municipal boundaries from the requirements of the municipal recycling ordinance or regulation. To be eligible for an exemption, a commercial, municipal or institutional solid waste generator must:

1. Otherwise provide for the recycling of high grade office paper, aluminum, corrugated paper, leaf waste and other materials deemed appropriate by the municipality.

2. Annually provide written documentation to the municipality of the total number of tons recycled.

## 4. RECYCLING PROGRAM PERFORMANCE GRANT:

Recycling Program Performance Grant funds are awarded to municipalities based on the type and weight of source-separated recyclable material. Eligible materials include: clear glass, colored glass, aluminum cans, steel cans, plastics, high-grade office paper, newsprint, corrugated paper, and other marketable grades of paper. Grants will be awarded only for properly documented, eligible materials that were actually marketed during the preceding calendar year. Private or nonprofit enterprise cannot be directly funded, but may negotiate with the governing body of a municipality for any "pass-through" of grant money.

## 5. ADDITIONAL INFORMATION:

DER maintains a database of markets for recyclable materials, including, recycling drop-off centers, buy-back centers, material processors, manufacturers and municipal curbside recycling programs. For more information on recycling, contact your regional DER Resource Recovery and Planning Coordinator or your county or municipal recycling coordinator.

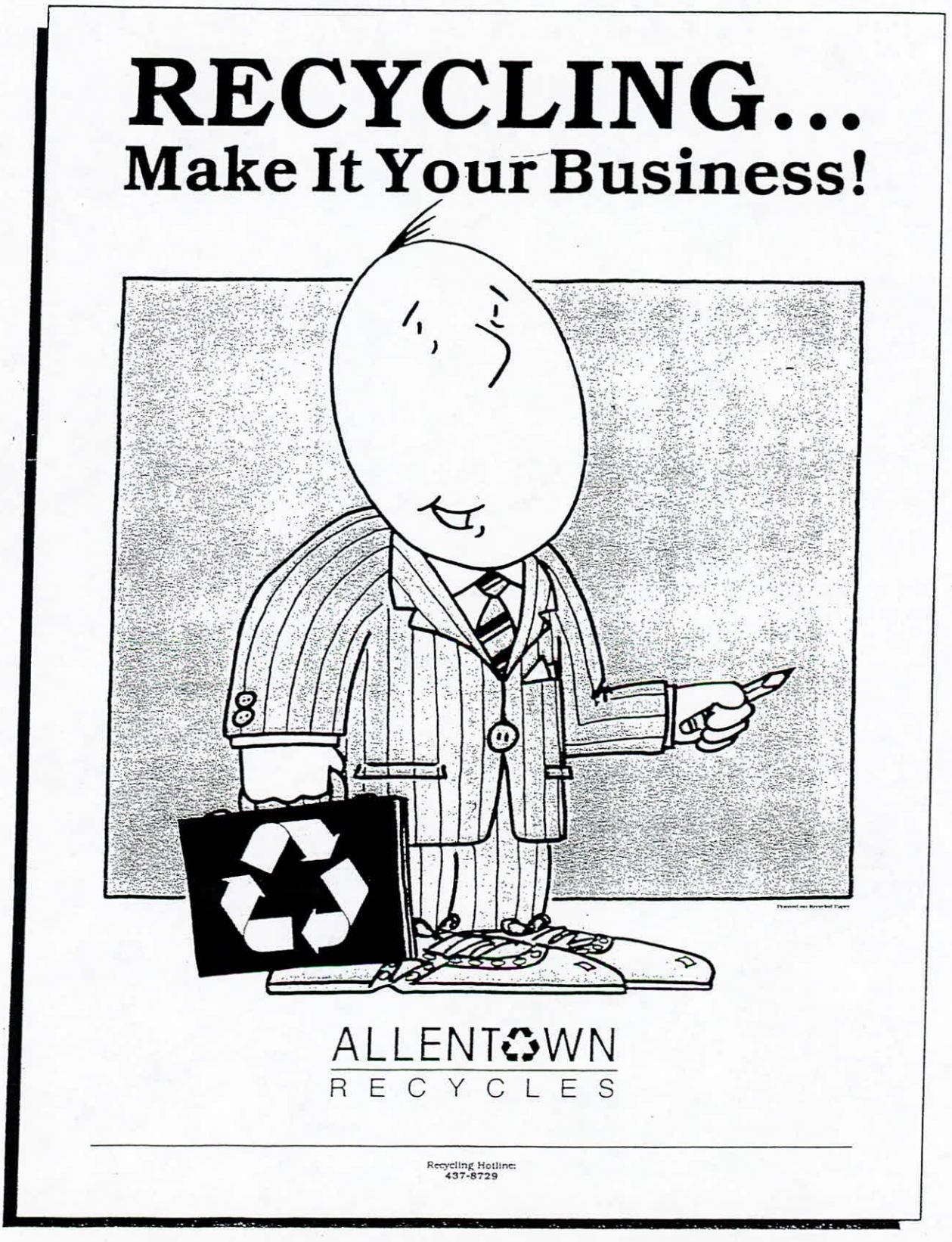
APPENDIX C

# Sample Education Materials

## Poster

Actual size measures 17" x 22".

*(Limited quantities are available from The Allentown Recycling Program.)*



# Reusing office supplies is a hot idea.

Use reusable mugs and dinnerware to reduce waste and protect the environment.

Poster design concept: Ramsey County

## HERE'S HOW TO SET UP YOUR PROGRAM

Paper makes up 42% of our Municipal Solid Waste, and as much as 93% of all office waste is paper — PAPER THAT CAN BE RECYCLED!

1. **MAKE A COMMITMENT TO RECYCLE** — Support from management and enthusiastic promotion are the keys to a successful program. You'll find employees will participate if they are well informed.
2. **APPOINT A RECYCLING COORDINATOR** — This person will act as a liaison among management, employees, maintenance personnel and your waste paper recycler. A competent and enthusiastic coordinator is crucial to the success of your recycling program.
3. **CARRY OUT A WASTE AUDIT**— Determine what quantity and type of waste paper your office generates.
4. **CONTACT YOUR HAULER** — Your recycling coordinator and hauler should decide how and when your waste paper should be separated and picked up.
5. **ESTABLISH AN EFFICIENT COLLECTION SYSTEM**— A formal collection system must be developed, well publicized, and ready to operate! Place recycling containers near computers and copy machines, and at each desk or cluster.
6. **ANNOUNCE THE PROGRAM TO ALL EMPLOYEES**— A brief hands on training session is the most effective way to get your program off to a good start. Hand out a "how- to" memo at the session.
7. **FOLLOW-UP PUBLICITY**— Reinforce your recycling efforts in your newsletter. Include information about quantities recycled, disposal costs savings, and areas that need improvement. Recognition for extra effort is a big morale booster that will ensure recycling success.
8. **CALL OUR OFFICE (949-2566) FOR EXTRAS**

   - Free advice and information
   - Model office recycling memos and hints for the environmentally responsible office
   - List of haulers that specialize in office recycling
   - Recyclable container suppliers
   - Suggestions for hard to recycle items and low-valued recyclables
   - Free recycling container labels
   - Municipal ordinances and guidelines

## THE INTERMUNICIPAL RECYCLING COMMITTEE

City of Altoona
Logan Township
Hollidaysburg Borough

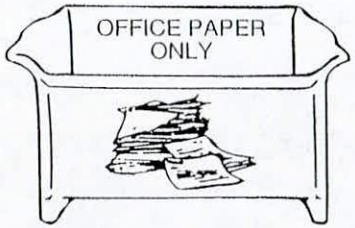
## IT'S THE LAW!

Blair County communities in the Intermunicipal Recycling Program have passed mandatory recycling ordinances in accordance with the Pennsylvania Act 101. The following items must be recycled in commercial and institutional businesses:

1. HIGH-GRADE OFFICE PAPER
2. CORRUGATED CARDBOARD
3. PLASTIC CONTAINERS
4. NEWSPAPER
5. BIMETALLIC & ALUMINUM CANS
6. GLASS BOTTLES AND JARS

## WHAT OFFICE PAPER IS RECYCLABLE?

*typing and bond paper*
*photocopy paper*
*computer bond paper*
*white computer paper*
*letters*
*white notebook paper*
*color bar computer paper*




## WHAT IS NOT RECYCLABLE?

These items are not accepted in routine recycling collection.

*low grade gray computer paper*
*blueprints*
*carbon paper*
*carbonless duplicate paper*
*envelopes of any kind*
*facial tissue*
*magazines and glossy paper*
*mimeo stencils*
*paper towels and cups*
*photographs*
*post-it notes*
*self-adhesive labels and tape*
*synthetic papers*
*telephone books*

ONE TON
OF
RECYCLED
PAPER
SAVES
17 TREES

BLAIR COUNTY INTERMUNICIPAL RECYCLING COMMITTEE

# OFFICE RECYCLING


A Waste Reduction & Recycling Guide for ...

Professional Offices
Schools & Libraries
Financial Institutions

*BECOME PART OF THE SOLUTION!*

Printed with Soy-Based Inks on Recycled Paper by A+ Printing, Inc.

# Mixed Office Paper Recycling Program

## What Is This Program All About?

As much as 93 percent of all office waste is paper - paper that can be recycled. The goal of this recycling program is to recover paper through a simple collection method starting at the source: the employee.

## How Will the Recycling Program Work?

Each employee will save his or her discarded paper in a specially designated folder or box that details which paper is acceptable or unacceptable.

When the folder or box is full, the employee will empty it into a larger container, which will be placed in each department and at copy machines.

The containers will be emptied regularly and the paper stored until it is taken to a scrap dealer for sale.

Paper dealers will bale or shred the paper and ship it to a paper mill for remanufacture into new products such as tissue paper and printing paper.

## Questions and Answers

### What type of paper is included in this recycling program?

Just about any paper found on top of a desk or in a filing cabinet may be recycled through this program: all white paper and colored paper, all envelopes (including manila envelopes and those with plastic windows), computer paper, reports with their covers still on, even lightweight cardboard such as manila folders and the backs of tablets. It isn't even necessary to remove staples, paper clips and rubber bands from the paper to be recycled.

### Why recycle mixed office waste?

If mixed wastepaper is collected, virtually all paper generated in an office setting can be recycled. This type of program also provides simplicity and convenience to participating employees. Though this color-mixed grade of paper is less valuable than, for instance, white bond or white computer paper, it offers the best opportunity to recycle the maximum amount of paper, saving valuable landfill space in Lancaster County and putting a once-discarded product back into the economic mainstream.

### What about glossy paper?

Glossy paper, such as magazines and report covers, is coated with clay. To recycle this paper, the clay must be removed, which is an expensive process. Glossy paper is not acceptable in this recycling program.

### What else should not be deposited in the recycling containers?

Newspaper, carbon paper, plastic, food waste, such as food wrappers and garbage, and restroom waste, like paper towels, should not be deposited. If these contaminants, which result in an inferior product when the new paper is manufactured, are mixed with the paper to be recycled, the dealer will substantially reduce the price for that paper.

### Why aren't newspapers included in this program?

The fibers are shorter and therefore of lesser quality in newspaper than in office paper. Newspapers are recyclable, of course, but they are made into such products as construction materials and corrugated boxes.

### Who do we contact with any questions?

If you have any questions about the program, or if you plan to clean out your files and have a large amount to recycle, please contact your department's recycling program liaison.

## BENEFITS of Paper Recycling

- ☑ Saves precious landfill space
- ☑ Uses 15 percent less water, 60 percent less energy, and a smaller amount of chemicals than manufacturing from virgin materials
- ☑ Generates revenues
- ☑ Saves trees (one ton of recycled paper saves 17 trees)

This program is a cooperative effort of the government of Lancaster County and the Lancaster County Solid Waste Management Authority.



LANCASTER COUNTY Recycle
LET'S SEPARATE TOGETHER


Printing paid for by the Lancaster County Solid Waste Management Authority


# LANCASTER COUNTY OFFICE PAPER

# RECYCLING PROGRAM

# COMING SOON

## Lancaster County Courthouse

# Office Paper Recycling Program

# Begins Monday, October 17

LANCASTER COUNTY Recycle
LET'S SEPARATE TOGETHER

# RECYCLING PROGRAM
# ALLEGHENY COUNTY OFFICES

COUNTY COURTHOUSE COUNTY OFFICE BUILDING

Act 101, the Municipal Waste Planning, Recycling and Waste Reduction Act, requires recycling of high grade office paper, corrugated paper, aluminum, and leaf waste by all commercial, institutional and municipal establishments located in certain municipalities over the next two years. Under the law, Allegheny County offices are required to begin no later than September 26, 1990.

On May 21, 1990, all offices in the County Courthouse and County Office Building will begin recycling office paper and corrugated paper as part of a phased-in effort that will include all the materials listed above and include all County offices.

Most of your paper will no longer go into your trash can. It should be stored temporarily at each work station; possible options for storage include file folders (colored folders that reflect the color scheme noted below could be used, or color coded signs provided by the Division of Waste Management can be attached to the front of regular manila folders), upright containers such as magazine storage boxes, or slotted trays (stacking or upright). The important consideration should be the ease with which sorting can be done in the limited space available at individual work stations. In high volume generation areas (such as at copying machines), storage should be provided in boxes or bins that are labelled with the color coded signs noted above. All individual folders and/or containers should be emptied into centrally located barrels labelled with the same color coded signs. Empty corrugated cardboard boxes should be stacked next to these containers. The barrels will be emptied as needed by County housekeeping staff.

Paper should be sorted as follows:

**Class 1: Gold** - All white, pinfeed (continuous form) computer printout paper. No other paper should be included in this category unless other types are determined to be acceptable within your office area. The Division of Waste Management can help with this determination.

**Class 2: Blue** - All letterhead, bond, and photocopy papers, telephone message sheets, white and yellow legal pad sheets, fax paper, envelopes (including window envelopes), Post-It notes, forms (including NCR-carbonless), newsletters, manila folders. No other paper should be included in this category unless other types are determined acceptable within a given area. The Division of Waste Management can help with this determination.

**Class 3: Red** - Corrugated Paper, i.e. cardboard boxes.

In all cases, unacceptable materials include magazines, newspapers, phone books, manila (goldenrod) envelopes, light cardboard (such as backs of legal pads), carbon paper, plastic spiral binders, paper towels, tissues, cups and papers contaminated with food or chemicals. Staples, paper clips and rubber bands can be tolerated in Class 2 paper.

The County will realize a savings in landfill disposal fees for every ton of paper we can remove from out waste stream. However, **THE EFFORT WILL ONLY BE SUCCESSFUL IF YOU TAKE THE TIME AND EFFORT TO SEPARATE AND PLACE YOUR PAPER INTO THE PROPER CONTAINERS.**

If you have any questions about the County recycling program, please contact the Division of Waste Management at 355-5865.

Thank you for your cooperation. We hope that you will do your part to do something good both for the environment and for the County.

## HERE'S HOW TO SET UP YOUR PROGRAM

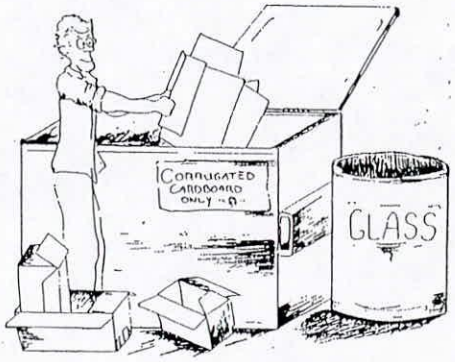
Corrugated cardboard makes up a very large portion of the waste in most commercial and retail businesses. Jars, bottles, cans, plastic bottles, copy paper, and newspaper are usually produced in smaller, but still significant, amounts. Your place of business is required by law to separate these items from your trash for recycling.

1. **CONDUCT A WASTE AUDIT** — Determine what quantity of each recyclable you commonly produce.
2. **CONTACT YOUR HAULER** — Use your waste audit to help you and your hauler establish or improve an effective containment and collection system.
3. **GET EVERYONE INVOLVED** — An effective recycling program works only when everyone is enthusiastically involved. Be sure to explain the recycling system to all workers and post clear directions, posters, and container labels.
4. **TAKE PRIDE IN DOING IT RIGHT** — Clean containers thoroughly and be sure proper materials end up in recycling containers.
   a. Corrugated cardboard (but no waxed cardboard)
   b. Glass bottles and jars (but no broken glass)
   c. Aluminum, tin, and metal cans
   d. Plastic containers (#1 and #2 plastic only)

5. **KEEP STRIVING TO IMPROVE YOUR PROGRAM** — Strive to maintain an excellent program after the novelty passes. Make recycling a habit. Look for ways to reduce the amount of trash you make. Reduce the use of disposables and try to use or purchase recycled commodities and recyclable packaging.
6. **CONTACT THE RECYCLING OFFICE FOR HELP & EXTRA INFORMATION** —
   - Free advice and information (949-2566)
   - List of haulers that specialize in commercial and retail hauling
   - Recyclable containers and suppliers
   - Suggestions for hard to recycle items and low-valued recyclables
   - Free recycling container labels and posters
   - Municipal ordinances and guidelines

BLAIR COUNTY
INTERMUNICIPAL RECYCLING
COMMITTEE

# COMMERCIAL & RETAIL RECYCLING




A Waste Reduction & Recycling Guide for ...

Stores & Markets
Wholesalers
Manufacturers

*BECOME PART OF THE SOLUTION!*

Printed with Soy-Based Inks on Recycled Paper
by A+ Printing, Inc.

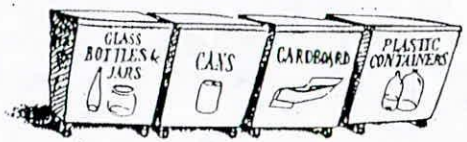
THE INTERMUNICIPAL RECYCLING COMMITTEE

City of Altoona
Logan Township
Hollidaysburg Borough

# IT'S THE LAW!

Blair County communities in the Intermunicipal Recycling Program have passed mandatory recycling ordinances in conjunction with Pennsylvania Act 101. A number of requirements are made of commercial and retail establishments.

1. Glass, cans, plastic containers, corrugated cardboard, newspapers, and high grade office paper must be recycled.
2. Recyclables must be collected at least once every two weeks and more often if needed.
3. Recyclables must be separated from trash. This includes placement of recycling containers in public areas.
4. Materials must be clean and free of food.
5. Lids must be removed from bottles and jars.
6. Trash and recyclables must be properly contained. Solid waste must be in rodent-proof containers, newspaper must be kept dry, and cardboard should not be stored loose outside.
7. It is illegal for any commercial business to burn solid waste, recyclables, or yard waste.




# REDUCING WASTE & POLLUTANTS

1. **Use recyclable, recycled, or reusable packaging.**
   a. Retailers should offer incentives for use of reusable bags or reuse of old bags.
   b. Mail orders can often be packaged in old boxes and used styrofoam peanuts or newspaper.
   c. Manufacturers should use recyclable corrugated cardboard and recycled paperboard while minimizing wasteful packaging and unnecessary plastic wraps.
2. **Close the recycling loop by buying, selling, and manufacturing recycled goods when possible.**
   a. Retailers should offer recycled products and goods in recyclable and recycled packages when possible.
   b. Manufacturers should explore recycled materials to replace raw materials or virgin fibers.
   c. Businesses with large amounts of one kind of waste should consider waste exchanges with other firms that can utilize those wastes.
3. **Make your office and lunchroom environmentally friendly.**
   a. Recycle and conserve office paper. Use two sides of paper when practical and buy recycled paper.
   b. Encourage the use of reusable mugs instead of styrofoam.
   c. Provide recycling containers in lunchrooms, lounges and high-traffic public areas.
4. **Use environmentally friendly cleaners and degreasers.**
   a. Try to eliminate the use of cleaners with harsh petroleum-based solvents. Many of these are extremely toxic. Many non-toxic alternatives are available.
   b. Do not overuse chlorine-based cleaners or phosphate detergents that can contribute to water pollution problems.
5. **Eliminate or reduce the use of other toxic materials.**
   a. Use toxic chemical pesticides and rodent controls only under extreme circumstances. Consider less toxic alternatives.
   b. Pay extra attention to cleanliness and pest problems will be greatly reduced.
   c. Proper containment of solid waste will reduce rodent problems.
   d. Consider sand as an alternative to salt for icy steps and sidewalks.
   e. Consider nontoxic weed controls in lieu of hazardous petroleum-based herbicides and weed killers. (Weeds can be pulled out of the ground easily right after a rainfall.)
6. **Take pride in being an environmentally conscious business and proclaim it proudly in correspondence, advertisements, and signs.**

## HERE'S HOW TO SET UP YOUR PROGRAM

Jars, bottles, cans, plastic containers, and corrugated cardboard usually make up he vast majority of waste in restaurants, taverns, cafeterias, and other food service areas. Your eating establishment is required to recycle all of these items.

1. **CONDUCT A WASTE AUDIT** — Determine what quantity of each recyclable you commonly produce.
2. **CONTACT YOUR HAULER** — Use your waste audit to help you and your hauler establish an effective containment and collection system.
3. **GET EVERYONE INVOLVED** — An effective recycling program works only when everyone is enthusiastically involved. Be sure to explain the recycling system to all workers and post clear directions, posters, and container labels.
4. **TAKE PRIDE IN DOING IT RIGHT** — Clean containers thoroughly and be sure proper materials end up in recycling containers.
   a. Glass bottles and jars
   b. Aluminum and metal cans
   c. Plastic containers (#1 and #2)
   d. Corrugated cardboard (but no waxed cardboard)

5. **KEEP STRIVING TO IMPROVE YOUR PROGRAM**— Strive to maintain an excellent program after the novelty passes. Make recycling a habit. Look for ways to reduce the amount of trash you make. Reduce the use of disposables and the cut back on the purchase of items in non-recyclable packages.
6. **CONTACT THE RECYCLING OFFICE FOR HELP & EXTRA INFORMATION** —
   - Free advice and information (949-2566)
   - List of haulers that specialize in commercial hauling
   - Recyclable containers and suppliers
   - Suggestions for hard to recycle items and low-valued recyclables
   - Free recycling container labels
   - Municipal ordinances and guidelines

Blair County Intermunicipal Recycling
1301 - 12th Street
Altoona, PA 16601

BLAIR COUNTY
INTERMUNICIPAL RECYCLING
COMMITTEE

# FOOD SERVICE

A Waste Reduction & Recycling Guide for ...

Restaurants
Taverns
Cafeterias

*BECOME PART OF THE SOLUTION!*

Printed with Soy-Based Inks on Recycled Paper
by A+ Printing, Inc.

THE INTERMUNICIPAL RECYCLING COMMITTEE

City of Altoona
Logan Township
Hollidaysburg Borough

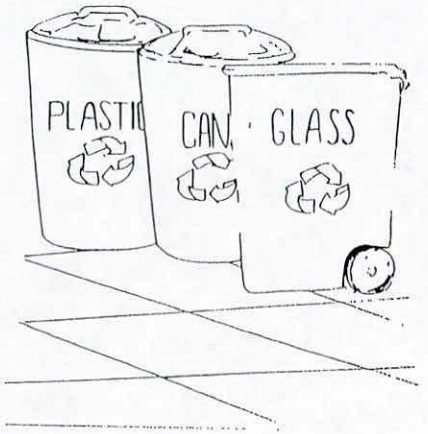
## IT'S THE LAW!

Blair County communities in the Intermunicipal Recycling Program have passed mandatory recycling ordinances in conjunction with Pennsylvania Act 101. A number of requirements are made of commercial establishments.

1. Glass, cans, plastic containers, corrugated cardboard, newspapers, and high grade office paper must be recycled.
2. Recyclables must be collected at least once every two weeks and more often if needed.
3. Recyclables must be separated from trash.
4. Materials must be clean and free of food.
5. Lids must be removed from bottles and jars.
6. Trash and recyclables must be properly contained. Solid waste must be in rodent-proof containers, newspaper must be kept dry, and cardboard should not be stored loose outside.


## REDUCING WASTE & POLLUTANTS

1. **Reduce the Use of disposable items.**
   a. Use washable cloth napkins
   b. Avoid throwaway cups and dishes.
   c. Explore alternatives to polystyrene.
2. **Buy in Bulk and avoid single-serving sized items.**
3. **Buy recycled and recyclable items when possible.**
   a. Glass, aluminum, and tin cans can be recycled over and over. Use them when there is a choice.
   b. If it is impractical to use washable cups and dishes, consider using recyclable throw-aways. (Many wholesalers have recyclable PET and HDPE plastic cups available for sale.)
4. **Use environmentally friendly cleaners.**
   a. Steer clear of phosphate detergent and cleaners.
   b. Try to eliminate the use of cleaners with harsh petroleum-based solvents. Many of these are extremely toxic.
   c. Do not overuse chlorine-based cleaners. Chlorine residues are not healthy or particularly tasty.
5. **Eliminate or reduce the use of other toxic materials.**
   a. Use toxic chemical pesticides and rodent controls only under extreme circumstances. Consider less toxic alternatives.
   b. Pay extra attention to cleanliness and pest problems will be greatly reduced.
   c. Proper containment of solid waste will reduce rodent problems.
   d. Consider sand as an alternative to salt for icy steps and sidewalks.
   e. Consider nontoxic weed controls in lieu of hazardous petroleum-based herbicides and weed killers. (Weeds can be pulled out of the ground easily right after a rainfall.)
6. **Take pride in being an environmentally conscious business and proclaim it proudly in menus, advertisements, and signs.**



## *DO DEPOSIT*

- All varieties of white paper
- All varieties of colored paper
- Lightweight cardboard
- All envelopes
- Computer paper
- Reports with covers

## *PAPER RECYCLING CONTAINER*

## *DON'T DEPOSIT*

- Newspapers
- Plastic
- Magazines, glossy paper
- Carbon paper
- Food waste
- Restroom waste

## *PAPER RECYCLING CONTAINER*

LANCASTER COUNTY

Recycle

LET'S SEPARATE TOGETHER

# Aluminum

LANCASTER COUNTY

Recycle

LET'S SEPARATE TOGETHER

# Clear Glass

This container constructed from recycled plastic. Please use it solely for its intended purpose.

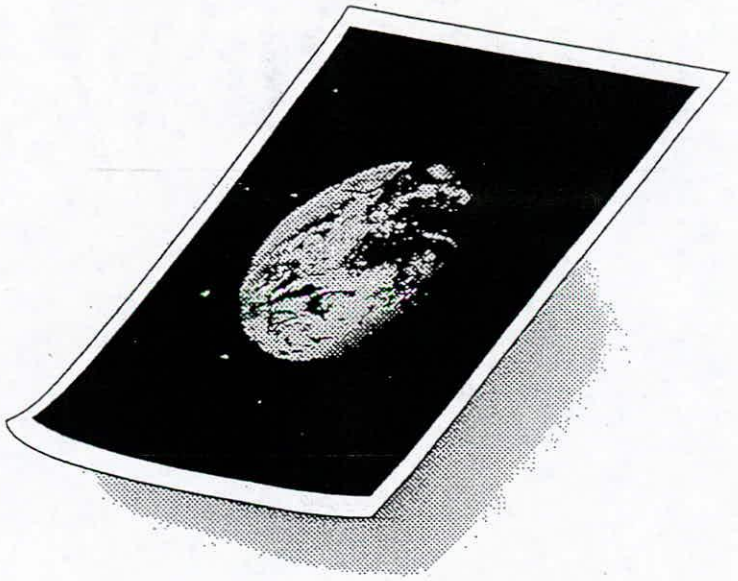
Provided by the Lancaster County Solid Waste Management Authority. 397-9968.

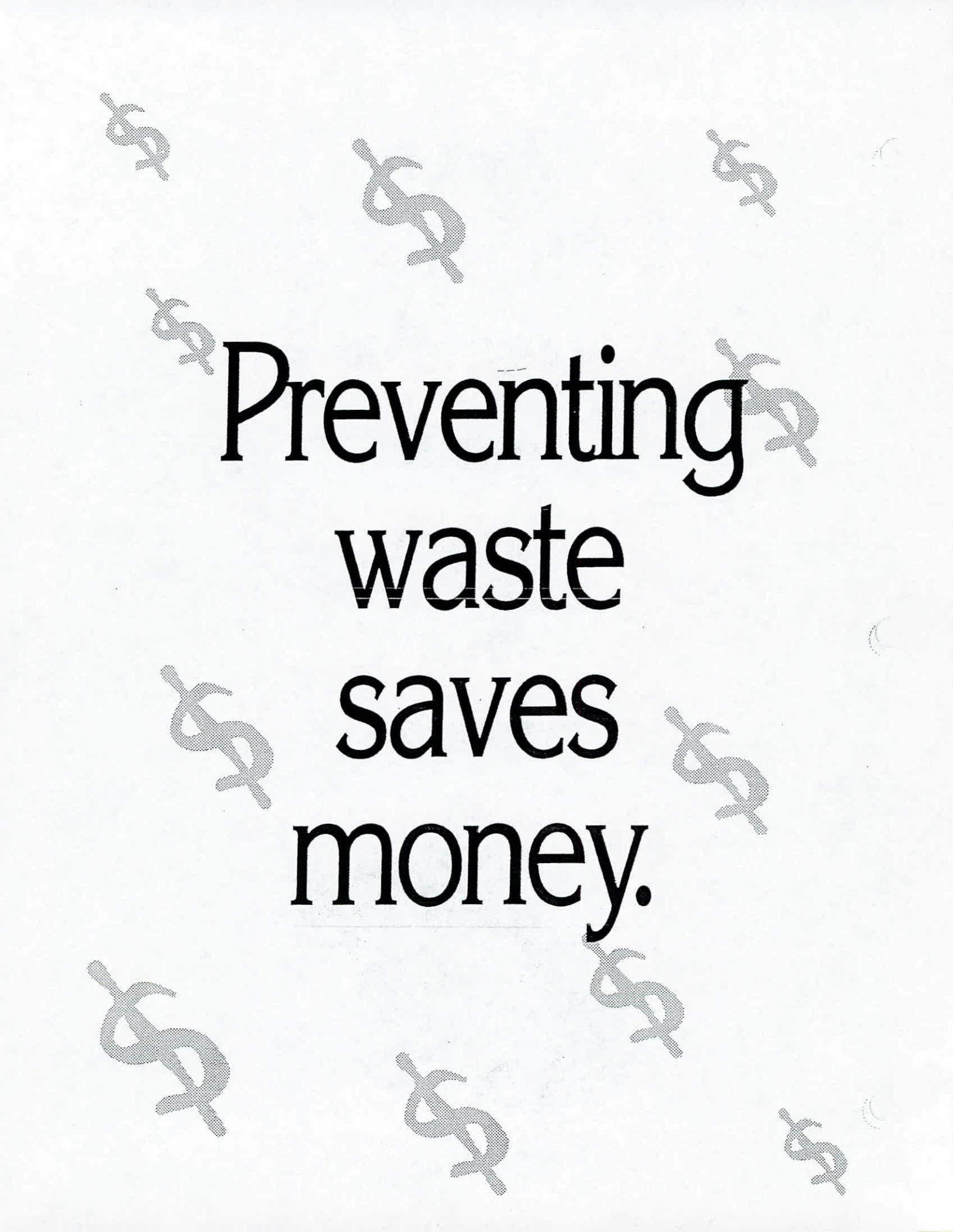
# RECYCLABLES ONLY

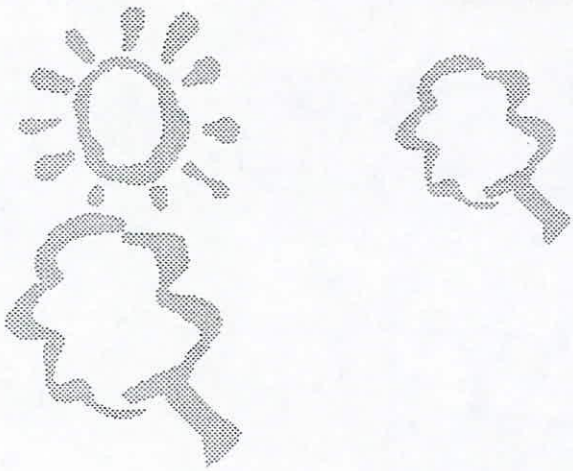
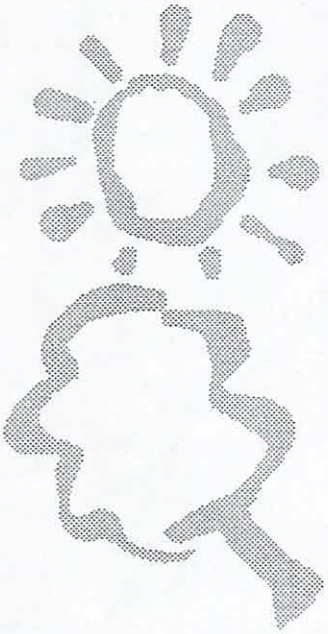

# NO GARBAGE


# GARBAGE ONLY

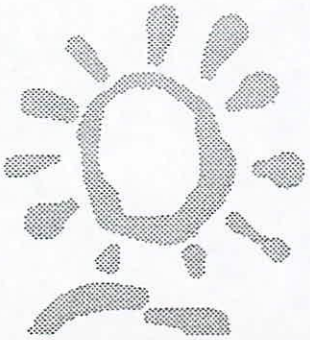
# If you're not preventing waste you're wasting resources



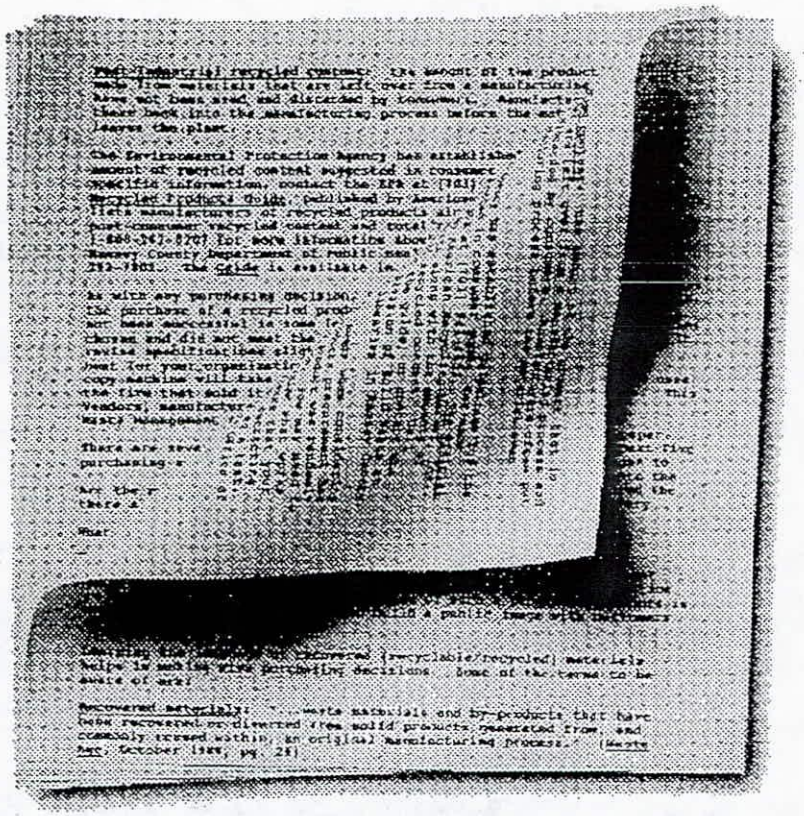

Preventing
waste
saves
money.


# Prevent waste. Save the environment




# It pays to repeat yourself.

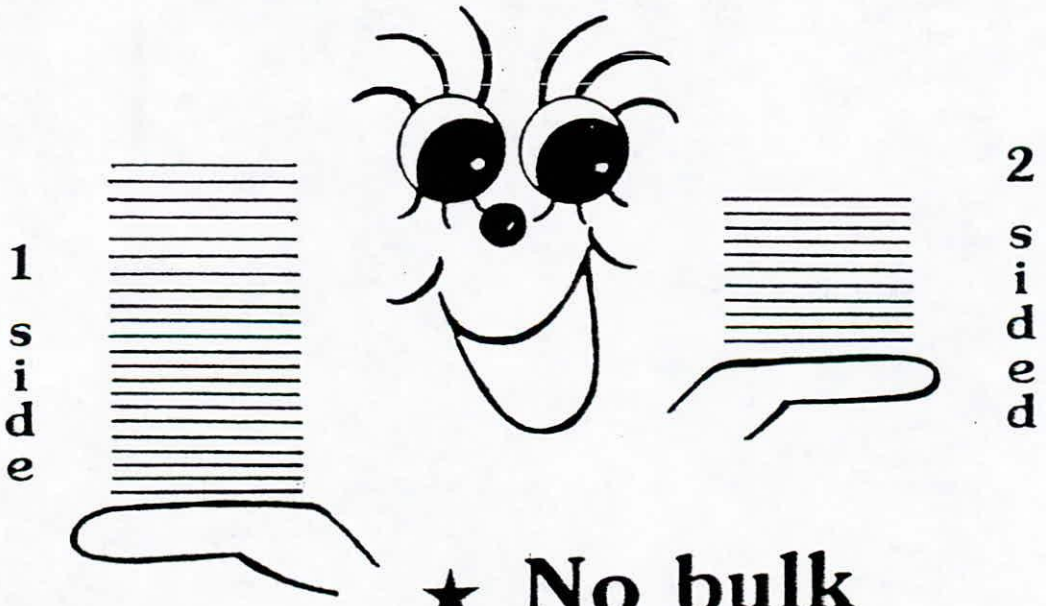


Some copiers will do double-side automatically, while others have a manual feed slot. Know your copier—and cut paper use in half.

REDUCE WASTE

Poster design concept: Ramsey County

# Two Sides are better than ONE!




**Get the same amount of copies with half the amount of paper**

★ **No bulk**

★ **No Weight**

★ **No Waste**

# USE BOTH S DES!

— A Reminder from the Solid Waste Reduction Program —

Juan Lazo

Reduce

*then* recycle

Reduce

*then* recycle

Reduce

*then* recycle

Reduce

*then* recycle

Reduce

*then* recycle

Reduce

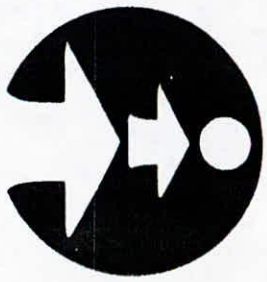
*then* recycle

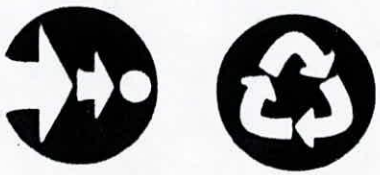
Reduce

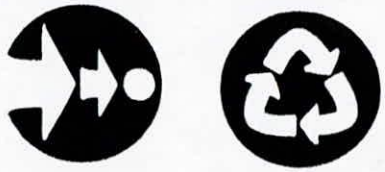
*then* recycle

Reduce

*then* recycle







*THANKS FOR RECYCLING YOUR PAPER!*

*UNFORTUNATELY, WE COULD NOT COLLECT YOUR RECYCLABLES BECAUSE THEY INCLUDED:*

_____ Newspapers
_____ Magazines
_____ Plastic Binders
_____ Phone Books
_____ Carbon Paper
_____ Gray Cardboard
_____ Hard Cover Books
_____ Food Wrappers/Food Contaminated Papers
_____ Brown File Folders
_____ Paper Towels/Tissues
_____ Copy Paper Wrappers
_____ Goldenrod Envelopes
_____ Soft Cover Books w/ Gray Pages
_____ Other _____

*PLEASE TRY TO HELP US DO OUR JOB BY BEING MORE CAREFUL ABOUT WHAT YOU PUT IN YOUR BIN*

December 1991

Dear County Employee,

CONGRATULATIONS! Thanks to the efforts of those Allegheny County employees who are involved in the office paper recycling program at County-owned facilities, more than 11.5 tons of corrugated cardboard, 42 tons of mixed office paper, and more than 21 tons of computer paper was diverted from landfills between July 1990 and July 1991. The paper recycled brought $2,892 in revenues, and in addition, the County saved almost $4,500 in waste disposal costs over the first six months of this period. THAT WAS A GREAT START, BUT WITH YOUR HELP, WE CAN DO EVEN BETTER!

Unfortunately, we got off to a somewhat shaky start because of changes in collection procedures and types of paper that could be accepted in the implemention phase of our program. While we believe most of these problems have been corrected, we know that we are still not getting all of the paper we should be getting based on observations of what is currently going into the dumpsters for disposal. Also, some of the paper that is being recycled has been contaminated with materials that are not recyclable, thus either reducing the revenue that we get for that paper or, in the extreme, resulting in reduction of the entire load.

To boost the amount of paper being recycled from County-owned facilities, we challenge you to look at the system in your office and find ways to increase both the amount and quality of paper you recycle. To help this effort, we are establishing a random review program. Here's how it will work: a representative from the County's Division of Waste Management may appear in your office at any time, unscheduled, to look into both your recycling and trash collection containers to determine how successful your office is in removing recyclable paper from wastes. If you office is doing a good job of recycling, we will issue a certificate of recognition and your office will be recognized during a weekly Board of Commissioners' meeting. If your office is not doing so well, the reviewer will discuss the specific problems that exist in your office and how you might address them. Your office would then have other opportunities in the future to demonstrate improvement and be recognized for your achievement in recycling.

For future reference, we have included information concerning what is recyclable and what is not on the back of this letter. If you have any other questions about storage and collection procedures, see your office recycling coordinator or call the Division of Waste Management at 355-5865.

For those employees located in other than County-owned facilities, please review the content of this letter and see whether you can improve your building's program. Please help Allegheny County's effort become an example of what a truly excellent paper recycling program can be!

Sincerely,

Tom Foerster Pete Flaherty Lawrence W. Dunn

APPENDIX D

# Conversion Table

# VOLUME-WEIGHT CONVERSION TABLE FOR RECYCLABLES IN POUNDS

| RECYCLABLE MATERIALS | ONE ITEM | ONE FULL GROCERY BAG | CUBIC YARD | GAYLORD 40"x48"x36" | 55-GALLON DRUM | BALE 30"x48"x60" | SEMI-LOAD |
|---|---|---|---|---|---|---|---|
| Aluminum Cans | | | | | | | |
| —Uncompacted (24) | .9 | Avg. 1.5 | 50-75 | | 13-20 | | |
| —Compacted | | | 250-430 | | | | |
| Ferrous Cans | | | | | | | |
| —Whole | .20 | | 150 | | 45-50 | | |
| —Flattened | | | 850 | | | | |
| Mixed Aluminum/Ferrous | | | 125 | | | | |
| Glass | | 16 | | | | | |
| —Whole bottles | | | 500-700 | | | | |
| —Manually broken | .25 | | | | 300 | | |
| —Crushed (mechanically) | | | 1800-2700 | | | | |
| —Semi crushed | | | 1000-1800 | | | | |
| —Refillable beer bottles (24) | 10-14 | | | | | | |
| —Refillable soft drink (24) | 12-22 | | | | | | |
| —8 oz. glass container | .5 | | | | | | |
| Mixed Food/Beverage Containers | | | 175 | | | | |
| Corrugated Cardboard | | | | | | | |
| —Uncompacted | | | 50-150 | | | | |
| —Compacted | | | 300-500 | | | | |
| —Baled | .70 | | 700-1100 | | | | 35000 |
| Newsprint | | 35 | | | | | |
| —Uncompacted | | | 360-505 | | | | |
| —Compacted/baled | | | 720-1000 | | | | |
| White Ledger | | | | | | | |
| —Flat uncompacted | | | 375-465 | | | | |
| —Flat compacted | | | 755-925 | | | | |
| —Crumpled uncompacted | | | 110-205 | | | | |
| —Crumpled compacted | | | 325 | | | | |

| RECYCLABLE MATERIALS | ONE ITEM | ONE FULL GROCERY BAG | CUBIC YARD | GAYLORD 40"x48"x36" | 55 GALLON DRUM | BALE 30"x48"x60" | SEMI-LOAD |
|---|---|---|---|---|---|---|---|
| Laser Printout | | | | | | | |
| —Uncompacted | | | 430 | | | | |
| —Compacted | | | 865 | | | | |
| Computer Printout | | | | | | | |
| —Uncompacted, stacked | | | 655 | | | | |
| —Compacted | | | 1310 | | | | |
| —1 case (2800 sheets) | 42 | | | | | | |
| Computer cards | | | | | | | |
| —Uncompacted | | | 605 | | | | |
| —Compacted/baled | | | 1215-1350 | | | | |
| White Ledger | | | | | | | |
| —Unstacked | | | 375-465 | | | | |
| —Stacked | | | 755-925 | | | | |
| —Uncrumpled | | | 110-205 | | | | |
| —Crumpled | | | 325 | | | | |
| —Ream of 20# bond (8.5x11) | 5 | | | | | | |
| —Ream of 20# bond (8.5x14) | 6.4 | | | | | | |
| —White ledger pads (72/case) | 38 | | | | | | |
| Mixed Ledger/Office Paper | | | | | | | |
| —Flat uncompacted | | | 380 | | | | |
| —Flat compacted | | | 755 | | | | |
| —Crumpled uncompacted | | | 110-205 | | | | |
| —Crumpled compacted | | | 610 | | | | |
| Waste Paper | | | | | | | |
| —Uncompacted | | | 70-90 | | | | |
| —Compacted | | | 215-270 | | | | |
| PET Soft Drink Bottles | | | | | | | |
| —Whole, uncompacted | | | 30-40 | 40-53 | | | |
| —Whole, compacted | | | 515 | | | | |
| —Baled | | | | | | 500-550 | |
| —Granulated | | | | 700-750 | | | 30000 |
| —2-liter bottles (8) | 1 | | | | | | |

| RECYCLABLE MATERIALS | ONE ITEM | ONE FULL GROCERY BAG | CUBIC YARD | GAYLORD 40"x48"x36" | 55 GALLON DRUM | BALE 30"x48"x60" | SEMI-LOAD |
|---|---|---|---|---|---|---|---|
| HDPE (Dairy only) | | | | | | | |
| —Whole, uncompacted | | | 24 | | | | |
| —Whole, compacted | | | 270 | | | | |
| —Baled | | | | | 400-500 | | |
| HDPE (Mixed) | | | | | | | |
| —Baled | | | | | 900 | | |
| —Granulated | | | | 800-1000 | | | 42000 |
| Mixed Rigid PET & HDPE | | | | | | | |
| —Whole, uncompacted | | | 32 | | | | |
| Film—Baled | | | | | 1100 | | 44000 |
| Other Plastics | | | | | | | |
| —Uncompacted | | | | | | | |
| —Compacted | | | | | | | |
| Yard Waste | | | | | | | |
| —Grass clippings, uncomp. | | | 350-450 | | | | |
| —Grass clippings, compacted | | | 550-1500 | | | | |
| —Leaves, uncompacted | | | 200-250 | | | | |
| —Leaves, compacted | | | 300-450 | | | | |
| —Leaves, vacuumed | | | 350 | | | | |
| —Mulch | | | 200-300 | | | | |
| —Wood chips | | | 500 | | | | |
| Food Waste | | | | | | | |
| —Solid or liquid fats | | | | | 412 | | |
| Asphalt/Concrete | | | | | | | |
| —Stone from asphalt/concrete | | | | | | | |
| Automotive Batteries | 33 | | | | | | |
| Tires | | | | | | | |
| —Car, whole | 20 | | | | | | |
| —Car, crumb rubber | 12 | | | | | | |
| —Truck, whole | 60 | | | | | | |
| —Crumb rubber | 100 | | | | | | |

Adapted from the National Recycling Coalition, Washington, DC
This table is a living document: conversion factors will be refined as new data becomes available.

| RECYCLABLE MATERIALS | ONE ITEM | ONE FULL GROCERY BAG | CUBIC YARD | GAYLORD 40"x48"x36" | 55 GALLON DRUM | BALE 30"x48"x60" | SEMI-LOAD |
|---|---|---|---|---|---|---|---|
| Used Motor Oil | | | | | | | |
| —Gallon | 7.1 | | | | | | |
| —Drum | 385 | | | | | | |
| White Goods | | | | | | | |
| —Dryer | Avg. 150 | | | | | | |
| —Freezers | 260-300 | | | | | | |
| —Refrigerators | 220-250 | | | | | | |
| —Stoves | 150-175 | | | | | | |
| —Washing machines | Avg.180 | | | | | | |
| —Water heaters | Avg. 135 | | | | | | |
| Municipal Solid Waste | | | | | | | |
| —Residential, uncompacted | | | 150-300 | | | | |
| —Commercial/Industrial, unc. | | | 300-600 | | | | |
| —MSW, compacted (truck) | | | 500-1000 | | | | |
| —MSW, landfill density | | | 750-1250 | | | | |



Adapted from the National Recycling Coalition, Washington, DC; revised using figures from EPA measurement project.
This table is a living document: conversion factors will be refined as new data becomes available.

APPENDIX E

# Directory & Publications

# Recycling Directory

This section lists a number of recycling and solid waste organizations that provide resources for recycling, composting, waste reduction, and waste disposal issues. Additionally, a directory of solid waste and recycling staff in the Pennsylvania Department of Environmental Protection is provided.

## Table of Contents:

**Aluminum Association**
900 19th Street, NW, Suite 300
Washington, DC 20006
(202) 862-5100
www.aluminum.org

**American Paper Institute**
1111 19th Street NW, Suite 800
Washington, DC 20036
(800) 878-8878

**American Plastics Council**
1300 Wilson Blvd., Suite 800
Arlington, VA 22209
(800) 2-HELP-90
www.plastic.org

**Aseptic Packaging Council**
1000 Potomac Street, NW, Suite 401
Washington, DC 20007-8565
(800) 277-8088
www.aseptic.org.

**Clean Air Council**
135 S. 19th Street, Suite 300
Philadelphia, PA 19103
(215) 567-4004
(215) 567-5794 (FAX)
www.cleanair.org

**Council on Plastic Packaging & the Environment (COPPE)**
1001 Connecticut Avenue, NW, Suite 401
Washington, DC 10036
(202) 331-0099

**Environmental Defense Fund**
257 Park Avenue South
New York, NY 10010
(212) 505-2100
(212) 505-2375 (FAX)
www.edf.org

**Foodservice and Packaging Institute**
150 South Washington Street, Suite 704
Falls Church, VA 22046
(703) 538-2800
(703) 538-2187 (FAX)
www.fpi.org

**Glass Packaging Institute**
515 King Street, Suite 420
Alexandria, VA 22314
(703) 684-6359
www.gpi.org

**Institute for Local Self Reliance**
2425 18th Street, NW
Washington, DC 20009
(202) 232-4180
www.ilsr.org

**Keep America Beautiful**
1010 Washington Boulevard
Stamford, CT 06901
(203) 323-8987
(203) 325-9199 (FAX)
www.kab.org

**National Association for Plastic Container Recovery (NAPCOR)**
2105 Water Ridge Parkway
Suite 570
Charlotte, NC 28217
(704) 423-9400
(704) 423-9500 (FAX)
www.napcor.com

**National Association of Counties**
440 First Street, NW, Suite 800
Washington, DC 20001
(202) 393-6226
(202) 393-2630 (FAX)
www.naco.org

**National Association of Towns and Townships**
444 N. Capitol Street, NW Suite 397
Washington, DC 20001
(202) 624-3550
(202) 624-3554 (FAX)
www.natat.org

**National League of Cities**
1301 Pennsylvania Avenue, NW, Suite 550
Washington, DC 20004
(202) 626-3000
www.nlc.org

**National Oil Recyclers Association**
5965 Amber Ridge Road
Haymarket, VA 20169
(703) 753-4277
(703) 753-2445 (FAX)
www.liquidrecyclers.org

**National Recycling Coalition (NRC)**
1325 G Street NW
Washington, DC 20005
(202) 347-0450
(202) 347-0449 (FAX)
www.nrc-recycle.org

**National Soft Drink Association**
Solid Waste Management Department
1101 16th Street, NW
Washington, DC 20036
(202) 463-6732
(202) 463-8277 (FAX)
www.nsda.org

**National Solid Wastes Management Association (NSWMA)**
Suite 300
4301 Connecticut Avenue, NW
Washington, DC 20008
(800) 424-2869
www.nswma.org

**Polystyrene Packaging Council, Inc.**
1300 Wilson Blvd. 13th Floor
Arlington, VA 22209
(703) 741-5649
(703) 741-5651 (FAX)
www.polystyrene.org

**Professional Recyclers of PA**
P.O. Box 25
Bellwood, PA 16617
(814) 742-7777
(800) 769-PROP
(814) 742-8838 (FAX)
www.proprecycles.org

**Scrap Tire Management Council**
1400 K Street, NW
Washington, DC 20005
(202) 408-7781
www.rma.org

**Solid Waste Association of North America (SWANA)**
P. O. Box 7219
Silver Spring, MD 20907-7219
(800) 467-4262
(301) 589-7068 (FAX)
www.swana.org

**Steel Recycling Institute (SCRI)**
Foster Plaza 10
680 Anderson Drive
Pittsburgh, PA 15220
(800)-876-SCRI
(412) 922-3213 (FAX)
www.recycle-steel.org

**U.S. Composting Council**
200 Parkway South Drive, Suite 310
Hauppauge, NY 11788
(631) 864-2567
(631) 864-3796 (FAX)
www.compostingcouncil.org

**U.S. Conference of Mayors**
1620 I Street, NW
Washington, DC 20006
(202) 293-7330
(202) 293-2352 (FAX)
www.usmayors.org

**U.S. Environmental Protection Agency EPA Office of Solid Waste**
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(800) 424-9346
www.epa.gov/epaoswer/osw/

**U.S. Environmental Protection Agency Region 3 Office**
1650 Arch Street (3CG00)
Philadelphia, PA 19107
Waste Minimization Hotline (800) 438-2474
www.epa.gov/region03

**U.S. Environmental Protection Agency EPA Office of Pollution Prevention**
1200 Pennsylvania Avenue, NW
Washington, DC 20460
(202) 564-8805
(202) 564-8899 (FAX)
www.epa.gov/p2

**American City and County**
6151 Powers Ferry Road, NW, Suite 200
Atlanta, GA 30330
(770) 955-2500
www.americancityandcounty.com

**Biocycle-Journal of Waste Recycling**
American Bio-Tech, Inc.
JG Press
419 State Avenue
Emmaus, PA 18049
(215) 967-4135
www.biocycle.jgpress.com

**Composting News**
McEntree Media Corp.
9815 Hazelwood Avenue
Cleveland, OH 44149-2305
(440) 238-6603
(440) 238-6712 (FAX)
www.recycle.cc

**Environmental Week**
King Communication Group, Inc.
1325 GST NW, Suite 1003
Washington, DC 20005
(202) 638-4260
(202) 662-9719 (FAX)
www.keypublishing.com

**Environmental Protection**
Stevens Publishing Corporation
5151 Beltline Road, 10th Fl.
Dallas, TX 75254
(972) 687-6700
www.eponline.com

**Greenwire**
E & E Publishing
122 C. Street NW, Suite 722
Washington, DC 20001
www.eenews.net

**MSW Management**
Forrester Communications
5638 Hollister Avenue, #300
Santa Barbara, CA 93117
(805) 681-1300
(805) 681-1312 (FAX)
www.forester.net

**Paper Stock Report**
9815 Hazelwood Avenue
Cleveland, OH 44149-2305
(440) 238-6603
(440 )238-6712 (FAX)
www.recycle.cc

**Pennsylvania Center for Environmental Education**
Slippery Rock University
Slippery Rock, PA 16057
(724) 738-4555
(724) 738-4502 (FAX)
www.pcee.state.pa.us

**The PROPonent**
Professional Recyclers of PA
P.O. Box 25
Bellwood, PA 16617
(814) 742-7777
(800) 769-PROP
(814) 742-8838 (FAX)
www.proprecycles.org

**Recycling Times**
5616 W. Cermk Road
Cicero, IL 60650
(312) 861-0708
www.recyclingtimes.com

**Recycling Today**
GIE, Inc.
4012 Bridge Avenue
Cleveland, OH 44113
(216 )961-4130
(216) 961-0364 (FAX)
(800) 456-0707
www.recyclingtoday.com
www.fibremarketnews.com

**Resource Recycling-North America's Recycling Journal**
Resource Recycling, Inc.
P. O. Box 42270
Portland, OR 97242-0270
(503)233-1305
(503)233-1356 (FAX)
www.resourcerecycling.com

## Publications Directory

**Scrap Processing & Recycling (ISRI)**
Institute of Scrap Recycling Industries
1325 G Street, NW, Suite 1000
Washington, DC 20005
(202) 662-8544
(202) 626-0944 (FAX)
www. isri.org

**Scrap Tires News**
Recycling Research, Inc.
133 Mountain Road
P. O. Box 714
Suffield, CT 06078
(860) 668-5422
(860) 668-5651 (FAX)

**Sierra**
85 Second St. 2nd Floor
San Francisco, CA 94105-3441
(415) 977-5500
(415) 977-5799 (FAX)
www.sierraclub.org

**Solid Waste Report**
Business Publishers, Inc.
8738 Colesville Road
Suite 1100
Silver Spring, MD 20910-3928
(301)589-5103
(301)587-4530 (FAX)
djones@bpinews.com

**The R Word**
Carolina Recycling Association
P. O.Box 1578
Pittsboro, NC 27312
(919) 545-9050
(919) 545 9060 (FAX)
cra@cra-recycle.org

**Waste Age**
6151 Powers Ferry Road, NW
Atlanta, GA 0339
(770) 955-2500
www.wasteage.com

**Waste News**
1725 Merriman Road
Akron, OH 44313-5251
(330)836-9180
(330)836-7409 (FAX)
www.waste.news.com

**Waste Reduction Tips- Environmental Newsletters, Inc.**
11906 Paradise Lane
Herndon, VA 20171-1519
(703) 758-8436
wastetips@aol.com

## Waste Exchange Directory

**American Plastics Exchange, Inc. (APEXQ)**
1425 Hampshire Ave South, Suite 113
Minneapolis, MN 55426
(612) 544-1100
(800) 746-2739
(612) 544-9811
www.apexq.com

**National Association for the Exchange of Industrial Resources (NAEIR)**
560 McClure St
Galesburg, IL 61401
(800) 562-0955 (ask for Corporate Relations)
(309) 343-8862

**Northeast Industrial Waste Exchange**
90 Presidential Plaza, Suite 122
Syracuse, NY 13202
(315) 422-6572
(315) 422-9051 (FAX)

**Ohio Waste Net**
CEC Consulting
6907 Brookpark Road
Cleveland, OH 44129
(216) 749-2992
(216) 398-8403

## Pennsylvania Department of Environmental Protection

P. O. Box 2063
Harrisburg, PA 17105-2063
General Information.....717-783-2300
Communications Office (Press)....717-787-1323

## Executive Office

16th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax.....717-705-4980
Secretary: Hess, David.....717-787-2814
Executive Assistant::
Laudenbach, Cindy.....717-787-2814

## 21st Century Environmental Commission

15th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax..... 717-783-8470
Executive Director:
Barkanic, Robert.....717-772-4770

## Citizens Advisory Council (CAC)

13th Floor, Rachel Carson State Office Building
P. O. Box 8459, Harrisburg, 17105
Fax .....717-772-2291
Executive Director:
Wilson, Susan.....717-787-4527

## Environmental Quality Board (EQB)

15th Floor Rachel Carson State Office Building
P. O. Box 8477, Harrisburg 17105-8477
General Information.....717-787-4526
Comments Regulations:
RegComments@state.pa.us

## Executive Deputy Secretary for Policy and Communications

16th Floor Rachel Carson State Office Building
P. O. Box 2063, Harrisburg, 17105-2063
Fax.....717-783-8926
Publications:.....DEPinfo@state.pa.us
Executive Deputy Secretary.:
Sexton, Barbara .....717-772-1856
Admininistrative Officer:
Adams, Tammey.....717-772-1856
Director of Local Government Relations:
Hershey, Don.....717-787-9580
Director of Legislative Affairs:
Mahon, Greg.....717-783-8303
Economic Development Project Coordinator:
Wolf, Michael.....717-787-9580
Public Participation Coordinator:
Allen, Christopher.....717-787-9580
DEP Website Administrator:
Pilgrim,Matt.....717-772-3953
Director, Environmental Education(Acting):
Farster, Jack.....717-705-3767

## Office of Communications

16th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax.....717-783-8926
EP update:.....EPUpdate@state.pa.us
DEP Website:.....www.dep.state.pa.us
Press Secretary:
Buterbaugh, Dennis.....717-787-1323

## The Policy Office

15th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax.....717-783-8470
Director: Hines, John.....717-783-8727
Regulatory Coordinator:
Trostle, Sharon.....717-783-8727

## Office of Pollution Prevention and Compliance Assistance

16th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax.....717-783-0546
Deputy Secretary:
Barkanic, Robert.....717-783-0540

## Governor's Green Government Council

Division of Certification, Licensing and Bonding
1st Floor, Rachel Carson State Office Building
Brownlee, Catherine.....717-772-8924
Fax.....717-783-0489
Chief: Slatick, Robert J.....717-787-4827
Bonding Section:
Keyes, Katherine.....717-783-7503
Bond Forfeitures .....717-783-7503
Bond Processing & Releases
Waste Management.....717-783-9707
Certification & Licensing Section- Chief:
Gross, Anita.....717-787-2865

## Air, Recycling and Radiation Protection

16th Floor, Rachel Carson State Office Building
P. O. 2063, Harrisburg, 17105-2063
Fax.....717-787-8885
Deputy Secretary for Air, Recycling & Radiation Protection:
Barkanic, Robert.....717-772-2724

## Bureau of Air Quality Control

12th Floor, Rachel Carson State Office Building
P. O. Box 8468, Harrisburg 17105-8468
Fax.....717-772-2303
Director: Epps, Joyce.....717-787-9702
Assistant Director:
St. Louis, Richard.....717-787-2688
Public Information Specialist.....717-787-9702
Division of Air Resource Management
Chief: Havens, J. Wick.....717-787-9495
**Division of Permits**
Chief: Slade, John.....717-787-4325
**Division of Compliance and Enforcement**
Chief: Kulp, Robert L.....717-787-9257
**Division of Air Quality Monitoring**
Chief.....717-787-2347

## Bureau of Land Recycling and Waste Management

14th Floor, Rachel Carson State Office Building
P. O. Box 8471, Harrisburg 17105-8471
Fax.....717-787-1904
Hazardous Waste.....717-787-6239
Land Recycling and Cleanup.....717-783-7816
Landfill Information/Hazardous ....717-787-6239
Landfill Information/Non-Haz.....717-787-7381
Manifest Information.....717-783-9258
Recycling .....717-787-7382
Reporting and Fees Collection.....717-783-9258
Residual Waste.....717-787-7381
Transporter Licenses.....717-787-6239
Director: Hogeman, David.....717-783-2388
Asst Director: Leader, Gayle.....717-787-9871
Program Development:.....717-787-9870
Program Support:
Miller, Nadine L.....717-787-9871
**Division of Hazardous Waste Management**
P. O.Box 8471
Chief: Shipman, D. Richard.....717-787-6239
Hazardous Waste Permits
Hayes Joe.....717-787-6239
Compliance & Monitoring
Vacant.....717-787-6239
Fax.....717-787-0884
**Division of Municipal and Residual Waste**
P. O. Box 8472, Harrisburg 17105
Chief: Pounds, William.....717-787-7564
Permitting: Socash, Steve.....717-787-7381
Enforcement & Bonding
Sloan, Samuel.....717-787-7381
General Permits/Beneficial Use
Hassinger, Ronald.....717-787-7381

**Division of Waste Minimization and Planning**
P. O. Box 8472, Harrisburg 17105
Chief: Holley, Larry.....717-787-7382
Recycling & Markets:
Hursh,Carl.....717-787-7382
Planning
Lohman, Sally.....717-787-7382

**Land Recycling and Cleanup Program**
P. O. Box 8471, Harrisburg 17105
Chief: Fidler, Thomas.....717-783-7509
Land Recycling.....717-783-7816
Hazardous Sites Cleanup
Crownover David.....717-783-7816
GERCLA (Superfund).....717-783-7509
Storage Tank Cleanup
Swokel, Charles.....717-783-7509
**Division of Remediation Services**
P. O. Box 8471, Harrisburg 17105
Chief: Vacant.....717-783-9475
**Division of Reporting and Fee Collection**
13th Floor Rachel Carson State Office Building
P. O. Box 8550, Harrisburg 17105
Chief: Beatty, Jeffrey.....717-783-9258

## Bureau of Radiation Protection

13th Floor, Rachel Carson State Office Building
P. O. Box 8469 Harrisburg 17105-8469
Fax.....717-783-8965
Director: Allard, David.....717-787-2480

## Chief Counsel

16th Floor Rachel Carson State Office Building
P. O. Box 2063 Harrisburg 17105-2063
Fax.....717-787-9378
Chief Counsel: Bedrin,Michael.....717-787-4449

## Bureau of Regulatory Counsel

9th Floor, Rachel Carson State Office Building
P.O. Box 8464, Harrisburg 17105-8464
Fax.....717-787-9378
Director: Mather, Richard P.....717-787-7060
Assistant Counsel, Solid Waste:
Campfield, Kristen.....717-787-7060

Field Operations
16th Floor, Rachel Carson State Office Building
P. O. Box 2063, Harrisburg 17105-2063
Fax.....717-772-3314
Deputy Secretary for Field Operations (Acting):
Conrad,Eric.....717-787-5028

Environmental Emergency Response Director:
High,Charles.....717-787-5027
After hours.....717-787-4343

## Southeast Region Office

Suite 6010 Lee Park
555 North Lane, Conshohocken 19428-2233
Fax.....610-832-6259
Information.....610-832-6000
Counties: Bucks, Chester, Delaware, Montgomery and Philadelphia
Regional Director (Acting):
Feola, Joseph.....610-832-6012
Fax.....610-832-6022
Regional Waste Management Manger:
Furlan, Ronald.....610-832-6213
Fax.....610-832-6143

## Northeast Region Office

2 Public Square Wilkes Barre, 18718-0790
Fax.....570-830-3051
Information.....570-826-2511
Counties: Carbon, Lackawanna, Lehigh, Luzerne, Northampton, Pike, Susquehanna, Wayne and Wyoming
Regional Director:
McDonnell,William.....570-826-2340
Regional Waste Management Manager:
Tomayko, William.....570-826-5425
Fax.....570-826-5448

Bethlehem District Office
4530 Bath Pike, Bethlehem 18017
Fax.....610-861-2072
Information.....610-861-2070

Pottsville District Office
5 West Laurel Boulevard, Pottsville-17901-2454
Fax.....570-621-3110
Information.....570-621-3118

Scranton District Office
Room 400, 101 Penn Ave.,
Scranton, PA 18503-2025
Information.....570-963-4521

Pocono District Office
HC 1, Box 95 B, Swittwater, PA 18379-9723
Fax.....570-895-4041
Information.....570-895-4040

## Southcentral Region Office

909 Avenue, Harrisburg
Fax.....717-705-4710
Information.....717-705-4700
Counties Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York
Regional Director:
Steiner, Michael.....717-705-4704
Regional Waste Management Manager
Krueger, John.....717-705-4706

Altoona District Office
615 Howard Avenue Altoona PA 16601
Fax.....814-949-7938
Information.....814-946-7290

Chambersburg District Office
Suite 6 South 7th Street
Chambersburg, PA 17201-3852
Fax.....717-267-3740
Information.....717-267-3364

Lancaster District Office
1661 Old Philadelphia Pike, Lancaster, PA 17602
Fax.....717-396-7178
Information.....717-299-7601

Reading District Office
1005 Crossroads Boulevard, Reading, PA 19605
Fax.....610-916-0110
Information.....610-916-0100

York District Office
150 Roosevelt Avenue, York 17404-3333
Fax.....717-845-3496
Information.....717-771-4481

## Northcentral Region Office

208 West Third Street Williamsport, 17701
Fax.....570-327-3565
Information.....570-327-3636
Counties: Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union
Regional Director:
Yowell, Robert C.....570-327-3695
Waste Management Manager:
Bittle, Richard.....570-327-3653

Sunbury District Office
309 North Fifth Avenue, Sunbury 17801
Fax.....570-988-5507

Information.....570-988-5500

Mansfield District Office
600 Gateway Drive, Mansfield 16933
Fax.....814-662-0843
Information.....814-662-0830
Hawk Run District Office
P. O. Box 209 Hawk Run, 16840-0209
Fax.....814-342-8216
Information.....814-342-8200

## Southwest Region Office

Waterfront Drive, Pittsburgh, PA 15222-4745
Fax.....412-442-4179
Information.....412-442-4000
Counties: Allegheny, Armstrong, Beaver, Cambria, Greene, Indiana, Somerset, Washington and Westmoreland
Regional Director:
Duritsa,Charles.....412-442-4179
Regional Solid Waste Manager:
Orlando, Tony..... 412-442-4120

Ebensburg District Office
437 South Center Street, P. O. Box 625
Ebensburg 15931-0625
Fax.....814-472-1898
Information.....814-472-1900

Greensburg District Office
Armbrust Building, R. D. 2 Box 603-B
Greensburg, 15601-0982
Fax.....724-925-5557
Information.....724-925-5400

McMurray District Office
3913 Washington Road, McMurray 15317-2532
Fax.....724-941-7258
Information.....724-941-7100

Uniontown District Office
100 New Salem Road, Uniontown 15401
Fax.....724-439-7324
Information.....724-439-7431

Beaver Falls District Office
206 Municipal Building
8th Avenue and 15th Street, Beaver Falls 15010
Fax.....814-847-5281
Information.....814-847-5270

## Northwest Region Office

230 Chestnut Street, Meadville 16335-3481
Fax.....814-332-6125
Information.....814-332-6945
Counties Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren
Regional Director:
Beckman, Steven C.....814-322-6816
Regional Waste Management Manager:
Lobins, Patrick.....814-332-6848

Knox District Office
White Memorial Building, Knox 16232
Fax.....814-797-2706
Information.....814-797-1191

New Castle District Office
101 South Mercer Street, New Castle 16101
Fax.....724-656-3267
Information.....724-656-3160

Warren District Office
321 North State Street, North Warren 16365
Fax.....814-723-1515
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**NORTHWEST REGION**

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Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango & Warren Counties

APPENDIX F

# Glossary

## Glossary

### Acronyms

**ACF** - Acclerated Cleanup Plans (for Superfund sites)

**BAT** - Best Available Technology

**BDAT** - Best Demonstrated Available Technology

**CAA** - Clean Air Act

**CAC** - Citizens' Advisory Committee

**CAMU** - Corrective Action Management Unit (A rule intended to remove obstacles with RCRA hazardous waste cleanups.)

**CERCLA** - Comprehensive Environmental Response, Compensation and Liability Act (the legislation that empowers the federal "Superfund" program)

**DEP** - The Pennsylvania Department of Environmental Protection

**DCNR** - The Pennsylvania Department of Conservation and Natural Resources

**EIS** - Environmental Impact Statement

**EPA** - The U.S. Environmental Protection Agency

**EQB** - The Pennsylvania Environmental Quality Board

**HHW**- Household Hazardous Waste

**HSWA** - The Hazardous and Solid Waste Act of 1984 (federal)

**IPC(F)** - Intermediate Processing Center (Facility)

**LDR** - Land Disposal Restriction

**MRF** - Materials Recovery Facility (usually applied to recycling processing facilities)

**MSW** - Municipal Solid Waste

**NPL** - National Priorities List for CERCLA/Superfund cleanups

**NRC** - National Recycling Coalition

**NRDC** - National Resources Defense Council

**PAYT** - Pay As You Throw (refers to a system where residents pay for waste management services per unit of waste collected rather than by a flat fee.)

## Glossary

**Plastics Acronyms:**

**PET or PETE** - Polyethylene Teraphthalate, used most often for soda bottles (#1 plastics)
**HDPE** - High Density Polyethylene, used for milk jugs, detergent containers, etc. (#2 plastics)
**V** - Vinyl or Polyvinyl Chloride, often used for cleaning product containers (#3 plastics)
**LDPE** - Low Density Polyethylene, used for plastic bags, lids and some containers (#4 plastics)
**PP** - Polypropylene, often used for yogurt and butter containers (#5 plastics)
**PS** - Polystyrene, used most often for food storage and food serving products (#6 plastics)

**PROP** - Professional Recyclers of Pennsylvania (formerly Public Recycling Officials of Pennsylvania)

**RACT** - Reasonable Available Control Technology

**RCRA** - Resource Conservation and Recovery Act of 1976 (the federal legislation to regulate hazardous waste and eliminate open dumping)

**RDF** - Refuse Derived Fuel

**SWAC** - The Pennsylvania (or other) Solid Waste Advisory Committee

**TPD** - Tons Per Day

**TPY** - Tons Per Year

**UST** - Underground Storage Tank (LUST - Leaking Underground Storage Tank)

**VOC** - Volatile Organic Compound

**WIIFM** - What's In It For Me

**WTE** - Waste-To-Energy

are not limited to; fairs, bazaars, socials, picnics, and organized sporting events. For purposes of Act 101, recycling is required for all such events that occur in municipalities mandated to recycle if the event is attended by more than 200 persons.

**Compactor** - Any power-driven mechanical equipment designed to compress waste materials. Usually attached to an enclosed rolloff container.

**Compactor Truck** - A large truck with an enclosed body that has special hydraulic equipment for loading, compressing, and distributing waste materials within the body.

**Composting** - A controlled process that breaks organic matter into a stable material called humus.

**Construction and Demolition Waste** - (C& D) All municipal and residual waste building materials, grubbing waste, and rubble resulting from construction, remodeling, repair and demolition operations on houses, commercial buildings and other structures and pavement.

**Contaminant** - Material of one type that is an impurity for another type of material. For example, metal is a contaminant in plastic recycling.

**Co-product** - A material generated by a manufacturing process that is consistently equivalent to the physical manufactured product if the use presents no greater harm to the environment that the use of the product.

**Corrugated Cardboard** - Structural paper material with an inner core shaped in rigid parallel furrows and ridges. Does not refer to linerboard or paperboard such as that use for cereal boxes.

**Cost Avoidance** - Money saving by not having to dispose of solid waste. Includes land tipping fees, and in some cases, hauler pickup and/or pulling charges.

**Cullet** - Clean, color-sorted, crushed glass that is used in glass making to speed up the melting of silica sand. The use of cullet reduces energy costs of glass manufacturing.

**Disposables** - Consumer products, items and packaging used once or a few times and discarded.

**Disposal Container** - The outside container in which solid waste is placed (usually a rolloff, compactor, lugger box or dumpster).

**Disposal** - The incineration, deposition, injection, dumping, spilling, leaking or placing of solid waste into or on the land or water in a manner that the solid waste or a constituent of the solid waste enters the environment, is emitted into the air or is discharged into the waters.

**Domestic or Household Hazardous Waste** - Solid waste comprised of garbage and rubbish which originates in the residential private household or apartment house.

**Ferrous Metals** - Iron and steel products, including tin coated food and beverage cans.

**Front Loader** - A refuse truck that has power driven loading equipment at the front of the vehicle.

**Garbage** - Any solid waste derived from animal, grain, fruit or vegetable matter that is capable of being decomposed by microorganisms with sufficient rapidity to cause such nuisances as odors, gases or vectors.

**Glass** - Bottles or jars made of clear, green or brown glass. The following types of glass are generally not recyclable, though some may be recyclable if there are local markets: non-container glass, plate

**Office Paper (High Grade)** - All white paper, bond paper and computer paper used in commercial, institutional, and municipal establishments.

**Pay-As-You-Throw (PAYT)** - A collections system where residents pay for waste management services per unit of wasted collected rather than through a flat fee, also known as variable rate pricing or unit pricing.

**Pickup Charge** - The fee assessed by a waste hauler to empty a front or rear-load dumpster. Usually this is a flat service fee regardless of weight or volume contained in the dumpster.

**Postconsumer Materials** - Materials generated by a business or consumer that have served their intended end uses and have been diverted from the municipal solid waste stream for the purpose of recycling.

**Preconsumer Materials** - Materials generated during any step in the production of a product and that have been recovered from or otherwise diverted from the waste stream for reuse in that same industrial process or sale to another industry for use in another industrial process. Examples include trimmings, damaged or obsolete products and production overruns. This type of material is also known as post-industrial material.

**Processing** - Any technology used for the purpose of reducing the volume or bulk or municipal or residual waste or any technology used to convert part or all of such waste materials for off-site reuse. Processing facilities include, but are not limited to, transfer facilities, composting facilities, resource recovery facilities and recycling facilities.

**Product** - A commodity that is the result of a manufacturing process. The term does not include off-specification materials; the materials may be co-products.

**Public** - all stakeholders who have the potential for affecting or being affected.

**Pull Charge** - The fee assessed by a waste hauler to pick up a rolloff, compactor or lugger box at the generator's facility, haul it to a disposal site, empty it and replace with another container.

**Rear Loader** - A refuse truck that has power-driven loading equipment at the rear of the vehicle.

**Recovered Materials** - Includes preconsumer and postconsumer recycled items.

**Recyclable Materials** - Materials generated by residences and commercial, municipal and institutional establishments which are specified by a municipality and can be separated from municipal waste and returned to commerce to be reused as a resource in the development of useful products. Recyclable materials may include, but are not limited to, clear glass, colored glass, aluminum, steel and bimetal cans, high grade office paper, newsprint, corrugated cardboard, leaf waste, plastics and any other items selected by a municipality or specified in future revisions to Act 101.

**Recycled Materials** - Products that contain some recovered materials that might otherwise have been disposed through the waste management infrastructure.

**Recycling** - The collection, separation, recovery and sale or reuse of metals, glass, paper, leaf waste, plastics and other materials which would otherwise be disposed or processed as municipal waste or the mechanized separation and treatment of municipal waste (other that through combustion) and creation and recovery of reusable materials.

**Recycling Coordinator** - A person who plans, organizes and oversees the recycling program established

glass, automotive glass, light bulbs, blue glass, porcelain and ceramic glass.

**Hauler** - Any person, firm, co-partnership, association or corporation who has been licensed to collect, transport and dispose of waste for a fee. Haulers that handle only recyclable materials are not required to obtain a license.

**Hazardous Waste** - Any solid waste or combination of solid wastes, as defined in Act 97, which because of its quantity, concentration or physical, chemical or infectious characteristics may; 1) cause or significantly contribute to an increase in mortality or an increase in morbidity in either an individual or the total population; or 2) post a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed.

**Incinerator** - A plant designed to reduce waste volume by combustion.

**Industrial Facility** - Any establishment engaged in manufacturing or processing, including, but not limited to; factories, mills, foundries, processing plants, refineries, mines and slaughterhouses.

**Institutional Establishment** - facilities that house or serve groups of people including, but not limited to; hospitals, nursing homes, orphanages, day care centers, schools and universities.

**Leachate** - Liquid that passes through, and escapes from, a landfill. The liquid is created from the rainfall and liquids present in the deposited waste that percolates down through the soil and garbage carrying many toxins with it as it travels to areas surrounding the landfill.

**Lead Acid Batteries** - Batteries that include, but are not limited to; automotive, truck, and industrial batteries that contain lead.

**Leaf Waste** - Leaves from trees, bushes, and other plants, garden residues, chipped shrubbery and tree trimmings, not including grass clippings.

**Lugger Box** - A type of disposal container that is hauled to disposal site, emptied and returned to the facility.

**Magazines and Periodicals** - Printed matter containing miscellaneous written pieces published ar fixed or varying intervals.

**Market** - An outlet for recyclable material. Can include a buy-back center, mill, intermediate handler, end user or processor of the material.

**Multi-Family Housing Properties** - Properties having multiple dwelling units per structure. For purposes of Act 101, multi-family properties are those having four or more units per structure.

**Municipal Waste** - Any garbage, refuse, industrial lunchroom or other material, including solid, liquid, semi-solid or contained gaseous material, resulting from operation or residential, municipal, commercial or institutional establishments and from community activities and any sludge not meeting the definition of residual or hazardous waste in the Solid Waste Management Act from a municipal, commercial or institutional water supply treatment plant, wastewater treatment plant or air pollution control facility. The term does not include source separated recyclable materials.

**Newspaper** - Paper of the type commonly referred to as newsprint and distributed at fixed intervals, having printed there on news and opinions, containing advertisements and other matters of public interests.

**Office Paper (Mixed Grade)** - Usually includes high-grade office paper as well as envelopes, colored paper and memos. It does not include carbon paper, paper board, newsprint, glossy paper or magazines.

in a commercial, municipal, institutional or industrial facility or in a municipal residential curbside collection program.

**Refuse** - All solid waste materials which are discarded as useless.

**Residences** - Any occupied single family dwelling. For purposes of Act 101, residences may include multi-family dwellings having up to four dwelling units per structure.

**Residual Waste** - Any garbage, refuse, other discarded material or other waste including solid, liquid, semi-solid, or contained gaseous materials resulting from industrial, mining and agricultural operations and any sludge from an industrial, mining or agricultural water supply treatment facility, wastewater treatment facility, or air pollution control facility, provided that it is not hazardous. The term residual waste shall not include coal refuse as defined in the Coal Refuse Disposal Control Act. Residual waste shall not included treatment sludge from coal mine drainage treatment plants, or disposal which is being carried on pursuant to and in compliance with a valid permit issued pursuant to The Clean Streams Law.

**Resource Conservation and Recovery Act** - Federal law passed in 1976 to address the waste management issues in the United States.

**Resource Recovery** - Processing that provides for the extraction and utilization of materials or energy from municipal waste that is generated off site, including, but not limited to, a facility that mechanically extracts materials from municipal waste, a combustion facility that converts the organic fraction of municipal waste to usable energy, and any chemical and biological process that converts municipal waste into a fuel product. The term does not include compost, methane gas extraction from a municipal waste landfill or recycling facility.

**Reuse** - Using a product again for its original purpose or a new purpose rather than disposing of it; for example, refilling a glass bottle.

**Rolloff** - A 10 to 50 cubic yard container with and open top for collection of solid waste. The container is picked up by a special truck and hauled to landfill to be emptied.

**Rubbish** - All non-putresible municipal waste except garbage and other decomposable matter. This category includes but is not limited to ashes, bedding, crockery and non-recyclable paper, glass and metal products.

**Sanitary Landfill** - A method of disposing refuse on land that is designed to minimize hazards to public health and safety. Modern landfills have impermeable liners and systems to collect leachate, the water that percolates through a landfill and may carry toxins with it.

**Scavenging** - The unauthorized and uncontrolled removal of material placed for collection or from a solid waste processing or disposal facility.

**Separation** - The process of sorting materials by their physical properties.

**Sewage Treatment Residue/Sludge** - Any coarse screenings, grit and dewatered or air-dried sludge from sewage treatment plants which are a municipal solid waste and require proper disposal under Act 97.

**Solid Waste** - Any waste, including but not limited to, municipal, residual or hazardous wastes, including solid, liquid, semisolid or contained gaseous material.

# Glossary

**Source Reduction** - The reduction of the quantity or toxicity of residual waste generated achieved through changes in the manufacturing process, including process modifications, feedstock substitutions, improvements in feed stock parity, shipping and packing modifications, housekeeping and management practices,, increases in machinery efficiency, recycling within a process. The term does not include dewatering, compaction or waste reclamation.

**Special Handling Waste** - Solid waste that requires special storage, collection, transportation, processing or disposal due to the quantity of material or its unique physical, chemical or biological characteristics, including, but not limited to sewage sludge, infectious waste, chemotherapeutic waste, incinerator ash, asbestos containing waste, PCB containing waste, non-hazardous waste oil, fuel contaminated soil and waste tires.

**Storage** - The containment of any waste on a temporary basis in such a manner as not to constitute disposal of such waste. It shall be presumed that the containment of any waste in excess of one year constitutes disposal. This presumption can be overcome by clear and convincing evidence to the contrary.

**Tipping Fee** - The charge made by a disposal site operator for the privilege of disposing waste materials.

**Transportation** - The off-site removal of any solid waste or recyclables at any time after generation.

**Transfer Station** - A facility where waste materials are taken from smaller collection vehicles and placed in larger transportation trucks for movement to disposal or processing areas.

**Unit Pricing** - Residents pay for waste management services per unit of waste collected rather than through a flat fee, also known as pay-as-you-throw or variable rate pricing.

**Variable Rate Pricing** - Residents pay for waste management services per unit of waste collected rather than through a flat fee, also known as pay-as-you-throw or unit pricing.

**Virgin Materials** - Natural resources and raw materials traditionally used in industrial and manufacturing processes. Examples of virgin material include wood pulp, plastic resins derived from the petroleum refining process, mined/processed metals, and glass produced using a silica base.

**Waste** - A material whose original purpose has been completed and which is directed to a disposal or processing facility or is otherwise disposed. The term does not include source separated recyclable materials or material approved by the PA Department of Environmental Resources for beneficial use.

**Waste Audit** - An analysis of a company's processes, waste stream and disposal costs used to process detailed information of the solid waste management system.

**Waste Reduction** - Design, manufacture, or use of a product to minimize weight of municipal waste that requires processing or disposal, including activities that minimize the weight or volume or increases durability or recyclability, and the use of products that contain as little material as possible, are capable of being reused or recycled, or have an extended useful life.

**White Goods** - Household appliances including, but not limited to, refrigerators, stoves, washers and dryers.

**Yard Waste** - Biodegradable wastes resulting from groundskeeping and landscaping operations. Can include leaves, grass clippings and pruning wastes.