



# Developing A Comprehensive Federal Office Recycling Program





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WASHINGTON, D.C. 20460

OFFICE OF  
ADMINISTRATION  
AND RESOURCES  
MANAGEMENT

The Environmental Protection Agency (EPA) has published various documents covering the waste management crisis facing this country. Developing A Comprehensive Federal Recycling Program is produced by the Office of Administration and Resources Management primarily for government agencies. The purpose of this document is to develop a broader understanding of the term "recycling program". Recycling must include education, collection, marketing, procurement, monitoring and evaluation. This document stresses the importance of each of the activities in establishing and maintaining an effective program.

While this is not a detailed operating manual, it does outline the necessary steps for designing and implementing a comprehensive office recycling program in a federal agency. Flexibility is a key factor when designing a recycling program. A program that works for a large agency located in or near a major city with good markets for recyclables, may have to be altered for a small agency located away from a major city. Mandatory recycling laws, such as the one covering all commercial and federal buildings in Washington, D. C., will also impact the scope, priorities and timing of your program.

Finally, we wanted to share with you our experience and information and to encourage you to get involved. Recycling is the "right thing to do" if we are to conserve our natural resources and preserve our land for future generations.

We have provided an Information Sheet at the back of this publication. Please use it to let us know about your accomplishments. We wish you every success in your recycling efforts.

  
Charles L. Grizzle  
Assistant Administrator

# **DEVELOPING A COMPREHENSIVE FEDERAL OFFICE RECYCLING PROGRAM: WHAT YOU NEED TO KNOW**

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## INTRODUCTION

### Office Recycling - Why Should My Agency Get Involved?

Through the early 1980s, solid waste management programs in the United States relied heavily on traditional waste disposal methods such as landfills and, to some extent, incineration. As a consequence, the environment and the economy were affected by contamination from under-designed and poorly located landfills and by losses of valuable land and material resources. Early conservation and recycling regulations written in the 1970's and the Resource Conservation and Recovery Act (RCRA) amendments of 1984 called for a new direction in managing solid and hazardous waste including source reduction, resource conservation, and recycling. However, national attention has been focused on the more threatening hazardous waste management issues. Intensified problems with managing solid waste have re-focused the nation's attention on the importance of waste minimization, recycling and conservation. Government leaders and representatives from all sectors of our society have come to realize that success in protecting the environment requires not only sound management of wastes and pollutants, but also an absolute reduction in the amount of waste generated.

Recycling, therefore, has moved to the forefront as an environmentally protective, technically feasible, cost-effective approach to solid waste management. In 1989, the U.S. Environmental Protection Agency (EPA) published its "Agenda for Action," a plan for addressing the nation's waste management issues. The plan was produced with the help of a consortium of leaders representing state agencies, local governments, industry, other Federal agencies, and environmental organizations. Waste reduction and recycling are two of the top priorities in the plan. This plan calls for at least a 25% reduction by 1992 in the volume of solid waste currently disposed in landfills by enhanced source reduction and recycling efforts.

There is a groundswell of recycling activity at the grassroots level, evident by the formation of numerous voluntary programs and a push to make recycling the public policy. By the end of 1989, at least 38 states and hundreds of local governments had enacted recycling laws. Furthermore, federal agency offices located in some of these states and local jurisdictions, such as those in the District of Columbia, must comply with the recycling ordinances of those jurisdictions.

Because office recycling is recognized as an important opportunity for furthering waste reduction aims, the Federal government increasingly has taken steps to set up and facilitate recycling programs in its offices nationwide. Various agencies have initiated recycling programs and formed interagency committees to promote recycling activities. For example, EPA, the General Services Administration (GSA), the Department of the Interior (DOI), the Department of Energy (DOE), and the Government Printing Office (GPO) have shared information and jointly designed procedures to promote recycling achievements. This handbook was prepared by the EPA Office of Administration and Resources Management, Facilities Management and Services Division, as a continuation of these efforts.

Other EPA agency offices have produced materials focusing on specific aspects of recycling. The EPA Office of Solid Waste (OSW), for example, recently updated its implementation manual on recycling high-grade office paper. The OSW manual provides extensive technical and programmatic detail on high grade office paper recycling. Because much of the information can be adapted to organizing a comprehensive office recycling program, you will find direct references to the manual in this handbook. Furthermore, **Appendix A** lists additional reference materials available through other Federal, State, and local agencies, and private organizations. **Appendix B** lists contacts for recycling information.

## **How Can This Handbook Help Me Design And Implement A Comprehensive Office Recycling Program?**

This handbook is designed to help you:

- Identify the basic recycling program components necessary for a comprehensive office recycling program.
- Understand the factors to consider when putting program components into place.
- Develop a step-by-step plan for designing and implementing a comprehensive office recycling program in your agency.

**A key aspect of this handbook is its emphasis on flexibility and being able to adapt to changing conditions. The technology and procedures for recycling are still in the developmental stage.**

The content of this handbook includes:

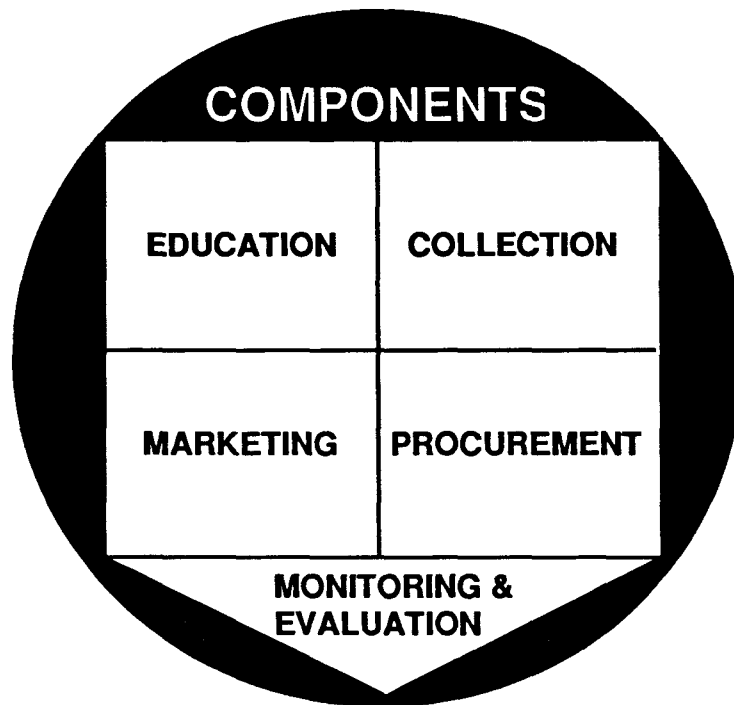
- **An Overview** of the basic components of a comprehensive office recycling program, and the procedural steps involved in program design and implementation.
- **Detailed Program Components**, including a definition, design options, special factors to consider when designing the component, people who should be involved in designing and implementing the component, tips on how to design and implement the component.
- **Implementation Suggestions**, which include procedural steps for designing and implementing the entire program.

Where appropriate, the handbook uses a question and answer format to guide you through the pertinent information.

### **SUGGESTION:**

**If you are responsible for designing and implementing a comprehensive office recycling program at your agency, you may find it useful to read the entire handbook sequentially. If, on the other hand, your agency's program is already operating, individual chapters may provide you with ideas for fine-tuning your program.**

## OVERVIEW



### What Is A Comprehensive Office Recycling Program?

A comprehensive recycling program consists of five basic, interrelated components:

- **Education** : Agency staff are prepared for the initiation of the recycling program, encouraged to participate, informed of program achievements, and asked for ideas on improving the program or broadcasting information.
- **Collection**: Recyclable materials are separated, gathered, and stored for transport from your agency.
- **Marketing**: Contracts to sell the recyclable material are identified and secured.
- **Procurement**: Contracts to buy agency supplies made from recycled materials are identified and secured. External procurement by State and local agencies using Federal funds, or by Federal agency contractors are monitored.
- **Monitoring and Evaluation**: Each facet of the program is surveyed, measured, and then rated to assess efficiency and progress, enabling agency leaders and staff to see program strengths, accomplishments, and weaknesses.

Each component is essential to a comprehensive recycling program but must be custom-tailored to your agency's unique characteristics and needs.

## **Why Are All Of The Components Important?**

**Education** is crucial to initiate and support a behavioral change. Research demonstrates that people tend to change behavior when it is clear how the change serves our best interest or that of our children, and when new behaviors are easy to adopt. An ongoing education component of your recycling program provides this needed information. Without a strong educational component, your recycling effort will be invisible, participation in it will be weak, and the program will suffer or fail.

**Collection** is necessary to remove recyclable materials from the waste stream.

**Marketing** returns the recyclable materials to the economy where they become raw materials for new products or alternative products.

**Procurement** distinguishes recycling programs from collection programs. As the component that completes the recycling loop, procurement builds demand for the recyclable materials you collect. Failure to procure recycled materials eventually leads to a collapse of the system because of over supply. Many areas of the U.S. currently are experiencing a severe weakening of the newsprint market due to over supply.

**Monitoring and Evaluation** keeps the program on track. By assessing where you are, where you want to go, and how you will measure your progress, and then performing regular checks, you can keep your recycling program attuned to your agency's needs, market conditions, and program objectives.

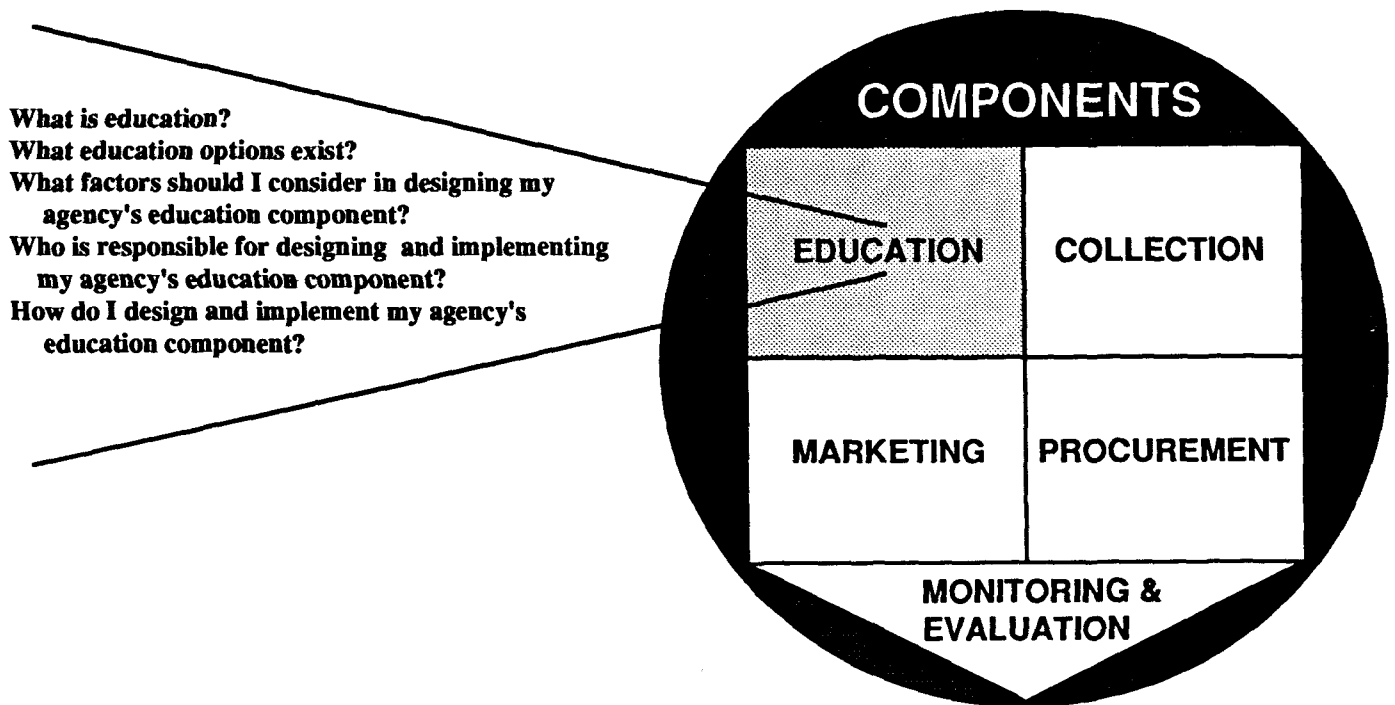
## **Who Is Responsible For Designing And Implementing A Comprehensive Office Recycling Program?**

Recycling is a multi-faceted effort involving the agency's top managers, building management staff, program managers, procurement staff, public information specialists, volunteers — in short — your entire agency and the contractors who support your efforts.

To design and implement a program that fits your agency and receives the support necessary for success, strong intra-agency cooperation is needed. Many agencies have launched successful recycling programs based on the strength of volunteer commitment. Most recycling program representatives report, however, that dedicating at least part-time staff to the effort pays high dividends in terms of the time and effort saved in launching and maintaining a program. In particular, agency representatives stress the importance of a **recycling coordinator** who can help organize a recycling committee and direct personnel in performing the many individual functions that comprise recycling program components.

## COMPONENTS

### EDUCATION



### What Is Education?

Education for your agency's recycling program is a **planned, ongoing, and multi-faceted information exchange** that involves **agency-wide staff**, recycling and other agency program leaders, and top managers within your agency.

A **planned** effort is important because it enables you to take stock of the:

- Awareness and commitment your agency staff have regarding recycling.
- Information needed throughout the agency to encourage staff participation.
- Audiences existing within your agency .
- Messages and channels you can use to reach those audiences.

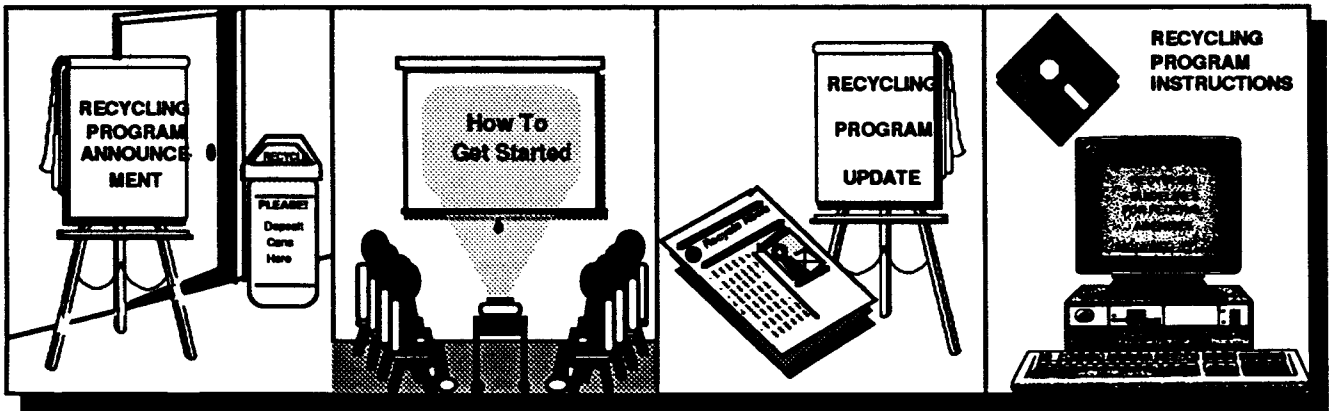
The time spent planning who you want to reach, and how, will pay off in an educational effort that encourages participation, promotes the success of your recycling programs and builds satisfaction in the agency.

Experienced recycling coordinators stress that an **ongoing** educational program is a must; that it simply will not be sufficient to broadcast information about recycling once or even infrequently.

Once you have interested your co-workers in recycling, you need to maintain their interest by designing a **multi-faceted** educational program. From memos to recycling events and awareness weeks, you can plan a variety of techniques that pay off with recycling participation and create a positive environment and esprit de corps in the agency.

Finally, **agency-wide involvement** in designing and implementing your educational program is as important as agency-wide involvement in recycling itself. As you plan your educational efforts, consult people from all sectors of the agency. They are important in shaping the type of information you need to convey. Equally important, everyone from your agency's top executive to entry-level staff should bring visibility to your agency's recycling program. And don't forget to include recycling in your new employee orientation, it's important to get new employees involved in the program immediately. EPA has prepared a brochure on recycling in the agency that is distributed to all of its new employees, which enables education to begin on an employee's first-day on the job.

**EDUCATION:**      **Interacting with agency staff to organize and convey information on recycling:**



### **What Education Options Exist?**

The Chart on the following page illustrates a variety of educational techniques and their applications according to various agency characteristics.

## TOOLS FOR MOBILIZING STAFF SUPPORT THROUGH EDUCATION

TECHNIQUE	BENEFITS	TRADE-OFFS	TIMING
<b>Memos</b>	Reflects agency policy; can reach every employee inexpensively	Good initial/supplemental communication; NOTE: insufficient motivators as sole communication tool	Major Milestones
<b>Display, Charts, Graphs, Facility Model Examples</b>	Creates interest; pictures and words strengthens information conveyance; can be transported; offers range of cost	Attention-holders for limited time periods, depending on style, content; should be circulated around facility/agency	2 weeks prior to start and periodically
<b>Flyers</b>	Attention-getting; quickly distributed for announcements; pictures and words informative		2 weeks prior to start and periodically
<b>Demonstrations Show and Tell</b>	High powered for interest enables exchange of information	Good opportunity to obtain feedback on program	Periodically
<b>Instructional Materials: Handbook, Cards</b>	Staff can refer to repeatedly; equips employees to participate and to train others to participate		2 weeks prior to start and periodically
<b>Posters</b>	Good attention-getters; high creative potential		Start + Achievements
<b>Agency Newsletters</b>	Can convey detailed explanation that can be referred to repeatedly; illustrates program legitimacy	Lends credibility to program; varied messages can be conveyed in regular publication	2 months prior to start and monthly
<b>PA Announcements</b>	Adds diversity; good attention-getter	Voice feature plus other techniques stimulates interest	2 weeks prior to start and periodically
<b>Buttons/ Bumper Stickers/ Banners</b>	Good to gain/illustrate program participation; promotes good spirit	Helps program visibility and positive image	1 month prior to start and ongoing
<b>Special Events: Kick-off, Talent Show, Awards Ceremonies, Awareness Week</b>	Promotes good spirit; promotes fun	Good capability for creating interest, involving agency-wide support, attracting volunteers, promoting recycling, and conveying wide range of information	Start and periodically
<b>Multi-media Shows</b>	Creates high interest; can impart detailed information	Provide capability for wide distribution	Start and periodically
<b>Speeches</b>	Good to demonstrate management support, foster participation	Strong leadership and effective speaking can invigorate the program	Major Milestones
<b>Conferences/ Trade Shows</b>	Excellent source of ideas; information exchange		Early and as Needed

## What Factors Should I Consider In Designing And Implementing My Agency's Education Component?

Consider the awareness and commitment to recycling that exists among staff and managers in your agency. Their attitude and involvement plays a crucial role in helping you decide the educational approach your agency will take in promoting recycling.

For example, if your recycling organizers and top managers agree, that the agency's goal will be to show leadership in recycling efforts by recycling the majority of materials in the waste stream, this implies certain educational messages. Agency values implicit in these objectives are pride of leadership, ambitious effort, and environmental conservation. If your agency is small, efforts to rally staff participation around these values can include frequent small gatherings for demonstrations, activities, or audio-visual presentations on recycling. Having top management behind your recycling efforts, can mean that your agency director contributes regularly to or is an active spokesperson for agency recycling efforts.

A small office also might link recycling efforts with other offices or departments. This would imply ongoing communication with staff and program leaders in these agencies to develop appropriate messages regarding the recycling program, including status reports on the project. The following chart provides additional examples of how various factors can shape your recycling program's educational component.

<b>FACTOR:</b>	<b>IMPACT ON EDUCATION SYSTEM DESIGN:</b>
<b><i>Program Objectives:</i></b>  Expand agency's marginal, voluntary recycling program to full-fledged agency-wide program	Initiate development of multi-faceted communication strategy identifying opinion leaders throughout agency and current impediments to recycling popularity
<b><i>Agency Characteristics:</i></b>  20 story urban headquarters office with ten regional facilities of 40-50 staff members	Organize headquarters recycling committee; establish contacts in each regional office; prepare agency-wide news article announcing plans to expand recycling, and explaining recycling concepts
<b><i>Commitment to Recycling:</i></b>  Motivate core group and top agency director, otherwise you will have unfamiliarity with recycling concept	Engage agency director to meet with recycling program leaders at headquarters and in each region; broadcast director's position on recycling; discuss recycling education concepts with program directors and staff throughout agency

## **Who Is Responsible for Designing And Implementing My Agency's Education Component?**

Regardless of the size of your agency, you will have diversity among your staff and probably among the programs handled by the agency. In order to reflect that diversity, it is best for more than one person to work on education. Three to seven people can best stimulate creativity, enable good outreach within the agency, and divide up the responsibilities. When you set up your recycling program organization, select people who are interested and who will plan to devote regular time to the recycling effort. Developing ongoing communication and good rapport with people throughout this network from the start will lay invaluable groundwork for your recycling committee's ongoing efforts. Your education subcommittee can benefit if you:

- **Involve as many employees as possible.** This not only will ensure diversity in what and how you tell employees about recycling, it will catalyze agency-wide support and participation in your program.
- **Stress volunteerism.** Use periodic recruiting campaigns to enlist volunteers and even more importantly, publicize the contributions to recycling achievements made by volunteers.

Recycling is, in a real sense, an activity that appropriately involves your entire agency, therefore your educational activities should have the broadest outreach possible.

## **How Do I Design And Implement My Agency's Education Component?**

To design and implement your educational program, you will need some basic and important tools which best can be thought of in terms of:

- **Who - should relay and receive information?** One of the recycling committee's first responsibilities will be to develop a network of communication by identifying:
  - The formal and informal communication paths within the agency, for example, the agency's organizational structure, ongoing staff meetings, newsletters, or procedures for distributing memos.
  - Key contact personnel such as the agency's top managers, information office staff, program directors, facilities service directors, waste management staff, grants administration, and procurement staff.
  - Various audiences within the agency, for example, program divisions, technical staff, administrative staff, support services staff, clubs or social organizations within the agency.
- **What - needs to be said about recycling?** This is where your education subcommittee or staff analyzes your agency's overall and specific objectives, the status of your recycling program, needs that staff can fill to help the program succeed, and the agency audiences. This analysis tells you what messages to convey.

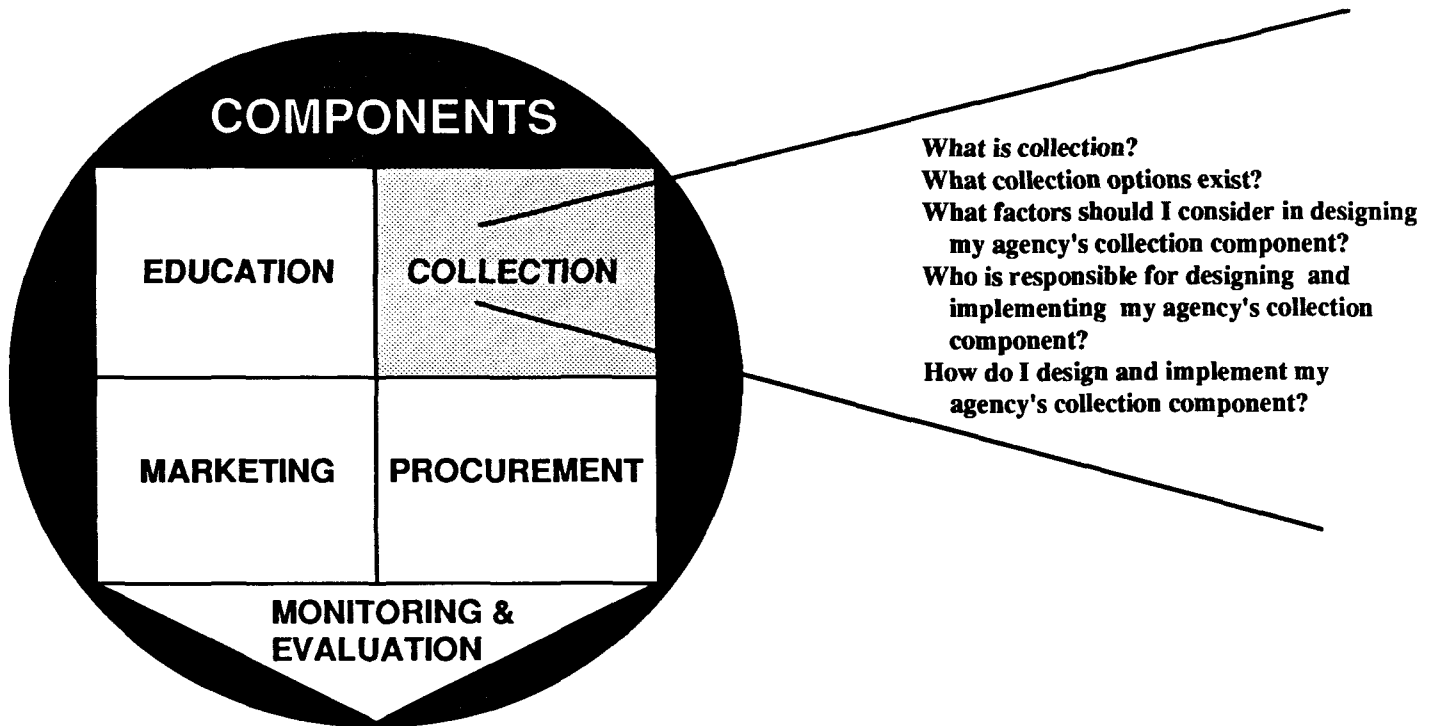
- **How to best spread the word?** The education techniques chart presents a variety of **communication techniques or channels**. Your education committee or staff, no doubt, will create many more which fit your agency. Deciding upon your techniques will involve a bit of research to determine:
  - Available funding for education materials.
  - Scheduling requirements for broadcasting information or planning events.
  - Procedures necessary to produce and coordinate multi-media events.
- **When - should you schedule your educational activities?** The educational campaign for your recycling program needs to begin well in advance of your first collection day. The education subcommittee should begin its work at the start of your recycling program effort. One of the first activities should be to let the agency know that the recycling project is under way and that it is backed by the agency's top management. With respect to procurement, schedule recycling orientation sessions with procurement staff well in advance of the commencement of the fiscal year when your grants and contract schedules will be determined.

The "why" of your tool kit already has been established by your agency's commitment to recycling. Working with the rest of these tools should help your staff set realistic goals and effectively focus their efforts.

In addition, you may find a few **rules of thumb** useful in designing your agency's educational program. For example:

- **Strike a balance between programmed educational events and spontaneity.** If you establish a pattern of agency reporting (for example keeping employees abreast of recycling progress via a monthly newsletter or by giving quarterly briefings to upper management). Also hold special events such as an awards program or celebration of an achieved milestone, or on-the-spot cash awards, you will show that the program is established within the agency, and help keep interest alive.
- **Stress the positive.** Until recycling becomes the way of life in our society, initiating a recycling program involves converting people's behavior and this requires regular encouragement. Your educational program can help by focusing on the efforts people make, celebrating the gains that are made, and incorporating humor in your events and promotional materials whenever possible. Elevate the potential for fun and creativity! It will rejuvenate the whole program.
- **Make recycling convenient.** Keep emphasizing that it is just as easy to throw materials into a recycling container as it is a trash can. This will help make it easier to change employee's habits.
- **Reflect the diversity of your agency staff.** In addition to making use of a variety of educational techniques, such as those presented in this handbook, you can build interest and involvement in recycling by learning about the employees in the agency and the work they perform. Target your information to their agency interests.
- **Have fun!** You will find that, by and large, employees WANT to recycle. This fact, and the active, participatory nature of the effort lend themselves to spirited innovative educational activities. Don't hold back on the opportunity to create and to enjoy the whole process.

## COLLECTION



### What Is Collection?

Collection, defined in the Code of Federal Regulations, Title 40, Part 246, is “the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point.”

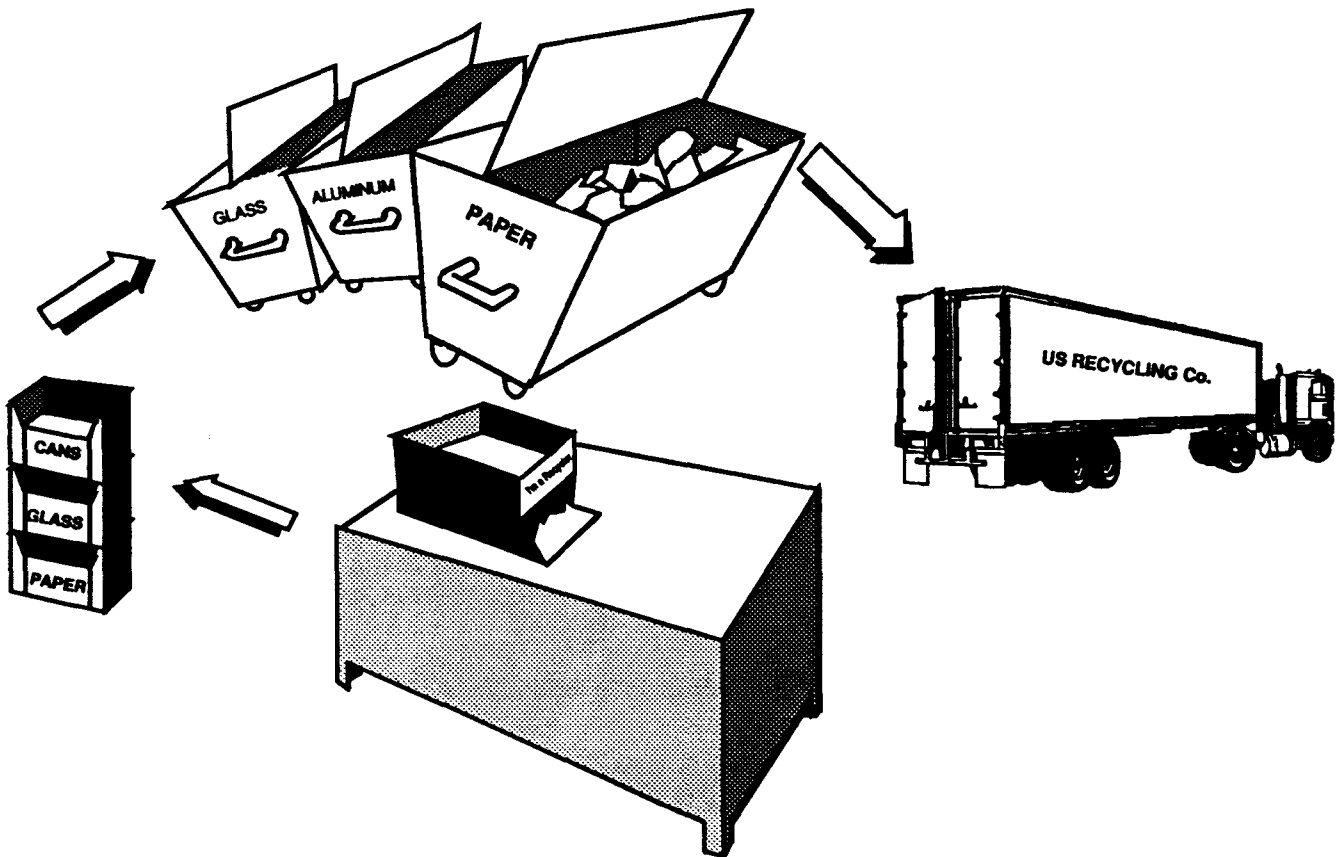
Within the context of an office recycling program, collection involves **several steps**:

- **Separating recyclable materials**
- **Depositing separated materials at collection points**
- **Transferring separated materials from collection points to designated storage bins**
- **Pickup by hauler and/or recycling company for transport to processing facility**

The efforts of numerous people and organizations must be integrated, including:

- **Managers**
- **Employees**
- **Health & Safety officers**
- **Contractors for building services**
- **Haulers.**

**Collection:** Gathering designated recyclables and moving to storage areas over systematic routes:



### What Collection System Options Exist?

Your agency's collection options will vary based on four decisions:

- What you choose to collect
- Which transfer system is used, including where containers are located
- Who moves the collected materials to the storage area
- What storage space and handling equipment are available.

Government agency and private sector organization recycling programs typically use one of a few basic methods to move materials from the individual to office collection points. These include the :

- **Desk-top system** where the user places recyclable paper in a container on the desk and discards non-recyclable waste in a waste basket.
- **Two-waste basket system** where one basket is used for recyclable paper and the second for discarding waste.

As either of these individual office units become full, each employee or a custodian deposits the materials in appropriate central collection containers. As a variation to the options above, vendors may offer services which enable mixed recyclables to be collectively stored for dealer pick-up and transported to processing centers.

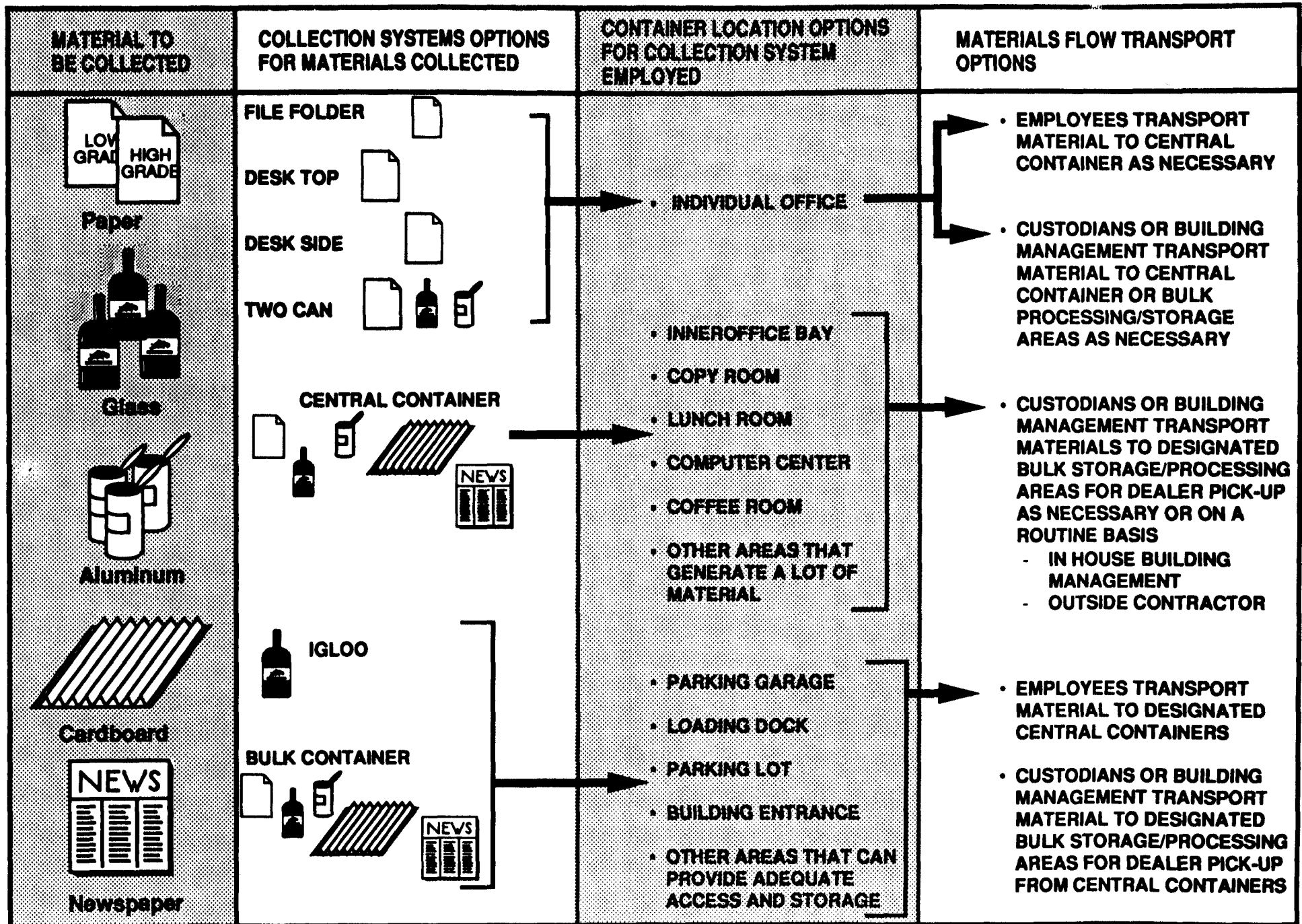
**Centralized office containers** accommodate a wide variety of office recyclables including paper, glass, and aluminum. Central collection containers are clearly identified bins, located in copy rooms or within individual office bay areas serving 15 to 25 persons.

Other central location options for materials such as glass or aluminum include large containers (often called “igloos”) located outside of the building, or containers located in lunchrooms or adjacent to employee travel paths. You can expand this central container concept to collect newspapers or corrugated cardboard. Custodians or building management staff, or in some cases outside contractors, move the materials from the centralized containers to bulk storage areas. The main storage area should be organized to minimize the accidental mixing of trash with segregated recyclables. Ask your building manager and/or the recycling vendor to help you select your main storage site. Keep in mind the following points when selecting your site:

- Is it large enough?
- Can the site be locked?
- Is the site protected with sprinklers?
- Is there a freight elevator easily accessible?

The following exhibit illustrates commonly grouped collection systems for five specific recyclable materials. The systems include transport for specific materials, personnel who perform the transport function, and container locations. For in-depth information about paper collection containers and transport equipment you can refer to the EPA Office of Solid Waste Paper Recycling Handbook (copyright 1977, reissued 1990) referred to in the introduction.

# Exhibit A COLLECTION OPTION DIAGRAM



## **What Factors Should I Consider In Designing My Agency's Collection Component?**

When designing and implementing your collection component, it is important to consider the number of employees and facility ownership. For example:

- **The Number of employees** affects the quantity of waste materials generated for disposal or recycling. The quantity in turn influences the kind of collection system you will employ. A sizeable agency office of several hundreds employees will have paper recyclables in the range of several tons per week in contrast to an office with less than 100 people where it may take a few weeks to accumulate such quantities of material. Larger offices may be scheduled for weekly pick-ups, smaller offices biweekly or monthly.
- **Whether your agency or another agency owns your facility** can influence how you design the flow pattern and staffing for your collection system. Typically, your agency will have greater leeway to select locations for collection containers, and assign staff with collection duties if the building is yours. If your agency is a tenant, these decisions must be negotiated with the building owner and managers.

In addition, **program objectives and agency commitment** are factors that play a part in design decisions, for example:

- If your agency objective is to recycle a high percentage of three major volume materials, if you are a large agency and if your leadership and staff demonstrate an interest in recycling, you may design a decentralized collection system that relies on strong employee involvement and organization. Change one of the factors, and you may alter the design of your collection system.
- If your agency is not aware of recycling and therefore the commitment to recycling is weak, it may be better to select only one material for recycling in order to get your program underway. Other materials can be added to your collection program on a phased-in basis as resources, time and experience permit.

The chart presented on the next page indicates examples of major factors and potential impact on collection system design.

<b>FACTOR:</b>	<b>IMPACT ON COLLECTION SYSTEM DESIGN:</b>
<b><i>Program Objectives:</i></b> <ul style="list-style-type: none"> <li>- Type and number of materials to be collected</li> <li>- Amount to be collected</li> <li>- Proposed extent of program participation</li> </ul>	<p>Number, type, and location of collection equipment</p> <p>Number of employees involved in process, waste stream composition</p> <p>Education program employed, convenience of transfer system</p>
<b><i>Agency Characteristics:</i></b> <ul style="list-style-type: none"> <li>- Size of facility</li> <li>- Number of employees</li> <li>- Facility ownership</li> </ul>	<p>Volume of materials, cost-effectiveness of program</p> <p>Collection schedule, type of transfer system</p>
<b><i>Commitment to Recycling:</i></b> <ul style="list-style-type: none"> <li>- Degree of management support</li> <li>- Extent of resources</li> </ul>	<p>Participation mandate, unity of effort</p> <p>Development approach, implementation strategy</p>

## **Who Is Responsible For Designing And Implementing My Agency's Collection Component?**

Collection system design involves a detailed series of procedures and sequential steps that require personal oversight, problem-solving and schedule adjustments. To ensure successful collection, the program coordinator must:

- Supervise education of staffs
- Supervise data gathering
- Arrange pick-up schedules
- Secure storage areas for collected materials.

In addition, the coordinator must meet with custodial supervisors in all buildings to explain the operation and to gain their support.

Consider these points when deciding who can best consolidate your recyclables most efficiently and transport them from the central containers to the main storage area:

- How many custodians service your building?
- Are the custodians in-house, contract, or union?
- Is there a daytime shift and a nighttime shift? If so, which crew could best handle the consolidation duties?

Most office paper recycling programs work best when integrated with existing janitorial operations. Many agencies add the responsibility of picking up the recyclable material into the janitorial contract when it is up for renewal.

If custodians are not involved in the collection of the recyclable materials, make sure that they are informed about the program so that they don't accidentally mix the recyclables in with the trash and throw them away.

## **How Do I Design And Implement My Agency's Collection Component?**

Designing the collection component requires answering basic questions about:

- Which type of equipment and flow path, and what kind of contract support are most convenient for your agency.
- Types of waste materials that make up your agency's waste stream and manner in which these waste materials currently are discarded.
- The contract(s) for space and services currently in place and whether they meet your anticipated program needs.
- Types of collection containers to be used and where to locate them.

- Suitable locations for collection containers
- Suitable area(s) to use as loading dock or central transfer points
- Handling requirements for the materials your agency will recycle (See Appendix D)
- Secured offices

Based on your research findings, you are equipped to take the following steps:

- **Secure clearances with the appropriate building and/or management staff to use space for collection areas**
- **Select and procure collection containers**
- **Place collection containers in designated areas**
- **Collect recyclable materials**
- **Transport materials to the loading dock or centralized collection point for dealer pick-up**
- **Weigh and record your recyclables and**
- **Collect payment for the recyclables from the dealer.**

Remember that the collection component of your recycling program needs to be integrated with the other program components. Planning and launching the collection activity, therefore, should be done in concert with the marketing, procurement, education, and monitoring and evaluation activities. Lessons learned from other agencies and a waste stream analysis sample sheet are provided on the following pages to assist your planning process.

## Summary of Lessons Learned From Various Agencies

### • Collection

-When considering who will collect and transport recyclables through the collection system, keep in mind three general options: the collection will be carried out by staff members, contracted out, or assigned to new and additional staff hired for that collection purpose. As you consider starting up for collection remember that educating your staff about the recycling program and training them in the specific tasks relating to the collection process will get your program off to a strong start.

- Your collection containers should be consistent in style and color, and clearly labeled with lists of acceptable and unacceptable items. Also post the lists near each container location. Be sure to use clear symbols and multi-lingual labeling wherever you have personnel, and especially collection staff whose primary language is not English. Choose your containers for durability, and if they are the desk-top variety make sure they require the least amount of your desk space. You also can find containers that your collection staff can handle easily.

- If your agency does not generate enough recyclable material, you can ask your building manager if another company in the building is recycling. You might try to enlist a neighboring agency to join with you and it is quite possible that together you will generate enough recyclable material to start a program. Consolidated Administration Support Unit (CASU), sponsored by the General Services Administration (GSA) are the administrative mechanisms by which you and other agencies can pool efforts. Combined volumes may attract more buyers, and prices and transportation options may improve.

-At the other extreme, some recycling programs have had problems because the volume of material to be processed has been seriously underestimated. This may sound like a problem everyone would like to have but the ensuing problems may permanently damage the program. Very quickly after the beginning of the collection operation, the program may be overwhelmed with the quantity of material and unable to cope with the continuing stream of material coming in from the agency.

### • Storage

- Storage problems can result when the volume of recycled materials expected is significantly underestimated or the demand for materials already on hand is significantly overestimated.

- A convenient loading dock, readily accessible to large trucks is important; it should provide protection from inclement weather. If space is unavailable near loading docks your agency's recyclable materials may be stored in central containers (convenient to freight elevators) located in temporary storage areas or outdoors in large bulk containers protected from the elements.

- Asking managers of existing recycling operations in the area may be the best method for accurately predicting your storage needs.

### • Transport

- The inability to move material from central collection spaces to designated dealer pick-up locations can cause a serious disruption in the recycling operation. You may want to consider back-up transport equipment.

- In designing a recycling materials flow path be sure to allow sufficient aisle room for easy and efficient movement of transport equipment. In addition your collection schedule should not disrupt your staff's daily office routine, nor should it lessen employee productivity.

### • Processing

- Processing recyclables is packaging, cleaning, or organizing the material in the most economical form for transport or to meet buyer specifications. Before designing your collection system, check with firms that buy your type of recyclables to assess any processing requirements that may affect your space, flow patterns, or schedules.

Useful information on markets and on procurement purchasing is available in various trade publications. Also ask your area recycling dealers what containers they will supply as part of a marketing contract. GSA can supply individual containers and central containers with a lid and slit in the top to Federal agencies through the Catalog and the Customer Supply Center in Washington, D.C. GSA is increasing the availability of these supplies nationwide.

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## PERFORMING A WASTE STREAM ANALYSIS

Performing a waste stream analysis is the first key step in clarifying the basic needs and goals of your recycling program. Such an analysis is an in-depth look at the waste materials your agency currently discards. The majority of office waste stream analyses reviewed demonstrated that 90 percent of the typical office waste stream is composed of paper products (e.g., white paper, computer paper). Obtaining an estimate of the percentage of materials that can be diverted from your waste establishes a baseline for program design and future monitoring and evaluation. Following are suggested options for conducting your waste stream analysis and a sample waste stream analysis worksheet:

- Assume generation rates based on general statistics (see [b] and [g] below).
- Work with a materials recycling company to obtain estimates based on:
  - Number of employees
  - General review of facilities operation
- Conduct a one-to-two week study of the office waste actually discarded in your agency.

When you have the facts about your agency's waste composition, you are better able to implement the collection system and to manage recyclable materials.

### SAMPLE WASTE ANALYSIS WORKSHEET

#### A. Total Refuse Generation:

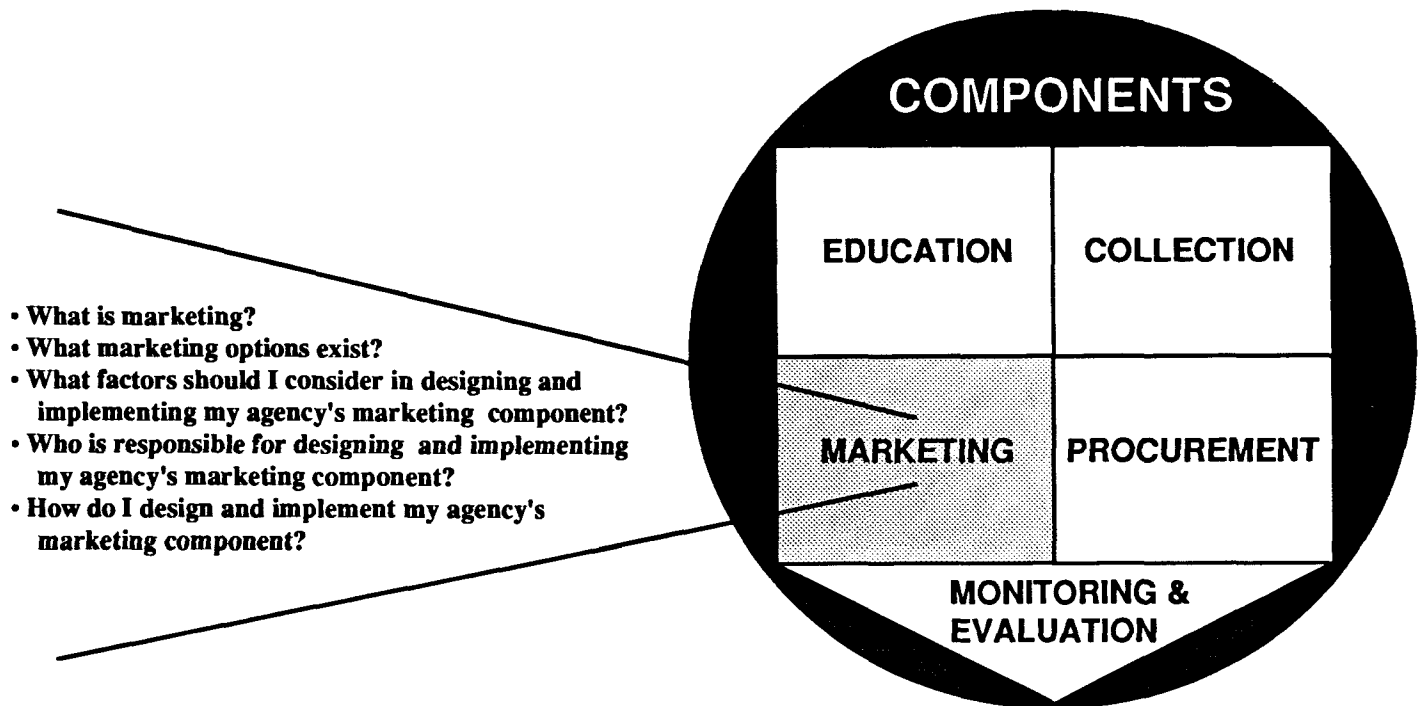
a	_____	X	[b] <u>1.55 lbs.</u>	=	[c] _____ lbs
	(No. Employees)		(lbs./employee/day)		(Trash/day)
c	_____	X	[d] <u>20 days</u> •/•	[e] <u>2,000 lbs.</u>	= [f] _____ Tons
			(Work days/mo.)	(Lbs./ton)	(Mo.)

#### B. Recyclable Paper Generation:

a	_____	X	[g] <u>.51 lbs.</u>	=	[h] _____ lbs.
			(paper/empl/day)		(Recyclable paper/day)
h	_____	X	[d] <u>20 days</u> •/•	[e] <u>2,000 lbs.</u>	= [j] _____ Tons
					(Recyclable paper/Mo)
j	_____	X	[k] <u>65%</u> (example)	=	[l] _____ tons
			( participation rate)		(Recycled paper/mo.)

In general, for a standard office paper recycling program, five hundred to one thousand pounds of high-grade paper is the minimum amount required for pickup. The average office worker throws away at least a half-pound of high-grade recyclable paper each day. **Agencies with fifty or more employees should generate enough paper to set up a workable program.**

## MARKETING



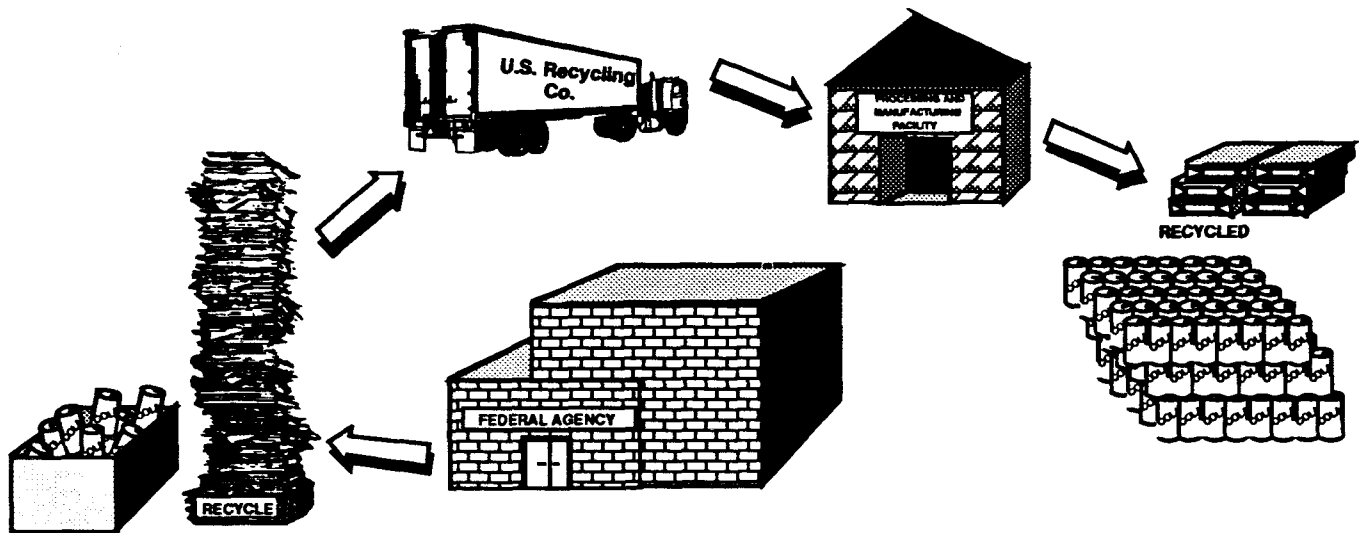
### What Is Marketing?

Marketing is finding purchasers for your agency's recyclable materials so they can be reused in manufacturing new products. In most cases, you will need to market different types of recyclable materials to different vendors. The key components used to describe the marketing effort include:

- Identifying and contracting with a vendor or broker of recycled materials.
- Arranging for regular pick-up of the recycled materials from your agency by the vendor.
- Ensuring that the materials are collected, separated and processed in a way appropriate for the manufacturing process, if necessary.

The materials you target for recycling, how you want to channel the proceeds from the sale of materials, available markets, the characteristics of your agency such as number of employees and geographic location, and the level of management support will all shape your marketing effort.

**MARKETING:** Directing recyclable materials to manufacturers who use those materials in making new products:



### What Marketing Options Exist?

You can develop your marketing component using three basic approaches. You may elect to use:

- **In-house resources** -where your recycling committee or facilities service staff undertake the research and negotiations needed to:
  - Identify potential markets and vendors qualified to purchase your recyclable materials.
  - Execute the contracts.
- **An interagency cooperative marketing plan** - whereby several agencies combine their recyclables. This enables an agency to reap benefits of a large quantity of marketable materials and to take advantage of shared responsibility for contracting with a vendor.
- **GSA support services** - that screens vendors and negotiates contract packages which individual agencies can access for needed services.

Work with your recycling committee to assess your agency's operating environment and recycling program goals. Then decide upon your best marketing approach. The following example illustrates one method of choosing a marketing plan based on specific agency factors.

### **Design of the Marketing Plan: A Case Study**

The administrator of the Motor Vehicle Loan Department for the \_\_\_\_ Agency wanted to develop a recycling program. A consultant hired to do the waste stream analysis found that 75% of the agency's waste stream was composed of recyclable materials and that tires and oil comprised the greatest percentage of materials, followed by newspapers and white paper (carbonless forms). The administrator hired a recycling coordinator to lead a task force. The purpose of the task force was to assess the feasibility of developing a self-sufficient Departmental recycling program. A subcommittee was appointed for each of the activities of the program. The marketing subcommittee, led by the purchasing officer for the Department:

- Determined how much material could be sent to a vendor in any given week.
- Developed a list of vendors for each material comprising more than 10% of the department's waste stream.
- Conducted a cost-benefit analysis to determine the net recovery of funds for the collection.

These objectives reflected the relationship (implications) of this department's operating environment (factors) on the marketing approach. Therefore, information gained from these activities was the foundation for the department's marketing plan.

### **What Factors Should I Consider In Designing and Implementing My Agency's Marketing Component?**

In designing your approach, consider the support resources available to assist your marketing efforts, such as GSA or other in-house expertise, and the type and quantity of recyclable materials that comprise your waste stream, as learned in the waste stream analysis. The chart on the next page illustrates how additional factors impact the design of your marketing strategy.

<b>FACTOR:</b>	<b>IMPACT ON MARKETING SYSTEM DESIGN:</b>
<b><i>Program Objectives:</i></b> - Multi-material recycling program  - Large quantity of recyclables	- Develop separate vendor lists  - Accelerate vendor pick-up schedule
<b><i>Agency Characteristics:</i></b> - GSA operated facility  - Non-GSA operated facility	- Work with GSA to develop marketing plan  - Develop plan with in-house resources
<b><i>Commitment to Recycling:</i></b> - High agency commitment evident in staff  - Resources assigned to recycling	- Provides staff to identify potential markets and good contract options

### **Who Is Responsible For Designing And Implementing My Agency's Marketing Component?**

The marketing coordinator should lead the marketing effort, acting as liaison for agency management, GSA (if appropriate), and the recycling committee or subcommittee. The primary responsibilities of the marketing subcommittee are to:

- Assist the recycling coordinator in developing an assessment of the current situation, as a basis for the design of the marketing plan.
- Design a marketing plan for review by agency management, including developing a list of potential purchasers.
- Work with the Education subcommittee to develop outreach materials explaining the overall concept and goals of marketing to the program participants.

**Always investigate** Federal, State and local laws for applicability to your program so as to be aware of mandatory recycling laws that may affect your marketing strategy.

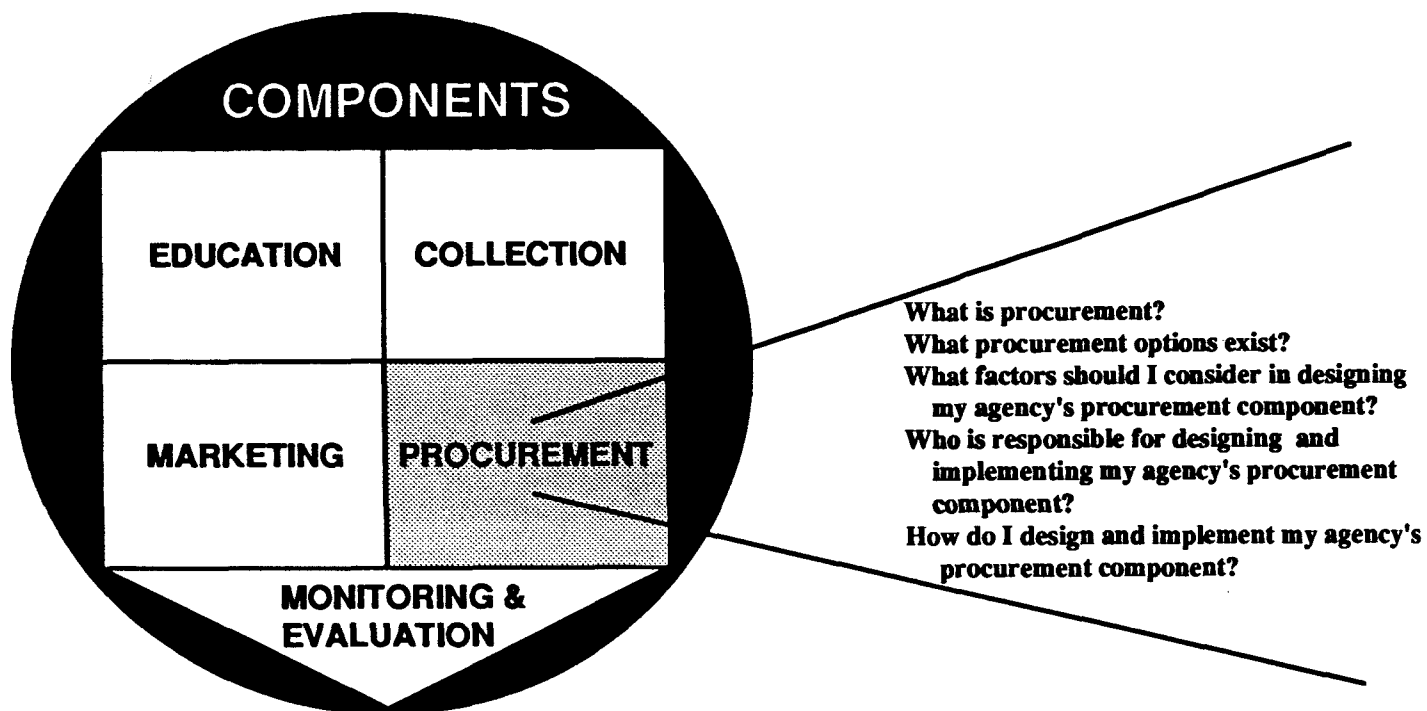
## **How Do I Design and Implement My Agency's Marketing Component?**

When designing and implementing your marketing component focus on the following basic steps:

- 1. Organize in-house resources, such as a marketing subcommittee in your recycling committee, to help design and implement the marketing plan.**
- 2. Develop a profile of the market for each recyclable material identified in your waste stream.**
- 3. Evaluate the market profiles to determine costs and benefits of the marketing plan for each material.**
- 4. Determine which materials are to be marketed based on your cost benefit analysis. The analysis should include the cost for transporting and disposing of waste in landfills.**
- 5. Identify the role of in-house agency staff and other support resources, such as GSA or contractor support in marketing materials.**
- 6. Solicit Invitations for bids.**
- 7. Negotiate agreement(s) with the prospective buyer(s) for each material.**

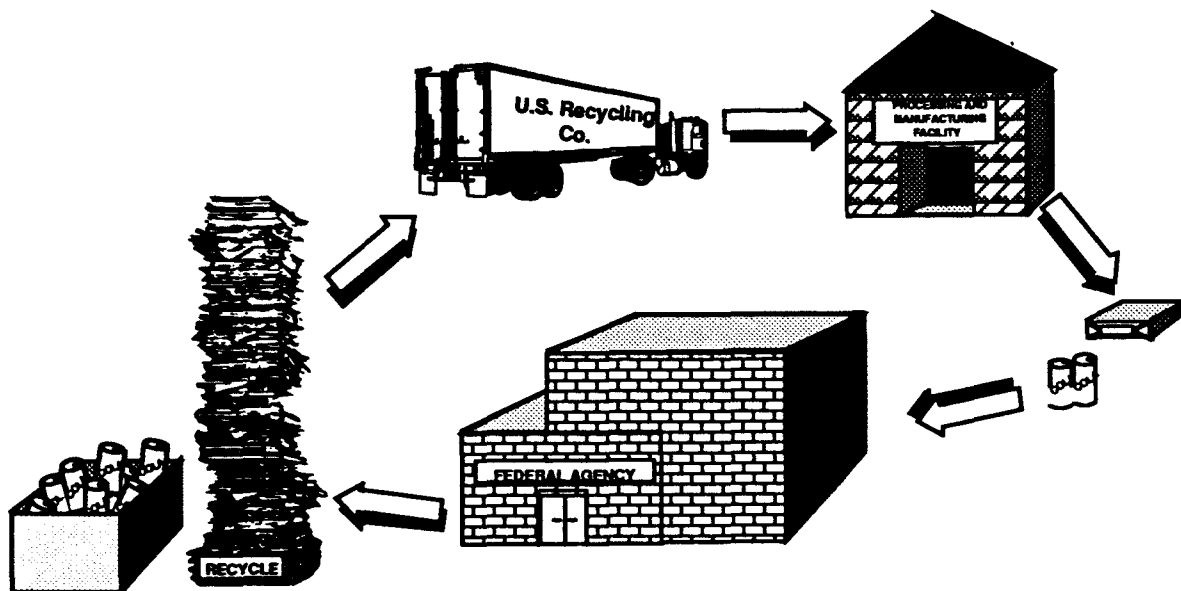
Each of the steps defined above is necessary to ensure a marketing plan that is responsive to recycling program needs and market conditions.

## PROCUREMENT



### What Is Procurement?

Unless a recycling program includes actually buying products made from recycled materials, it stops short of being a recycling program. Recycling occurs when the materials that were collected and sold to recycling operators re-enter the economy via procurement. Ordering, purchasing, and using supplies made from recycled materials is your agency's contribution to ensuring that a market will exist for the recyclables you collect and sell. Procurement for most Federal agency offices notably includes paper products, but it also should include any other products that are made from recycled materials.



Over the past several years, the U.S. Environmental Protection Agency (EPA) issued several procurement guidelines, which are regulations that require government agencies to buy products made of recycled materials. The guidelines implement Section 6002 of the Resource Conservation and Recovery Act (RCRA). Their purpose is to encourage recycling and reduce the amount of materials that must be thrown away. Each guideline designates specific items containing recovered materials, which governments must procure, and it provides recommendations for implementing RCRA requirements. The **RCRA Procurement Hotline** number is 703-941-4452 for copies of the guidelines and more detailed information concerning implementation.

EPA has issued five such guidelines which cover:

- **Fly ash in cement and concrete**
- **Paper and paper products**
- **Lubricating oils**
- **Retread tires, and**
- **Building insulation products.**

Regardless of whether or not a Federal agency institutes its own recycling program, RCRA mandates all Federal agencies and procuring agencies procure these items containing recovered materials. To do so agencies must:

- **Review and, as necessary, revise their specifications to allow for the purchase of recycled materials. Identify the performance expected of the product so that acceptance or rejection is based on a verifiable test.**
- **Design affirmative procurement programs.**

The table on the next page summarizes this information. In addition, **Appendix C** of this handbook includes the RCRA procurement guidelines.

**REQUIREMENTS TO INCREASE FEDERAL AGENCY PROCUREMENT  
OF RECYCLED PRODUCTS**

GUIDELINES	WHO	HOW TO COMPLY
<p><b>Paper/Paper Products</b></p> <p><b>Lubricating Oils</b></p> <p><b>Retread Tires</b></p> <p><b>Building Insulation Materials</b></p> <p><b>Fly ash in cement and concrete</b></p>	<ul style="list-style-type: none"> <li>• <b>Federal Agencies</b></li> <li>• <b>State and local agencies using appropriated Federal funds and spending more than \$10,000 per year on the item</b></li> <li>• <b>Firms contracting with federal agencies or with affected state or local agencies and that spend more than \$10,000 annually on the item</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Review and Revise Specifications</b></li> <li>• <b>Build Affirmative Procurement Program</b></li> </ul>

### **What Procurement Options Exist?**

Two general arenas for procuring recycled products include intra-agency purchases and external procurement by State or local governments receiving funds from, or firms which operate under contract to, your agency. Strengthening your agency's procurement program, therefore, will entail focusing on both these arenas.

Although many products are manufactured from recyclable materials, some of the major products purchased by Federal agency offices are addressed in the existing procurement guidelines. Your agency can either purchase these items through GSA or directly, if your agency is located outside a GSA-service area. When considering items for purchase consult your agency's GSA procurement office for a list of the recycled materials available.

## **What Factors Should I Consider in Designing My Agency's Procurement Component?**

When designing your agency's procurement program, consider the:

- **Types of materials your agency buys**
- **Size of the agency**
- **Level of funding activity for State and local government programs, and contractor services to the agency**
- **Your Contract and Grants staffs level of awareness about recycling and especially the role procurement plays**
- **Inherent prejudice you will have to overcome that recycled content is inferior**
- **Proximity to and communication between your agency and GSA**
- **Opportunities to combine your purchase orders with those of other organizations.**

These factors and others will influence the priorities you set when developing a strategy for procuring recycled products. Most agencies will have their highest demand in paper products and therefore will concentrate some of their efforts on establishing which recycled products provide the service required. Agencies with extensive grant programs, or those administering large contracts to firms providing government support service, on the other hand, will focus part of their strategy on how to ensure that these entities comply with EPA procurement guidelines. All agencies are likely to encounter the attitude that recycled products are deficient. A concerted effort is needed to work with personnel throughout the agency to overcome this recycling roadblock. The chart on the next page indicates some additional examples of how various factors can influence the design of your procurement program.

<b>FACTOR:</b>	<b>IMPACT ON PROCUREMENT COMPONENT</b>
<b><i>Program Objective:</i></b>  Increase type and quantity of recycled materials procured	<ul style="list-style-type: none"> <li>- Active involvement of procurement staff in education of employees and vendors</li> <li>- Close cooperation with purchasing personnel/analysts</li> <li>- Evaluation of current purchases for expansion</li> <li>- Evaluation of recycled products availability and performance</li> </ul>
<b><i>Agency Characteristic:</i></b>  Number of employees	<ul style="list-style-type: none"> <li>- Potential for joint purchasing agreements to achieve economies of scale</li> <li>- Need for updated source list of recycled products suppliers</li> </ul>
<b><i>Commitment to Recycling:</i></b>  Agency director mandates aggressive affirmative procurement program	<ul style="list-style-type: none"> <li>- Intensive coordination with procurement staff required</li> <li>- Extensive research and educational efforts required</li> <li>- Involvement of several persons required for procurement sub-committee</li> </ul>

### **Who Is Responsible For Designing and Implementing My Agency's Procurement Component?**

The successful design and implementation of your agency's procurement program calls for the involvement of several key agency leaders, among them your:

- Recycling coordinator
- Chief executive
- Facilities management staff
- Contracts/Procurement and Grants staffs
- Program managers
- Procurement sub-committee of your recycling committee.

Successful procurement of recycled products will rely extensively on management support because procurement is an integral function of the agency's daily operations. After the recycling coordinator and agency managers explore options, the procurement sub-committee should develop a strategy. The testing and implementation of this strategy should be based on ongoing communication between all the sub-committees of the recycling committee, the agency's procurement staff, top executive and program staff, and information officers within the agency .

### **How Do I Design and Implement My Agency's Procurement Component ?**

The personnel designated above can design and implement a procurement strategy for recycled products by following the basic requirements of RCRA. RCRA requires each agency to analyze its current procurement specifications, revise those which unnecessarily exclude recycled products, eliminate restrictions for virgin materials only, provide for use of recycled materials to the maximum extent possible, and put into place an affirmative procurement program. The affirmative procurement program components are shown in the chart below.

<b>AFFIRMATIVE PROCUREMENT PROGRAM COMPONENTS</b>	
<p><b><i>Recovered Material Preference Program:</i></b></p> <p>Agencies must establish:</p> <ul style="list-style-type: none"> <li>• Minimum Content Standards</li> <li>• Recommended levels</li> <li>• Quality Performance levels</li> </ul>	<p><b><i>Promotion Program:</i></b></p> <ul style="list-style-type: none"> <li>• Explicit statements in Requests for proposal</li> <li>• Mention at pre-bidders conferences</li> <li>• General publicity</li> <li>• Recycling statement or logo on agency literature printed on recycled paper</li> </ul>
<p><b><i>Establish Procedures to Obtain Estimates, Verify and Certify Quantity of Recovered Material Content:</i></b></p> <ul style="list-style-type: none"> <li>• When vendors must provide information</li> <li>• Who should provide information</li> <li>• How to obtain information</li> <li>• How to verify information</li> </ul>	<p><b><i>Annual Review and Monitoring :</i></b></p> <ul style="list-style-type: none"> <li>• Range of estimates and certifications provided by vendors</li> <li>• Check for significant variations and percentages of recovered materials</li> <li>• Analysis of barriers (e.g. technical, economic, resistance to use)</li> </ul>

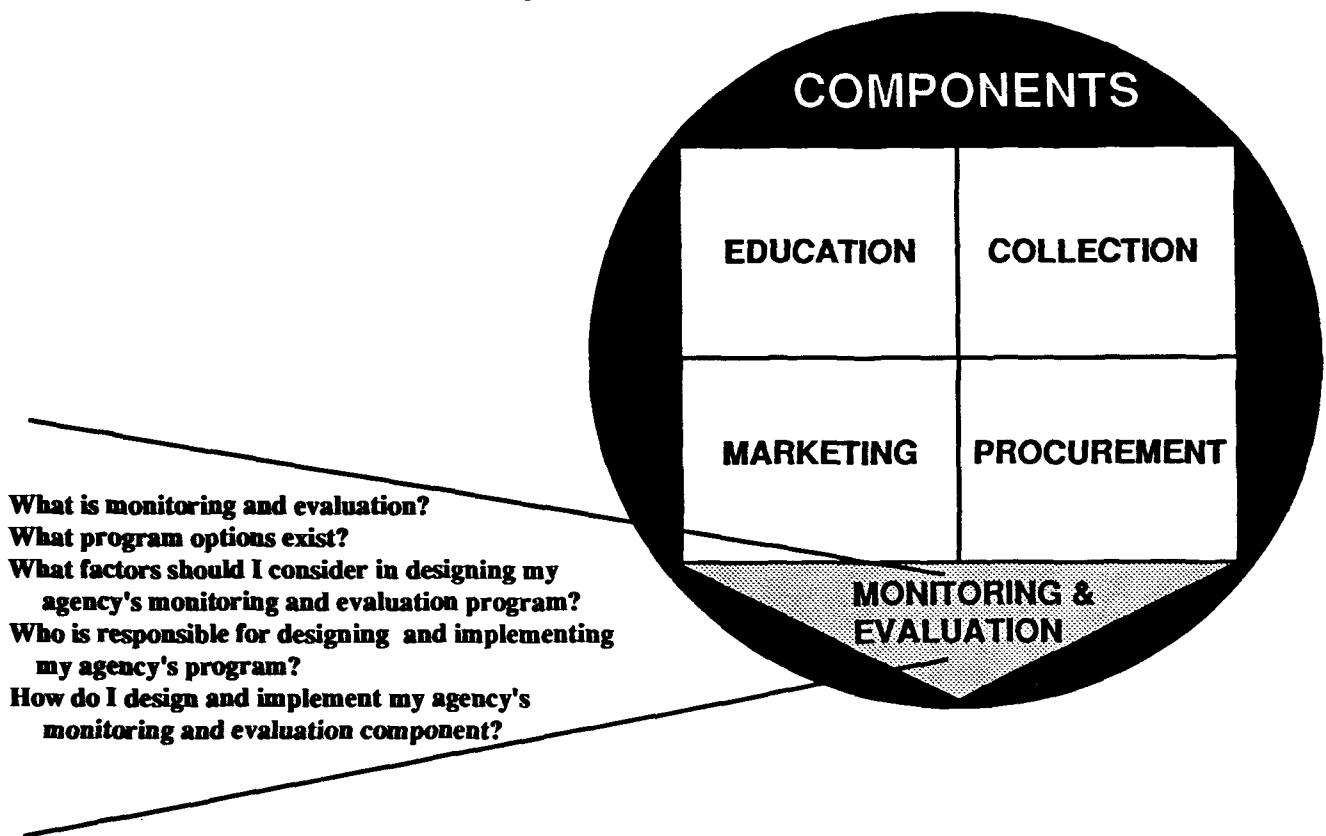
Your agency's approach to designing and implementing a procurement strategy can be summarized in the following basic steps:

### **Active Procurement Program Steps**

- 1. Organize in-house resources, such as a procurement subcommittee in your recycling committee, to help design and implement the procurement plan. Work with your procurement staff, contract administrators, and grant program administrators from the start. Enlist the support of other in-house agency staff and support resources, such as GSA, to define your agency's procurement strategy.**
- 2. Review existing procurement specifications for agency supplies. Survey program units and other components of the agency to determine volumes and uses of the materials, in order to plan and consolidate your procurement program.**
- 3. Develop a profile of standards for recycled products and a list of definitions for those products. (Consult RCRA Guidelines)**
- 4. Develop a profile of the capability for a recycled material to meet the specifications of each item on your agency's list of purchased materials. Include information such as cost, availability, and potential vendors.**
- 5. Test the recycled material to determine its replacement ability for certain products in your procurement program. Especially evaluate over-specified products (e. g. inter-office notepaper), and determine which recycled materials are to be purchased based on your analysis and other agency environmental factors, such as cost and management support.**
- 6. Get the word out throughout the agency to "BUY RECYCLED."**
- 7. Advertise and promote program with vendors early and often.**
- 8. Negotiate agreement(s) with the prospective vendor(s) for each material.**

**In building a comprehensive recycling program, use your collection, marketing, and education systems to support the procurement process.**

## MONITORING AND EVALUATION



### What Is Monitoring And Evaluation?

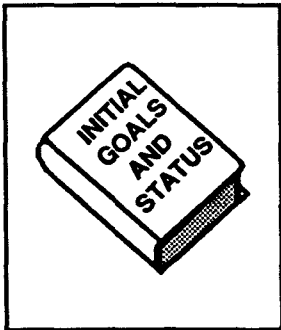
Monitoring and evaluation of your recycling program is a tracking process in which you measure your agency's progress toward the recycling objectives you have established. This process can help your agency:

- Set realistic goals and expectations
- Measure implementation options
- Anticipate and resolve problems due to changes in your agency's environment or operating objectives.

Successful monitoring and evaluation programs are built on plans designed to measure each program activity. The chart on the following page illustrates some critical measures of program performance.

ACTIVITY	PERFORMANCE MEASURE
Education	Employee participation—how many, how often, and how well employees recycle
Collection	<p>Material recovery -- percentage of waste stream recovered for recycling</p> <p>Efficiency -- employees, custodians, and vendors adhere to collection schedules and collection proceeds smoothly</p>
Marketing	Competitive prices for recyclables, available vendor services, and sale of collected materials.
Procurement	<p>Agency procurement roster lists many recycled products options</p> <p>Widespread, visible promotion of "buy recycled"</p> <p>Purchase orders reflect high rate of usage of recycled products</p>
Monitoring & Evaluation	<p>System checks are sufficiently frequent and thorough</p> <p>Supply information needed</p>

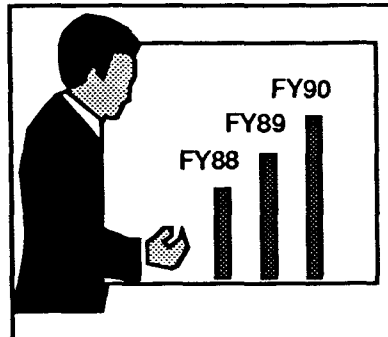
**MONITORING AND EVALUATION:** Performing periodic checks to measure and report the quantity of materials recycled and the efficiency of the operation



Determining a baseline for reporting



Recordkeeping of costs and revenues



Monitoring recovery rates and participation



Reporting successes and problems to management and employees

Monitoring your recycling program means keeping accurate and up to date statistics, including records of tonnage figures, dollars received from recycling vendors, and estimated cost avoidance figures for removing recyclables from the waste stream.

**What Monitoring And Evaluation Options Exist?**

Many monitoring and evaluation options can be integrated into your program, depending on your agency's objectives and the information resources available to assist you in tracking activities. Some options include, for example:

- **Education** -- Surveying employees in advance of the recycling program start-date, then periodically thereafter to determine the level of knowledge or awareness throughout the agency about program components.
- **Collection** -- Recording weight slips for collected materials and comparing this information with the materials volumes data recorded during your waste stream analysis to determine level of participation.
- **Marketing** -- Recording and comparing revenues for recyclables to evaluate best-price vendors, and recording and comparing overall waste disposal costs to determine the rate of decrease because of diverting materials from the waste stream.
- **Procurement** -- Reviewing your agency's procurement contracts, grants, and interagency agreement requisitions to evaluate the rate of procurement of recycled materials.
- **Monitoring and Evaluation** -- Surveying agency leaders and employees for ideas on measurements of success for the recycling program, developing a monitoring and evaluation plan to measure success rates, re-surveying on a smaller scale and re-evaluating whether the monitoring and evaluation plan has provided the information desired.

Just as there are many measurement options, there are many methods for implementing these options. Your choices will depend on your agency's resources and the scope of your program. You may, for example, maintain records in a handwritten form, or log information in a computer database. Staff could be assigned to conduct your evaluation or your monitoring and evaluation subcommittee members may provide the service on a volunteer basis. **A simple procedure for gathering data is as follows:**

- **Require the recycling company that you contract with to develop and maintain an accounting system for each waste stream for the period of the contract.**
- **The recycling company will provide a statement each month to the agency recycling program coordinator which:**
  - **Outlines the total weight of each material collected.**
  - **States the grade assigned to each load of recyclable material and the price paid per pound for each material.**

With this information, a program operating with even minimal staffing is equipped to track program progress.

### **What Factors Should I Consider In Designing My Agency's Monitoring And Evaluation Component?**

Your recycling objectives, agency commitment to recycling, and many of your agency's specific characteristics, which you will document in your waste stream analysis, will help you establish the framework within which you can monitor and evaluate your recycling program. If your agency's objective, for example, is to reduce its landfilling of waste through a 30% reduction in the amount paid for hauling refuse to a landfill, this suggests parameters within which you can measure your recycling program performance. The chart on the next page indicates a few additional monitoring and evaluation implications which arise from considering certain factors.

<b>FACTOR:</b>	<b>IMPACT ON MONITORING AND EVALUATION COMPONENT:</b>
<p><b><i>Program Objectives:</i></b></p> <p>Maintain simple data-gathering and accounting system</p> <p>Increase procurement of recyclable materials</p>	<ul style="list-style-type: none"> <li>- Require monthly statements from recycling company, outlining total weight of each material collected, and file statements</li> <li>- Periodically review your agency's procurement activities</li> </ul>
<p><b><i>Agency Characteristics:</i></b></p> <p>Agency with multiple facilities</p>	<ul style="list-style-type: none"> <li>- Focus on regular reporting methods to apprise staff and employees of results and convey support from agency management</li> </ul>
<p><b><i>Commitment to Recycling:</i></b></p> <p>Agency leaders require internal program to comply with local recycling laws</p>	<ul style="list-style-type: none"> <li>- Enforcement strategy to ensure compliance</li> </ul>

**Recycling-generated funds:** Consider also that you will be monitoring the use of recycling-generated income which implies certain responsibilities for the use of those funds. These responsibilities are noted as follows:

<b>RECYCLING REVENUES DERIVED FROM:</b>	<b>WHERE THE REVENUES MUST GO:</b>
<p><b>Materials the agency procures to fulfill its operating mission, e.g., paper.</b></p> <p><b>These materials are the property of the government.</b></p>	<p><b>U.S. Treasury</b>  <b>(Unless agencies have specific appropriation authority for return to a Working Capital or Revolving Fund)</b></p>
<p><b>Materials purchased by non-government funds, e.g. employee purchases such as soda cans, glass bottles, newspapers.</b></p> <p><b>These are not government materials.</b></p>	<p><b>Discretion of the recycling program. May be used, for example, for ongoing program costs or contributed to charities.</b></p>

Pending legislation would enable agencies to keep and use their recycling-derived revenues for recycling program support. Enactment of this legislation could catalyze all Federal agencies to move forward rapidly with their recycling programs.

**Enforcement:** Any standardized program implies requirements which, in turn, usually raise the subject of enforcement. How can or should you attempt to enforce your agency's recycling policies? For the most part, program participation is voluntary and the success rises or falls on the quality of your educational efforts. Mandatory recycling, however, is becoming the policy of many state and local governments. If the State and/or local government in which your office is located has implemented such a law, your agency must comply. Even if it is not a State or local law, there are effective ways to enforce recycling policy. One of the most effective is a clear and forceful policy statement from your agency head. Sometimes enforcement can be tied to a service sanction as illustrated on the following page.

## Enforcement sample notice:

### WE ARE SORRY

- ▲ The janitorial staff was unable to empty your trash can because it contained recyclable materials.
- ▲ Materials that may be thrown into "Garbage Only" trash cans include:
  - . Air freight envelopes
  - . Carbon paper
  - . Cellophane
  - . Damaged binders (recycle the papers)
  - . Foam cups, plates, and trays
  - . Food waste
  - . Waxed paper
  - . Writing implements (old pencils, pens, markers)
- ▲ **Contact building services regarding on-site recycling procedures for office paper, newspaper, aluminum, cardboard and glass.**  
**Thank you in advance for helping to abide by our State law.**

## Who Is Responsible For Designing And Implementing My Agency's Monitoring and Evaluation Component?

Your **recycling coordinator and committee** will play key roles in the design and implementation of your agency's monitoring and evaluation program component but they cannot do an effective job alone. EPA's experience demonstrates that for this and other aspects of a recycling program, it is important to house responsibilities within the **building management component** of an agency. Institutionalization of the program in this way ensures that someone has authority to sign off on program decisions and that documentation of recycling activities will be forwarded to an agency official.

In addition, most effective recycling programs have **appointed and trained monitors**. The monitors can be agency-wide volunteers or staff of the agency's building service division. Program monitors should:

- **Periodically inspect office areas** to determine if employees are properly disposing of recyclable materials.
- **Post recycling statistics** in each building so that employees can follow the progress of the program.

- **Field questions** regarding program operation or pass along staff suggestions.
- **Contribute to articles** in Agency bulletins and newsletters.
- **Ensure that recycling posters are displayed** throughout the year.

Monitoring is not a job that can be passed off routinely, or rotated through. To provide consistency and reliability there must be regular evaluations by regular monitors. The recycling program coordinator should meet with program monitors on a monthly basis to readjust the program as needed.

### **How Do I Design And Implement My Agency's Monitoring And Evaluation Component?**

To track the benefits and improvements of your recycling program, first develop a clear picture of your starting point, a baseline measure of where you are early in the program. To assess your baseline, you should:

- **Address the following questions:**
  - Is there an active program already in place?
  - Is there currently a program under development (other than your own)?
  - What do you consider key items in your recycling agenda?
  - What do your co-workers want to see accomplished?
- **Circulate a staff questionnaire and document the staff's current knowledge of and attitude toward recycling.**

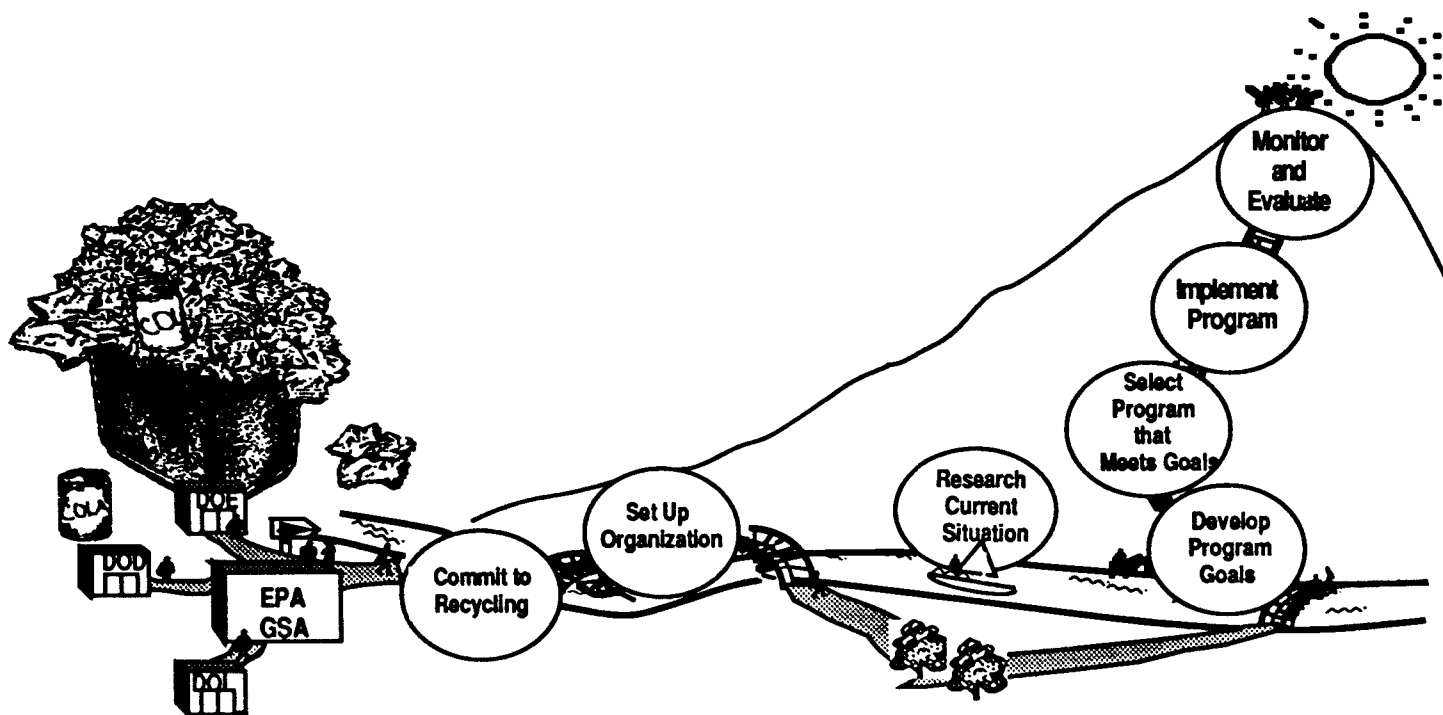
This information provides a background for deciding appropriate measures to use in assessing your program as it goes forward.

The next step is actually performing periodic checks and assessing all program activities, using these measures. It is essential that an analysis is performed and records are kept on each activity. The box on the next page provides some suggestions.

<b>COMPONENT</b>	<b>MONITORING &amp; EVALUATION TIPS</b>
<b>Education</b>	<p>A pre-program questionnaire and periodic updates can indicate increased knowledge and support of the program. Your program's end-results are probably the best measure of your education component.</p>
<b>Collection</b>	<p>Compare collection actions with goals. Check whether:</p> <ul style="list-style-type: none"> <li>• Bins are emptied when full</li> <li>• Correct recyclables are collected</li> <li>• Contaminants are present in recyclables</li> </ul> <p>Also check which recyclable items are not collected and why.</p>
<b>Marketing</b>	<p>Keep vendor receipts for recyclables sold or document volumes of recyclables at the loading dock prior to sale.</p> <p>Periodically compare rates with other vendor rates.</p> <p>Document time and method of pick-up to check efficiency.</p> <p>Investigate opportunities for joint-sales with other agencies.</p>
<b>Procurement</b>	<p>Review purchase orders periodically to ensure that your agency is buying products made from recycled materials, whenever possible.</p> <p>Schedule periodic discussions with representatives of all agency departments to review their product needs and encourage them to "buy recycled."</p>
<b>Monitoring &amp; Evaluation</b>	<p>Distribute findings, report accomplishments and stumbling blocks to management and employees.</p> <p>Provide follow-up information so people can see their efforts are productive.</p> <p>Provide a feedback mechanism for employee suggestions.</p>

# IMPLEMENTATION

## How Do I Put My Agency's Comprehensive Office Recycling Program In Place?



This section outlines three major phases of activity, which included seven key steps that your agency may follow in putting your comprehensive recycling program in place. Please keep in mind as you review these steps that not all programs will follow this exact format for program development and that flexibility will be the key to your success. The majority of the successful programs reviewed for this handbook did, however, use most, if not all of these steps.

The seven steps of the process usually occur in three phases:

- **PHASE 1—GETTING STARTED**
- **PHASE 2—PROGRAM DEVELOPMENT**
- **PHASE 3— MAINTAINING YOUR PROGRAM**

## **Phase 1 - Getting Started**

In this phase, you set your direction, gather resources, and research your agency's situation. These steps are explained in more detail below.

### **Step 1 - Commit to Recycling**

Critical to the successful implementation of any recycling program is the support and endorsement of senior agency managers. The go-ahead to establish a recycling program must come from top level agency management. It should be clear that management supports the program, and that it is to be implemented throughout the agency. Without this support, it is not likely your program will be successful. Remember the success of any office recycling program depends on the support and cooperation from every employee, from the highest levels of management to the personnel who carry out the actual collection procedures. Considering all of the above you must also be sure that your agency puts forth a truly unified effort and that all groups within the agency are represented.

When you talk about commitment you may be wondering, "What costs are the agency committing to". Costs for setting up a program vary according to its size, implementation strategy, and resources available in-house. Cost components include:

- Portion of salary paid to recycling coordinator
- Promotion and education campaigns
- Containers (main cost)
- Increased janitorial costs (if any)
- Procurement changes, for example higher prices for recycled paper
- Monitoring and evaluation

Those responsible for establishing a recycling program are aware of the importance of cost effectiveness. The net effect of such programs, though, often includes more than costs because of important benefits from recycling that do not result in revenue such as:

- Conservation of natural resources and energy
- Savings in landfill disposal costs
- Savings in landfill space
- Savings in hauling costs
- Currently, return of funds to the U. S. Treasury from the sale of collected materials.

When you consider the costs versus the benefits of a recycling program, it should be readily apparent why more and more Federal, State and local governments are committing to recycling.

## **Step 2 - Set Up Your Organization**

The effectiveness of your recycling program will depend, in part, on adequate staffing. Prior to initiating a recycling program, senior agency management must designate a Recycling Program Coordinator. For a large program, a paid manager or staff may be necessary. Depending on the size of your agency, the coordinator will spend anywhere from a week or two to several months getting a recycling program off the ground. Hours required to oversee the program, once it is running, can range from a few each week to full time.

The **Recycling Program Coordinator** will be responsible for overseeing the recycling program and staffing the recycling program team. Staffing the team entails bringing in interested and knowledgeable individuals to assist in the development and implementation of the recycling program. It consists of three steps: establishing a recycling committee, assigning monitors, and using consulting experts.

**Establishing a recycling committee.** The first official duty of the new recycling program coordinator should be to establish a recycling committee to assist in the research, program design, and program implementation. A committee can be essential to the smooth initiation of a recycling program. Your newly appointed Recycling Program Coordinator can manage the efforts of the committee members to ensure that the project and events progress well. The establishment of subcommittees within the committee will allow your group to focus on the specific components of a recycling program (e.g. education, collection, procurement, marketing, and monitoring and evaluation).

These committees should include people who are both interested and dedicated to the program and have leadership/communication experience. While committee members do not need to be recycling “experts,” specialty areas such as contracts specialists, lawyers, scientists, and facilities staff will reduce the amount of research that needs to be done to get up to speed on many of the issues. For example, staff from the procurement division, facilities division, technical staff, and program staff should be involved. The committees should include representatives of all the offices/buildings that are part of the program.

**Assigning monitors.** The Recycling Program Coordinator and the Recycling Committee should ask for volunteers to be monitors for the recycling program. One monitor for each division or floor, or for every 25-50 employees, is optimal. Monitors do not need to be experts, but should have a good rapport with the staff and a thorough understanding of how the recycling program works. They may be responsible for: ensuring that the containers are relatively free of non-recycled trash, notifying the coordinator if a container overflows, and encouraging employees to participate in the program. Monitors must also be aware of the importance of promoting the procurement of recovered materials.

**Using Consulting experts.** You may want to consider using an outside “expert,” such as a consultant who has set up recycling programs in other facilities. It’s possible that your agency will require new services to get your recycling program off the ground.

Once help is aboard for developing the program, the first order of business is to take stock of the agency’s current situation.

### Step 3 - Research Your Current Situation

Researching the current situation will enable your group to develop a set of options and evaluation criteria to guide the design of your recycling program. Before you start designing and implementing the recycling program identify:

- **Waste stream characteristics of the agency.** These include the types and quantities of materials the agency discards. This can be determined by conducting a “waste stream analysis,” as a first step in determining which materials are viable for recycling (See example in collection section of this handbook.).
- **Any current recycling initiatives in place.** Prior to implementing a comprehensive recycling program, determine if any other recycling efforts already exist at your agency. Such efforts may be “grass roots” in nature and may comprise only a few offices, floors, or staff members. Contact these staff members and determine the scope of their activities, including: the number of people involved, the types and amounts of materials being collected, vendors they are using, the processes they use for collection and marketing, pitfalls and lessons learned, and the location of their activities. This information should be useful to you in setting up a larger, more comprehensive program. In addition, since the ongoing program can be expected to be merged with the larger effort, it is helpful to work together to make integration go smoothly.
- **Current contracts for space and services.** Identify your agency's existing contractual agreements for building space and services in order to select the recycling option that best meets the parameters in which you must operate. **First, meet with your office's facility personnel** to gather information on building and service agreements. Determine who is responsible for collecting and hauling trash to a disposal facility. Is it a GSA contractor or operated by the building owner? Who contracts for services, GSA or your agency? Find out what the current level of service provides? Determine if your building is leased from GSA or a private owner. **Second, determine whether the trash collection staff can add collecting recycled materials to their job.** Determine whether this would require an amendment to their contract or additional funding. How would recycling affect current services? Is the waste hauled at a fixed rate or at cost plus fixed fee?
- **Current procurement specifications, plans, guidelines** to determine if your agency is purchasing recycled materials or plans to do so.
- **Applicable components of Federal/State/local laws.** An increasing number of States and localities have requirements for recycling certain materials. In most cases, Federal agencies are required to meet State and local laws. **Appendix C** includes Federal procurement and recycling requirements. You should review these requirements and EPA guidelines to ensure that your agency is in compliance. For further assistance on Federal recycling requirements, call the **RCRA Procurement Hotline at (703) 941-4452 or the RCRA Program Hotline at 1-800-424-9346.**
- **State and local requirements that apply to your agency** by contacting the following resources:
  - Local and county planning agencies
  - State planning agencies
  - State departments of natural resources or environmental protection

- State laws and regulations
- Local codes and ordinances.

You may want to ask staff at the State or local offices to assist you in designing and implementing a program that meets their requirements. Regardless of whether State or local requirements exist, you must comply with RCRA .

- **Marketability of collected materials.** Knowing what materials can be marketed to a recycler is critical, so you need to identify:
  - Potential vendors/recyclers
  - Materials the vendors/recyclers recycle
  - Whether there are sufficient materials to warrant recycling; and
  - Whether the purchase price is sufficient to warrant recycling

Once the materials to be recycled are determined, you can begin to design your program.

## **Phase 2 - Program Development**

During the second phase of your program activity, you re-examine initial goals in light of the synthesized information your group has gathered to compose plausible options.

### **Step 4 - Develop Program Goals**

After assessing your current recycling activities, it is helpful to set program goals commensurate with the current legal, contractual, and environmental goals identified above. These program goals form the criteria with which to evaluate different options for the recycling program. Typical goals include:

- **Ease of implementation**
- **Meets Federal/State/local requirements**
- **Increases Agency's procurement of recycled materials**
- **Can be implemented with available resources (staff and cost)**

Costs of setting up a program vary according to its size, in-house resources, salaries for recycling staff (if any), containers for recyclable goods (the main cost), educational materials and increased janitorial costs (if any).

### **Step 5 - Select Program that Meets Goals**

An agency considering recycling as a waste management tool must first decide whether to make recycling mandatory or voluntary. This decision is usually driven by economic realities such as diminishing and costly landfill space and/or increased distances to available disposal sites and/or local laws regarding recycling, if any. Several decisions must be made before the program can be designed:

- **Is the program mandatory or voluntary?** (If recycling, in the future, is mandated for federal agencies by law and regulation, some options need not be considered or evaluated.)
- **Will the work be conducted by staff members voluntarily or will the work be contracted out or will additional staff be hired to do the work?**
- **What funding resources are available?**
- **Is this a phased program, starting with only some of the materials at first or including only some of the buildings initially?**
- **Which buildings will you consider? Will you plan on phasing in other buildings at a later date?**
- **Will you try a pilot program prior to initiation of a full-scale program?**
- **What purchases lend themselves to the acquisition of recycled materials?**

- **What is the scope of the program?** Remember, this will be your first cut at the program scope and you should be realistic while at the same time optimistic. Will it include:
  - Waste reduction only?
  - Collection and marketing only?
  - Procurement only?
  - All of the above activities?
- **In the Collection Component which materials will you want to recycle?** Develop a list of recyclable materials and list them in priority order for recycling.
  - High grade white office paper
  - Glass
  - Aluminum
  - Computer paper
  - Corrugated cardboard
  - Newspaper
  - Oil
  - Other metals
  - Plastics
  - Laser printer cartridges
  - Lab wastes (some)

In addition, you may want to consider recycling compost materials such as lawn clippings and other yard wastes, and agricultural wastes, as well as other wastes identified in the waste stream analysis. Select the materials to be recycled based on the availability of a vendor to buy them, the amount of that material in your waste stream analysis, and the benefits compared to the cost of collecting and marketing the material.

Now that you have considered the first two phases, you should have a pretty good idea about what your program will look like. As a committee you are well established and have the backing of management who you have kept informed throughout this process. In order to move the program forward, submit the committee's findings and recommendations to management for approval.

## **Phase 3 - Maintaining Your Program**

### **Step 6 - Implement Program**

So much has already been said regarding program development that this section is presented as a summary of design and implementation steps in the form of a checklist to help keep your program on track.

#### **Program Design and Implementation Checklist**

Your staffing team is ready and the comprehensive requirements analysis has been done. You have selectively designed a recycling program that is now ready to be implemented. But first check to make sure you have:

##### **Education:**

- \_\_\_\_\_ Established lines of communication with employees
- \_\_\_\_\_ Determined which types of education devices will be used by whom
- \_\_\_\_\_ Announced the program and put up posters
- \_\_\_\_\_ Distributed written recycling procedures for staff, maintenance personnel and management
- \_\_\_\_\_ Trained the staff, maintenance personnel, and management who are directly involved

##### **Collection:**

- \_\_\_\_\_ Determined whether your present contract meets your program needs
- \_\_\_\_\_ Identified and secured space for collection and storage of materials
- \_\_\_\_\_ Selected and procured collection containers
- \_\_\_\_\_ Identified area(s) for loading dock use or other central point(s) of transfer for dealer pick-up
- \_\_\_\_\_ Determined who will move materials to central transfer points
- \_\_\_\_\_ Placed containers in appropriate areas

##### **Marketing:**

- \_\_\_\_\_ Met with Agency contracts staff
- \_\_\_\_\_ Identified dealer contract components
- \_\_\_\_\_ Established funding needs to market materials
- \_\_\_\_\_ Determined where income from recycle collection will go
- \_\_\_\_\_ Solicited proposals from dealers
- \_\_\_\_\_ Reviewed GSA contract availability
- \_\_\_\_\_ Signed a contract

##### **Procurement:**

- \_\_\_\_\_ Implemented procurement guidelines
- \_\_\_\_\_ Organized in-house procurement resources
- \_\_\_\_\_ Enlisted the support on in-house agency staff and other support resources
- \_\_\_\_\_ Developed a profile of the availability of a recycled material
- \_\_\_\_\_ Evaluated recycled material profiles
- \_\_\_\_\_ Determined which recycled materials are to be purchased through procurement program
- \_\_\_\_\_ Negotiated agreement(s) with prospective vendor(s) for each material.

## Step 7 - Monitoring and Evaluation:

- \_\_\_\_\_ Conducted waste stream analysis
- \_\_\_\_\_ Established monitoring/evaluation timeframe
- \_\_\_\_\_ Established methods of tracking, measuring and recording quantities of material recovered
- \_\_\_\_\_ Established lines of communication between staff and management to convey program results
- \_\_\_\_\_ Program monitors in place
- \_\_\_\_\_ Established feedback mechanism
- \_\_\_\_\_ Developed enforcement program if necessary

Your monitoring and evaluation sub-committee may find additional items to add to the checklist. Now you are really ready to go. Good luck, and enjoy a worthwhile project!

### ***TEAR SHEET***

#### **Let Us Know How You Are Doing and What You Need**

EPA recognizes that with the rapid advancements in recycling programs and technologies, guidelines such as those offered in this handbook may quickly become outdated. In order to provide your agency with the best information possible, EPA would like to know how the handbook has been useful to you, changes or other information you would find helpful, resources you can recommend, and suggestions or tips you can offer from your office recycling efforts. The tear sheet included at the end of the handbook has a two-fold design: to enable you to report back to EPA regarding the helpfulness of the handbook and any changes you recommend, and to provide you with a record of your program's goals and accomplishments. In order to maintain the completeness of this handbook, please photo-copy the page, complete the questionnaire, and return it to the address indicated on the form. The information you provide will be used in periodic updates of this handbook.

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Procurement Guideline for Cement and Concrete Containing Fly Ash, 40 CFR Part 249, January 1983

Procurement Guideline for Paper and Paper Products, 40 CFR Part 250, June 1988

Procurement Guideline for Lubricating Oils Containing Refined Oil, 40 CFR Part 252, June 1988

Procurement Guideline for Retread Tires, 40 CFR Part 253, November 1988

Procurement Guideline for Building Insulation Products, 40 CFR Part 248, February 1989

## APPENDIX B: LIST OF INFORMATION CONTACTS

INFORMATION CONTACTS	PROCUREMENT	MARKETING	COLLECTION	MONITORING & EVALUATION	EDUCATION
<b>RCRA PROCUREMENT HOTLINE</b> <b>(703) 941-4452 M-F</b> <b>8:30 TO 5:30 (EST)</b>  <b>RCRA PROGRAM HOTLINE</b> <b>1-800-424-9346</b>	✓	✓	✓	✓	✓
<b>EPA RECYCLING RESOURCE STAFF</b> <b>POC: GAIL WRAY</b> <b>ROBERT KELLY and</b> <b>REBECCA HOCKMAN</b> <b>(202) 382-6980</b>	✓	✓	✓	✓	✓
<b>EPA, OFFICE OF SOLID WASTE</b> <b>POC: TRUETT DEGEARE</b> <b>TERRY GROGAN</b> <b>TERRY GRIST</b> <b>RICHARD BRADDOK</b> <b>(202) 382-6261</b>	✓		✓	✓	✓
<b>GSA</b> <b>FEDERAL RECYCLING PROGRAM</b> <b>POC: BEVERLY GOLDBLATT</b> <b>(202)501-0348</b>		✓	✓	✓	

## **APPENDIX C**

### **PROCUREMENT GUIDELINES FOR FEDERAL PROCUREMENT OF RECYCLED MATERIALS**

The statutory definition of a procuring agency identifies three types of agencies:

- (1) Federal agencies
- (2) State or local agencies using appropriated Federal funds
- (3) Contractors.

Section 6002 of RCRA sets forth certain requirements for procuring agencies. These requirements include:

- (1) Eliminating from specifications any discrimination against the use of recovered materials.
- (2) Purchasing products which contain recovered material if reasonable levels of technical performance, cost, availability, and competition can be achieved.
- (3) Obtaining certification from suppliers that they have met any minimum contractual requirements for including recovered materials in their products.

The exhibit on the following page outlines the procurement guidelines for:

- (1) Building insulation materials
- (2) Cement and concrete containing fly ash
- (3) Paper and paper products
- (4) Lubricating oils containing refined oil.
- (5) Retread tires

# PROCUREMENT GUIDELINES FOR FEDERAL PROCUREMENT OF RECYCLED MATERIALS

## **GUIDELINE FOR PROCUREMENT OF BUILDING INSULATION PRODUCTS CONTAINING RECOVERD MATERIALS; 40 CFR PART 248, FEBRUARY 1989.**

This guideline applies to building insulation products. This term includes but is not limited to insulation products used in residential, commerical, and industrial type applicaitons and includes blanket, board, spray-in-place, and loose-fill insulations. Building insulation is used in four locations: ceilings, floors, foundations and walls. The types of materials from which these products are made include, but are not limited to cellulose fiber, fiberglass, rock wool, plastic rigid foams, and specialty materi-als. Composite products are also considered within the scope of this guideline.

## **GUIDELINE FOR PROCUREMENT OF CEMENT AND CONCRETE CONTAINING FLY ASH; 40 CFT PART 249, FEBRUARY 1983**

This guideline designates cement and concrete products such as pipe and block, containing fly ash, as a product area for which procuring agencies must exercise affirma-tive procurement under Section 6002 of RCRA and presents recommendations for carrying out the requirements of Section 6002 with respect to fly ash used in cement and concrete.

## **GUIDELINE FOR PROCUREMENT OF PAPER AND PAPER PRODUCTS CONTAINING RECOVERED MATERIALS; 40 CFR PART 250, JUNE 1988**

This guideline applies to the procurement of paper and paper products containing recovered materials. Included are all paper and paperboard categories except building and construction paper grades. EPA included as many items as possible within the scope of this guideline to encourage the paper industry to increase and improve the production of paper and paperboard categories falling within the scope of these guidelines incudes: high grade bleached papers, printing and writing papers, mailing en-velopes, memo pads, form bond and manifold business forms, computer paper, newsprint, xerographic/copy paper, and tissue products.

## **GUIDELINE FOR FEDERAL PROCUREMENT OF LUBRICATING OILS CONTAINING REFINED OIL; 40 CFT PART 252, JUNE 1988**

This guideline designates engine lubricating oils, hydraulic fluids, and gear oils which meet specifised military specifications (Mil Specs) as items which are subject to the procurement requirements of Section 6002 of RCRA. These oils were chosen because the Mil Specs allowed refined oils to be used. The oils represent large components of the annual Federal procurement of lubricating oils, and State, local and private purchasers commonly use the oils.

## **GUIDELINE FOR PROCUREMENT OF RETREAD TIRES; 40 CFR PART 253, NOVEMBER 1988**

This guidelines applies to purchases of the following types of tires: high-speed industrial tires, bus tires, and special service tires (including Military, agricultural, off--the-road, and slow speed industrial). The guidelines do not apply to airplane tires or original equipment tires.

## **APPENDIX D: MATERIAL HANDLING REQUIREMENTS**

### **BACKGROUND INFORMATION**

The following provides basic information and handling requirements on the paper, glass, aluminum and plastics recycling programs.

#### **Paper Program:**

When assessing the potential for paper recycling, keep in mind that not all paper is the same. Different grades lend themselves to making different types of new products and, therefore, are not interchangeable. For example, old newspapers are used primarily to make newsprint and recycled paperboard, but cannot be used to make fine writing papers; old corrugated containers make linerboard, corrugating medium, and recycled paperboard, but not newsprint; high-grade deinking papers and pulp substitutes (e.g., trim or cuttings from converting plants that produce folding cartons, envelopes, bags) make tissue and printing/writing papers, but not corrugated boxes. Recycled paper can be used to create cereal boxes, writing pad bases, wall board, newsprint, corrugated containers and tissue paper. The four major grades of recyclable paper are:

#### **1. High Grade Office Paper:**

The fourth largest source of waste paper is the high-grade deinking papers, of which 2.5 million tons were collected in 1988. This is estimated as 36% of the potential available. This is primarily discarded as production printed waste, but also includes materials such as computer printout papers white paper/any color printing, white office stationary, white copier paper, white note/tablet paper, white envelopes with water-soluble glue(flaps that stick when moistened). Excluded from this category include: envelopes with non-soluble glue, carbon paper (sensitized paper), blueprint paper, film and photographs, all colored paper, and file folders.

#### **2. Low Grade Office Paper:**

Mixed papers are collected from office buildings and industrial plants and are generally unsorted paper. Included in mixed paper is a significant percentage of high quality waste papers. These, if separated from other non-paper wastes, can be recycled into high quality products. In 1988, 3.0 million tons of mixed papers were collected, which represents a 10 percent collection rate overall and a 13 percent recovery rate of the uncontaminated supply. Additionally low-grade paper includes: colored paper, file folders(reuse if possible), brown envelopes, soft cover books with white paper(e.g., Code of Federal Regulations, phone books)-or remove binding and recycle as high grade white paper.

#### **3. Corrugated Cardboard:**

The largest single source of waste paper collected for recycling is corrugated boxes, including corrugated box plant clippings. In 1988, approximately 10.5 million tons of used corrugated boxes (post consumer waste) and 1.8 million tons of box plant clippings (industrial waste) were collected. The nationwide collection rate for old corrugated containers in 1988 was 51 percent, with some metropolitan areas achieving a post-consumer collection rate estimated to be in excess of 60 percent.

#### **4. Old Newspapers:**

The second largest source of waste paper is newspaper, which constitutes the principal grade collected from private residence. In 1988, approximately 4.7 million tons were recovered, representing 34 percent of total U.S. consumption (the equivalent of 81 percent of the 5.8 million tons of U.S. newsprint production).

#### **Glass Program:**

Glass is 100% recyclable without any loss in quality to the new containers being manufactured. The average American uses approximately 85 pounds of glass per year. Recycled glass melts at a lower temperature, thereby reducing energy consumption and extending the life of melting furnaces. Every pound of melted glass can be recycled into a pound of new glass, and it can be recycled again and again. Recyclable glass containers include all types of food jars, beverage bottles (all glass), and cosmetic bottles. Excluded are light bulbs, ceramic glass, dishes or plate glass, safety and window glass, heat resistant glass, and lead-based glass (such as crystal or TV tubes).

#### **Aluminum Program:**

Approximately 55 percent of all aluminum cans sold are returned and recycled. In 1988, 1.5 million pounds of aluminum beverage containers (about 42.5 billion cans) were recycled. The actual number of aluminum cans recycled has increased every year since aluminum recycling became popular in the early 1970s. In most cases recycled aluminum is used to produce new cans.

#### **Steel and Bi-Metallic Program:**

Steel cans are purchased by the steel industry because they are a good source of scrap and because their tin coating can also be recovered and recycled. Some steel cans have aluminum tops and bottoms and are called bi-metal cans. A can is bi-metal if a magnet sticks to the sides but not the ends. If you collect a lot of cans, you might want to flatten them to save space. You will need to check the local marketability for bi-metal cans to determine if recycling them is viable.

#### **Plastics Program:**

A growing number of types of plastic products are being recycled. PET plastics (polyethylene terephthalate) are recycled at a rate of 20 percent. Other plastic products with favorable recycling potential are milk, water and juice containers, all of which are derived from high density polyethylene (HDPE). Recycling potential also exists for other types of plastics, such as polyvinyl chloride (PVC) or vinyl. Items made from polystyrene foam which can be recycled include plastic foam cups and plates, take-out containers used by the restaurant industry; cafeteria trays, fast-food containers, plastic cutlery and packaging materials. Recycled plastics are used in plastic wood products, flower pots, drainage pipes, toys, traffic barrier cones, carpet backing, and fiber for pillows, ski jackets and sleeping bags.

## **Tires:**

Approximately 200 million tires are available for reuse or recycling each year. Since they are bulky, they take up valuable landfill space. Tires, which are very expensive to dispose of, can be used in asphalt pavement, industrial fuel, rubber mats and to hold soil erosion.

## **Yard Waste:**

Yard waste comprised eighteen percent of the municipal waste stream. Yard wastes including leaves, grass clippings, branches, and twigs can be composted and used to enrich soil. For more information about composting you may wish to read EPA's Yard Waste Composting: A Study of Eight Programs (EPA/530-SW-89-038). This document is available through the RCRA Program Hotline 1-800-424-9346

## **HANDLING REQUIREMENTS**

Each of the different types of recyclable materials have different handling and processing requirements, a few of which are outlined below. It will be important to work closely with your local recycling company who will stipulate requirements for materials other than those discussed below:

### **High And Low Grade Office Paper:**

Contamination of high and low grade office paper causes serious problems in the paper manufacturing process and substantially lowers the value. The most frequently found contaminants are:

- Plastic covers
- Lithocoated paper
- Fax paper
- Glossy paper
- Post-its
- Tape
- Carbon paper
- Blueprints
- Cardboard
- Pressure-sensitive labels
- Paper with insoluble glue (e.g., wrapping for copier paper)
- Envelopes with plastic windows
- Envelopes with pressure-sensitive flaps and labels
- Binder clips, metal fasteners, rubber bands (save for reuse)
- Food wrappings, cups, napkins, tissues.

### **Corrugated Cardboard:**

Corrugated cardboard should be kept free of contaminants, which adversely affect production efficiency and product quality. Contaminant-free corrugated waste paper also increases its value. Common contaminants include: styrofoam packing materials, plastic bags, wrap and film, trays used to package food items, and plastic cups.

## **Newspapers:**

In order to maximize the price that can be obtained for newspapers, they should be kept clean, dry, out of direct sunlight, tied in bundles or placed in paper bags, and free of contaminants. Contaminants include:

- Wire hangers or other metal objects
- Wax and plastic paper
- Aluminum foil
- Food
- Plastic bags
- Clothing
- Glass
- Wood and yard waste.

## **Glass:**

Glass has a number of processing and handling requirements that have to be followed in order to produce cullet (crushed glass) that is furnace ready (i.e., color-sorted and free of contaminants).

1. Separate material by color (green, brown or clear): Color sorting is essential to guarantee color consistency in containers being made from recycled glass. Occasionally, markets can be found for mixed-color glass, but prices paid may be lower than these for color-sorted glass. No equipment in the glass container industry can effectively color sort glass in the processing phase. Sorting of glass can be done easily by providing three separate, central containers clearly marked to specify which color of glass should be deposited in each container.
2. Separate contaminants from the glass: Contamination is a serious concern of the glass container industry. Sources of contamination include:
  - Stones and dirt
  - Ceramic cups, dishes and ovenware
  - Light bulbs
  - Plate glass, safety and window glass
  - Heat-resistant glass such as Pyrex
  - Lead-based glass such as crystal or TV tubes.

These materials can create serious problems for the glass container manufacturer for the following reasons: glass furnaces operate at temperatures of about 2700 degrees Fahrenheit. Both lead and aluminum melt at this temperature. Iron, steel and lead will settle to the bottom of a furnace and attack its refractory lining. Aluminum melts into small balls called "stones" or bubbles called "seeds." These can appear in the containers being made, causing both structural and aesthetic problems. Ceramics and stones create similar problems.

Glass plants are equipped with cullet processing systems which can remove metal caps, rings, and paper from the cullet. This means that all glass recycling programs must make quality control of collected material a high priority.

3. Crushing the glass. Glass does not need to be crushed to be sold. However, crushed glass (cullet) reduces the volume which makes transport simpler and more efficient.

**Metal Cans:**

Depending on your market, metal cans at some point will need to be separated into all aluminum, steel and/or bi-metal categories. If separation is required at the Agency, a magnet can be used to determine the alloy. It is suggested that the cans be crushed in order to reduce the volume and make transportation more efficient. Contaminants include:

- liquid in cans
- food wrappings
- cups, plastic and glass

It is important that the cans be empty of liquid and that such information be displayed on the collection container.

**Plastics:**

There are many varieties and combinations of plastic in offices. Plastic will usually have to be separated by types. This is a relatively new area and technology is advancing rapidly.

## **APPENDIX E: WASTE REDUCTION**

Program staff can undertake steps to reduce waste and to foster the reuse of material goods. Activities include:

- Source elimination
- Source reduction
- Reuse

Suggestions for involving staff are presented in the following paragraphs.

### **A. Source Elimination**

Educate staff to the choice of selecting and buying products that have recycling markets in your area. Selecting recyclable and recycled goods over other materials also could be applied to document production (e.g., Code of Federal Regulations) whereby the agency specifies that water soluble glues are used. At the same time, investigate alternative ways to bind documents so that when a document is no longer useful, it can be recycled as a high grade material with a minimal amount of labor involved. Other waste reduction examples include:

- Telephone directories should be stapled rather than glued
- Use of ceramic cups instead of disposable polystyrene foam

The aim of these efforts is to eliminate unnecessary non-recyclable waste.

### **B. Source Reduction**

A Federal agency can assess its own way of doing business to encourage staff to reduce the amount of waste it helps generate. For example, requiring agency staff and contractors to copy on both sides of the paper can generate substantial savings in paper. Use the back of previously used paper for drafts or worksheets. Make only the number of copies of memos or reports needed to meet your requirements. Do not round up--making twenty copies when only eighteen are needed. This equals a 10% reduction in waste. See EPA document (EPA-530-SW-89-066) Promoting Source Reduction and Recycling in the Marketplace.

### **C. Reuse**

One of the most critical components of waste reduction is the reuse of materials. Each time a material is reused, a new one need not be manufactured, purchased, and ultimately disposed of. Suggested items to reuse include:

- File folders
- Interoffice envelopes
- Binder clips, metal fasteners, paper clips
- Rubber bands.
- Three ring binders
- Staples
- Staple removers

An agency should stress that office supplies can often be reused instead of being thrown out. It is suggested that an area be identified for the display of used supplies within or near your agency's supply store.

# TEAR SHEET

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## GENERAL INFORMATION:

AGENCY NAME: \_\_\_\_\_ Today's Date: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact Person/Division: \_\_\_\_\_

## PROGRAM GOALS:

### • EDUCATION:

Strategy \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Accomplishments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### • COLLECTION:

Materials: Estimated tonnage to be collected

_____ High grade paper	_____ Oil
_____ Computer paper	_____ Other metals
_____ Other paper	_____ Plastics
_____ Newspaper	_____ Printer Cartridges
_____ Glass	_____ Lab wastes
_____ Aluminum	_____ Other (please identify)
_____ Corrugated cardbd.	

### • PROCUREMENT:

Materials: Please check those recyclable materials regularly or those which which will be procured.

_____ Paper	_____ Building insulation products
_____ Computer paper	_____ Fly ash in cement
_____ Photocopy paper	_____ Other (please identify)
_____ Oil	
_____ Printer cartridges	
_____ Lab products	
_____ Retread tires	

- **MARKETING:**

Strategy \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Accomplishments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- **MONITORING AND EVALUATION:**

Strategy \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Frequency \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**PROGRESS TO DATE:**

**EDUCATION:** What techniques have you used and how successful have they been?

<u>Techniques</u>	<u>Frequency, Timing</u>	<u>Participation</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

How have you staffed your education program?

\_\_\_\_ Volunteers    \_\_\_\_ New Hires    \_\_\_\_ Assigning tasks to existing employees

- **COLLECTION:** What materials are regularly collected?

<u>Materials</u>	<u>Amount (in tons)</u>
_____	_____
_____	_____
_____	_____
_____	_____

How have you staffed your collection program?

\_\_\_\_ Volunteers \_\_\_\_ New Hires \_\_\_\_ Assigning tasks to existing employees

- **PROCUREMENT:** What recycled materials are regularly procured?

Materials

Amount (in tons or dollars)

_____	_____
_____	_____
_____	_____

- **ENTHUSIASM AND COMMITMENT:** How would you describe the enthusiasm and commitment of the following participants to your recycling program:

- Senior Agency Management:

\_\_\_\_\_  
\_\_\_\_\_

- Program Staff:

\_\_\_\_\_  
\_\_\_\_\_

- Program Participants

\_\_\_\_\_  
\_\_\_\_\_

- **GENERAL:** How has actual program experience differed from program goals? Why has experience been better or worse?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Describe funding support and adequacy: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

- **FUTURE:** What program improvements or changes do you plan?

\_\_\_\_\_  
\_\_\_\_\_

## HANDBOOK CRITIQUE:

1. What parts of the handbook were particularly helpful in setting up your recycling program?

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2. In what areas was the handbook weak: (For example, have you encountered problems for which the handbook had no answer. Were there any areas where it was incorrect or misleading? If so, please photocopy the pages and return with comment

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3. What guidance could we add that would make the handbook more useful?

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4. What other references did you use to develop your program?

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5. What advice would you give others wishing to develop a similar recycling program?

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Please mail responses to:

U.S. Environmental Protection Agency  
Office of Administration and Resources Management  
Attention: Gail Miller Wray (PM-215)  
401 M St., SW  
Washington, DC 20460