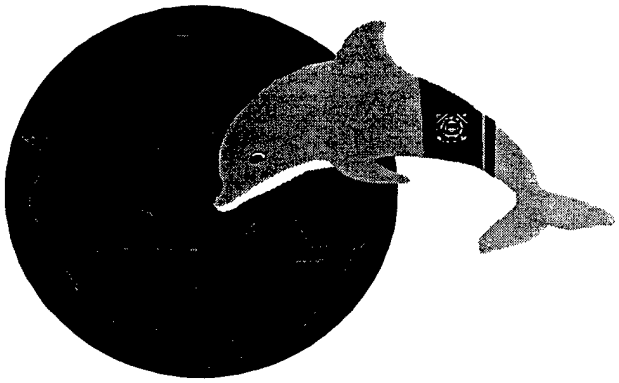
Report No. CG-D-25-96

United States Coast Guard Recycling Guide



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FINAL REPORT
July 1996

Prepared for:

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1082 Shennecossett Road
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and

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16. Abstract

In accordance with the Pollution Prevention Act of 1990, the United States Coast Guard (CG) is committed to a pollution prevention program that will improve the quality of the environment. A key element of this program is the minimization of municipal, industrial, and hazardous waste being generated at CG facilities nationwide. Recycling of wastes serves to reduce disposal costs and minimize adverse effects on the environment. This document gives guidance to personnel responsible for establishing CG recycling programs.

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UNCLASSIFIED	UNCLASSIFIED		

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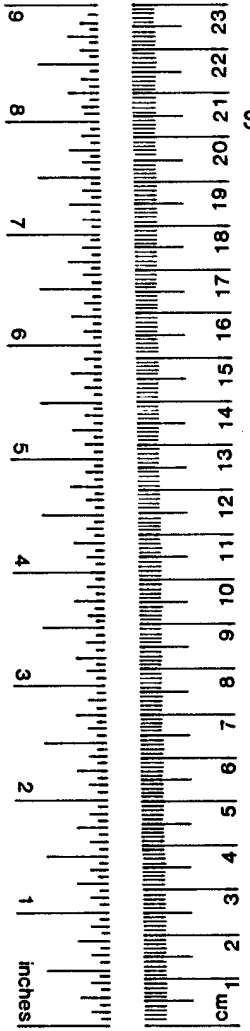
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

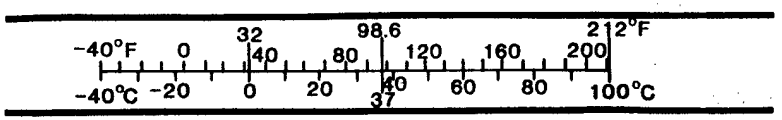
Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
in	inches	* 2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (WEIGHT)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (EXACT)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly).



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (WEIGHT)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	0.125	cups	c
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (EXACT)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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LIST OF ACRONYMS

BACT	Best Available Control Technologies
C/N	Carbon/Nitrogen
C&D	Construction & Demolition
CAA	Clean Air Act
CEM	Continuous Emission Monitoring
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFC	Chlorofluorocarbon
CG	United States Coast Guard
CWA	Clean Water Act
CEU	Civil Engineering Unit
DRMO	Defense Reutilization and Marketing Office
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning & Community Right to Know Act
FBC	Fluidized Bed Combustors
FIFRA	Federal Insecticide, Fungicide & Rodenticide Act
GSA	General Services Administration
HAZMAT	Hazardous Material
HDPE	High Density Polyethylene
HHW	Household Hazardous Waste
LAER	Lowest Available Emission Rate
LDPE	Low Density Polyethylene
MACT	Maximum Achievable Control Technology
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
MWC	Municipal Waste Combustion
MLC	Maintenance and Logistic Command
NEPA	National Environmental Policy Act
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standard
PCB	Polychlorinated Biphenyls

LIST OF ACRONYMS

PET	Polyethylene Terephthalate
PP	Polypropylene
PPA	Pollution Prevention Act
PS	Polystyrene
PVC	Polyvinyl Chloride
QRP	Qualified Recycling Program
RCRA	Resource Conservation & Recovery Act
RDF	Refuse Derived Fuel
SARA	Superfund Amendments & Reauthorization Act
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SPI	Society of the Plastics Industry
SS	Source Separated
SWM&MP	Solid Waste Management & Management Plan
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
USCG	United States Coast Guard
V	Vinyl

EXECUTIVE SUMMARY

In accordance with the Pollution Prevention Act of 1990, the United States Coast Guard (CG) is committed to a pollution prevention program that will improve the quality of the environment. A key element of this pollution prevention program is the minimization of municipal, industrial, and hazardous waste being generated at CG facilities nationwide. The CG spends millions of dollars annually to dispose of these wastes. An effective method the CG can employ to decrease the costs and environmental drawbacks associated with waste disposal is recycling.

Utilizing the Environmental Engineering Division of the John A. Volpe National Transportation Systems Center (Volpe Center), the CG Research and Development Center has developed the *CG Recycling Guide* to assist individual CG facilities with the development of environmentally and economically sensible recycling programs, including CG Qualified Recycling Programs (QRP). The objective of these QRPs, as stated in Commandant Instruction (COMDTINST) 16477.5, is to: prevent pollution, reduce contribution to overcrowded landfills, conserve our finite supply of natural and fiscal resources, and minimize routine waste disposal costs by reducing waste, reusing resources, and procuring products made of recycled materials, as well as materials that are readily recyclable and therefore environmentally preferable. Although the establishment of a QRP is optional, all units are required to recycle or participate in a community recycling program to the maximum extent possible, regardless of whether or not they are a participating QRP facility.

The *USCG Recycling Guide* can be used to establish recycling programs, including QRPs, that are consistent with CG policy and operations. This document will give the personnel responsible for developing CG recycling programs specific instructions for establishing a recycling team. The team will be responsible for waste stream auditing, identifying necessary facilities and equipment, marketing recyclable materials, establishing a recycling education and promotion program, and conducting a cost/benefit analysis of the recycling program.

SECTION 1.0 - INTRODUCTION

1.1 BACKGROUND

Federal agencies can reduce their environmental impacts and the costs associated with managing these impacts by incorporating pollution prevention into their facilities activities. The Federal government is in a unique position to demonstrate leadership by protecting the environment using pollution prevention. Through its purchasing practices, for example, the government can demonstrate the use of less toxic and environmentally protective products and materials. The government can also create the demand for goods and products with recycled content by establishing minimum recycled content standards in its procurement contracts. By embracing pollution prevention as the preferred environmental management technique, the Federal government can promote pollution prevention in all its forms, including source reduction, recycling, and affirmative procurement. The Federal government can fundamentally change the way in which the government and, in the long-run, the Nation conduct business.

1.2 PURPOSE OF THIS DOCUMENT

The purpose of this document is to help CG personnel develop and implement recycling programs while complying with Executive Orders (EOs) 12856 and 12873 (see Appendix G) and the Pollution Prevention Act through recycling. EOs 12856 and 12873 are respectively entitled *Federal Compliance with Right-to-Know Laws and Pollution Prevention* and *Federal Acquisition, Recycling, and Waste Prevention.* Both of these EOs include recycling of generated waste and the purchase of materials made from recycled material as important elements of a sucessful pollution prevention program. This document will give the personnel responsible for developing CG recycling programs specific instructions for establishing a recycling program. These instructions cover such activities as waste stream auditing, identifying necessary facilities and equipment, marketing recyclable materials, establishing a recycling education and promotion program, and conducting a cost/benefit analysis of the recycling program.

1.3 FORMAT OF THE RECYCLING GUIDE

In order to present the elements of a recycling program in a straightforward manner, the recycling guide has been formatted as follows:

- **Section 2.0 - Determining Whether or not to Establish a Qualified Recycling Program (QRP) at your Facility**

  This section describes how to determine if your facility is eligible to become a QRP and what sections of this guide are relevent to QRP facilities vs non-QRP facilities.

- **Section 3.0 - Regulations and Policies**

  This section identifies and summarizes federal regulations pertaining to waste recycling, reuse and recovery. In addition, CG polices regarding waste minimization and recycling are identified and summarized.

- **Section 4.0 - QRP Personnel Responsibilities**

  This section identifies the responsibilities of CG personnel who administer and operate the QRP.

- **Section 5.0 - Waste Stream Assessment**

  The purpose of this section is to assist CG personnel with the identification of the types, quantities and sources of wastes being generated at the facility.

- **Section 6.0 - Recyclable Materials**

  This section describes recyclable materials and their typical sources. The purpose of this section is to provide CG personnel with general information about recyclable materials following the conduct of the waste stream assessment (Section 5.0).

- **Section 7.0 - Recyclable Material Separation and Collection Techniques**

  This section summarizes the typical techniques used to separate and collect recyclable materials. The purpose of the section is to provide CG personnel with information on various separation and collection techniques so that they can implement the appropriate technique for their facility.

- **Section 8.0 - Facilities and Equipment**

  This section describes the facilities and equipment typically used in recycling programs.

- **Section 9.0 - Strategies for Marketing Recyclable Materials**

  This section summarizes methods which CG personnel can use to locate potential markets for the recyclable materials identified during the waste stream assessment.

- **Section 10.0 - Cost/Benefit Analysis**

  This section describes the method of conducting a cost/benefit analysis for the recycling program. Examples are provided to assist the CG in the conduct of their cost/benefit analysis.

- **Section 11.0 - Education/Promotion Program**

  This section describes the elements of an effective education/promotion program. The section provides specific methods to use when establishing the education/promotion program.

Commandant Instruction (COMDTINST) 16477.5 provides policy guidance for establishing a QRP and report requirements for recycling activities. CG personnel should review and be familiar with this instruction before implementing a recycling program. The QRP is referenced throughout this guide and a copy of COMDTINST 16477.5 is provided in Appendix F.

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SECTION 2.0 - DETERMINING WHETHER OR NOT TO ESTABLISH A QUALIFIED RECYCLING PROGRAM (QRP) AT YOUR FACILITY

The USCG QRP (COMDTINST 16477.5) is a recycling program which allows CGunits to use proceeds from the sale of recyclable materials to support Morale, Welfare, and Recreation (MWR) activities and to finance pollution prevention, energy conservation, and occupational safety and health projects. There is no requirement for units to establish a QRP: becoming a QRP unit is optional. However, if a CG unit wants to receive proceeds from the sale of their recyclable materials, they must establish a QRP.

The question to be answered when deciding whether or not to establish a QRP at your unit is: *Will the proceeds from the sale of recycled material exceed the added costs of selling the material*? If the answer is "**yes**", your unit should seriously consider establishing a QRP. If the answer is "**no**", there is no benefit in establishing a QRP, and therefore, it is not necessary to establish a QRP at your unit.

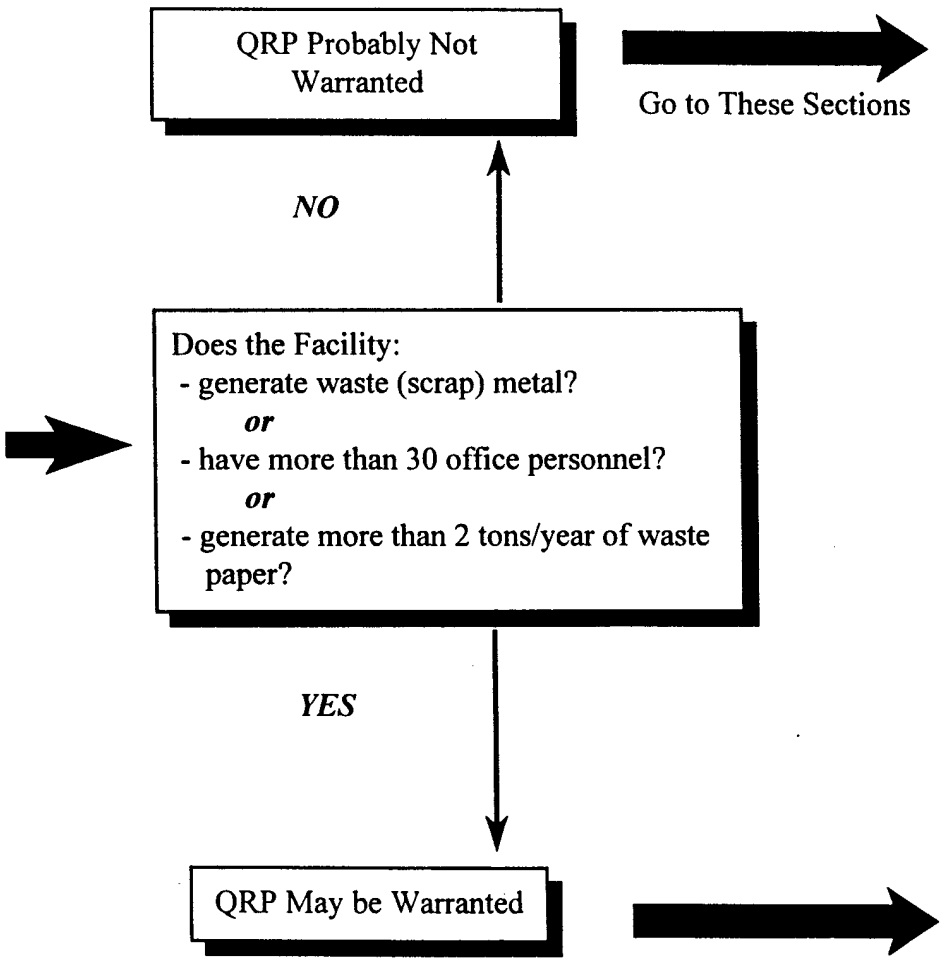
Regardless of whether or not you have established a QRP at your facility, all CG units are required to recycle or participate in a community recycling program to the maximum extent possible.

In most cases, the more recyclable waste that is generated, the more likely proceeds from the sale of recyclables will exceed the costs of recycling. Therefore, since larger CG units generate more recyclable waste than smaller units, the larger units are more likely to benefit from establishing a QRP.

Using this Guide

This guide is intended to assist all CGunits in establishing recycling programs, whether they're QRP or non-QRP. Some of the sections in this recycling guide, such as Section 9.0 Strategies for Marketing Recyclable Materials, are not relevent to CG units that are not going to establish a QRP. Figure 2-1 provides a decision tree for deciding whether or not to establish a QRP at your unit and the relevent sections for each decision.

Figure 2-1



Relevant Sections:

Section 3.0: Regulations and Policies
Section 5.0: Waste Stream Assessment
Section 6.0: Recyclable Materials
Section 7.0: Recyclable Material Separation and Collection Techniques
Section 11.0: Educational/Promotional Activities

Relevant Sections:

Section 3.0: Regulations and Policies
Section 4:0: QRP Personnel Responsibilities
Section 5.0: Waste Stream Assessment
Section 6.0: Recyclable Materials
Section 7.0: Recyclable Material Separation and Collection Techniques
Section 8.0: Facilities and Equipment
Section 9.0: Strategies for Marketing Recyclable Materials
Section: 10.0: Cost/Benefit Analysis
Section: 11.0: Educational/Promotional Activities

SECTION 3.0 - REGULATIONS AND POLICIES

This section gives a brief overview of regulations and policies that relate to recycling. These regulations and policies reveal that federal, state, and local agencies, as well as the USCG, acknowledge the importance of recycling in an overall pollution prevention program. It is important for all CG units to know that these regulations exist, however it is not necessary, or expected, that CG personnel know all the details of these regulations. By following the directions given in this guide, CG personnel should not encounter any regulatory problems regarding recycling. However, if there are any questions or concerns regarding recycling regulations or regarding any other aspect of recycling, contact the appropriate sources listed in Appendix A.

3.1 FEDERAL REGULATIONS

Although specific federal recycling regulations do not exist, many federal regulations do include recycling as an activity which would assist with compliance. Federal laws which are associated with recycling include the following:

3.1.1 Pollution Prevention Act (PPA) of 1990

In October 1990 Congress passed the Pollution Prevention Act, establishing a national policy "...that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner; and disposal or other release into the environment should be employed only as a last resort...."

3.1.2 Federal Facilities Compliance Act of 1992

The Federal Facilities Compliance Act requires federal facilities to comply with all applicable solid and hazardous waste laws and corresponding federal, state, and local regulations. The Act makes federal facilities fully responsible for violations of the Resource Conservation and Recovery Act (RCRA) resulting from their management of solid (Subtitle D) and hazardous (SubtitleC) wastes. By making federal facilities responsible for RCRA compliance violations, the Act provides federal facilities with incentives to minimize the generation of solid and hazardous wastes regulated under RCRA.

3.1.3 Additional Federal Regulations

The United States has made progress in reducing pollution, but in the process has generated, since 1970, more than 50,000 local, state, and federal environmental regulations. Most important among these are the following:

- The National Environmental Policy Act (NEPA)
- The Toxic Substance Control Act (TSCA)
- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- The Resource Conservation and Recovery Act (RCRA)
- The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as Superfund)

- The Clean Water Act (CWA)
- The Clean Air Act (CAA)
- The Safe Drinking Water Act (SDWA)
- The Superfund Amendment and Reauthorization Act (SARA)

3.2 STATE AND LOCAL REGULATIONS

Provisions of the CAA, CWA, SDWA, and RCRA are delegated to the states for compliance, monitoring, and enforcement. Several types of legislation and local guidelines support recycling programs and have triggered CG interest in recycling across the country.

These Include:

- **Mandatory Source Separation.** Requires businesses to separate recyclable materials from waste. This has proved effective in creating public participation in recycling programs. Mandatory source separation can be enforced by states and localities in several ways, including citations, fines, or refusal to collect unseparated garbage.
- **Disposal Bans.** Applies to certain recyclable materials. Newspapers, glass bottles, lead-acid batteries, and used motor oil are sometimes banned from landfills or incinerators.
- **Variable Disposal Rates.** Adjusts disposal fees at landfills or combustion facilities as an economic incentive to recycle.
- **Flow Control Ordinances.** Designed to encourage recycling and to ensure a steady flow of materials to solid-waste combustion facilities. For example, the CG can direct a certain regular volume of paper waste to an incinerator, where it can be converted to heat energy.
- **Antiscavenging Ordinances.** Deters individuals from removing recyclable materials before they are picked up by the selected hauler.

3.3 EXECUTIVE POLICY

To promote pollution prevention as the preferred environmental management technique throughout the federal government, numerous Executive Orders (EOs) have been issued. These orders instruct federal agencies to integrate waste reduction and recycling programs into their environmental management initiatives. The following EOs specifically relate to this guide:

3.3.1 EO 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements

EO 12856 sets specific policies, goals and timelines for the development of pollution prevention plans. The EO requires federal agencies to conduct their facility management and acquisition activities so that, to the maximum extent practicable, the quantity of toxic chemicals entering any waste stream, including releases to the environment, is reduced as expeditiously as possible through source reduction; that waste is recycled to the maximum extent practicable; and that any wastes remaining are stored, treated, or disposed of in a manner protective of public health and the environment. EO 12856 can be found in Appendix G. Following are additional highlights of EO

12856:

- Develop a facility-wide pollution prevention plan by December 31, 1995, to reduce releases and transport of toxic chemicals by 50 percent.
- Ensure that the plan supports agency-wide reduction strategies and goals.
- Establish agency plans and goals to eliminate or reduce unnecessary acquisition of products containing hazardous substances or toxic chemicals.
- Make strategies, plans, and Toxic Release Inventory (TRI) reports available to the communities surrounding your facility.
- Comply with Emergency Planning and Community Right to Know Act (EPCRA) emergency planning and response requirements.

3.3.2 EO 12873 - Federal Acquisition, Recycling, and Waste Prevention

EO 12873 sets specific policies, goals and timelines for federal acquisition. EO 12873 can be found in Appendix G. Following are highlights of the requirements of EO 12873:

- Establish goals for solid waste prevention and recycling to be achieved by 1995.
- Procure products that are environmentally preferable or that are made with recovered materials, and set annual goals to maximize the number of recycled products purchased (i.e., establish Affirmative Procurement Programs).

3.4 CG POLLUTION PREVENTION POLICY

CG is committed to establishing and sustaining a pollution prevention program at all levels of the organization in compliance with its environmental policy. The CG shall take action to prevent pollution by reducing hazardous material use and decreasing the release of pollutants into the environment to the minimum amounts achievable. Commandant Instruction (COMDTINST) 16477.5 - *Coast Guard Qualified Recycling Program Policy* provides the policy and procedures for the development of QRPs. In addition the following is relevant to CG recycling operations:

3.4.1 Priorities

CG priorities for waste management are the following:

- Purchase Products Readily Recyclable
- Purchase Products Made from Recycled Materials
- Source Reduction
- Recycling
- Energy Recovery
- Waste Treatment
- Waste Disposal

3.4.2 Planning Requirements

Following are the planning requirements of the CG Pollution Prevention Policy which are associated with recycling:

- All units are required to recycle or participate in a community recycling program to the maximum extent possible.
- Cooperation in sharing technical and managerial expertise and in technology transfer will ensure a smooth transition to the recycling program.
- Units must develop programs to enhance source reduction, waste separation, and recycling to meet CG and regulatory waste reduction goals.
- Managers should strongly encourage employee participation throughout the planning and decision-making process at scheduled employee meetings. CG management and employees must then work together to implement and track the success of each recycling program.

3.4.3 Ownership

Recyclable material owned or generated by the CG belongs to the CG. Material that is personally owned remains personally owned. Any recyclable materials found, identified, or generated on CG property or by CG procedures for which ownership is unclear may be recycled after ownership has been determined by CG management. Household recyclables may be included in the QRP if approved by the Commanding Officer/Officer in Charge.

3.4.4 Waste Disposal Contracts

Where feasible, waste disposal contracts should include a recyclable material rebate or discounted price.

3.4.5 Community Recycling Program

Participation in community recycling programs or partnering with Department of Defense or other federal agencies is highly encouraged, especially where mandated by local laws.

3.4.6 Reporting Requirements

All CG facilities, both QRP and non-QRP, are required to maintain records on their recycling activities. CG facilities must maintain records of the types and quantities of materials recycled. Each district is responsible for designating a recycling coordinator to compile the district's recycling reports and forward them to COMDT (G-SEC-3). Reporting requirements are detailed in COMDTINST 16477.5 section 11 (Appendix F).

SECTION 4.0 - QRP PERSONNEL RESPONSIBILITIES

The CG is legally and socially responsible for safely managing the materials used in its operations and the waste it produces. Recycling programs are mandatory where required by law and recommended elsewhere. COMDTINST 16477.5 (Appendix F) specifies the responsibilities of CG personnel in the establishment and operations of a QRP. In addition to the responsibilities stated in COMDTINST 16477.5, responsibilities for recycling should be assigned to individuals at each unit.

Recycling is a multi-faceted effort involving all CG personnel (Officers, etc.) in all positions. In order to design and implement a successful recycling program, strong intra-service cooperation and support is needed.

4.1 RECYCLING TEAMS AT INDIVIDUAL UNITS

Most recycling program representatives report that dedicating at least part-time staff to the recycling effort will result in saved time and effort in launching and maintaining a viable recycling program. Many recycling programs begin with establishing a recycling team at each unit. The recycling team should consist of an overall recycling coordinator and one or two assistants, depending on the size of the unit.

4.1.1 Recycling Manager/Coordinator

The recycling manager/coordinator works with the recycling team to develop, implement, and maintain the facility program. Specific responsibilities of the recycling manager/coordinator are detailed in Commandant Instruction 16477.5 Section 5.a . Typically, being a recycling coordinator is not a full-time job, nor is it a labor intensive activity. However, at larger facilities a full time recycling coordinator may be necessary. Typical responsibilities include:

- Oversight of the recycling program
- Determination of whether or not recycling is practicable and appropriate
- Initiation of recycling program
- Monitoring the progress of program
- Keeping records
- Encouragement of employee cooperation

4.1.2 Recycling Assistants

Assistants help the coordinator in the implementation and daily operations of the program. The assistants along with the coordinator make up the recycling team.

4.1.3 Recycling Team/Committee

The recycling team develops and implements the unit's recycling program. Typical responsibilities include:

- Establishing recycling goals

- Conducting a waste stream assessment
- Conducting technical and economic analysis of recycling options (this can be somewhat complicated, contact your CEU or CG Pollution Prevention Coordinator for assistance, see Appendix A)
- Developing the facility recycling program
- Establishing an implementation schedule
- Directing the implementation of the program
- Monitoring and evaluating the program once it is operating
- Ensuring recycling provisions in waste disposal contracts

4.1.4 Possible Unit Recycling Team/Committee Components

(Team consistency and effort will usually depend on size of unit and QRP recyclable generating potential.)

- Recycling Coordinator (designated by CO)
- CO or XO
- Environemntal Manager/EPS/Coordinator
- Supply or Logistics Officer
- Comptroller or Accounting Clerk
- Representative from each Tenant Unit
- Safety Officer
- Others as appropriate

All CG units, both QRP and non-QRP, are required to maintain records on their recycling activities. CG units must maintain records of the types and quantities of materials recycled and revenues received (QRP units only) from the sale of recyclable materials. Each district is responsible for designating a recycling coordinator to compile the district's recycling reports and forward them to COMDT (G-SEC-3). Reporting requirements for recycling are detailed in COMDTINST 16477.5 section 11.

SECTION 5.0 - WASTE STREAM ASSESSMENT

The first step in a recycling program is to conduct a waste stream assessment. A waste stream assessment will assist the recycling coordinator/team in identifying the types, quantities, quality and sources of wastes being generated. Identification of the types of wastes being generated is needed to distinguish which waste streams are recyclable and which are not (see Section 6.0). Information on the quantity of waste generation can be used to make decisions on collection, storage, transfer, and disposal at a recycling center or other facility. Identifying the quantity of recyclable waste is important for assessing marketing opportunities. Source identification is used to target waste management activities and to set recycling goals for specific source areas.

There are three basic methods that can be used to collect data for a waste stream assessment. The first method is to review unit documentation to identify and estimate the quantity of waste being generated. Types of documents to examine include purchasing records, material inventories, and waste disposal invoices. Purchasing records and material inventories can be used to identify the types and quantities of material that are being used at a facility. Most materials that are purchased and stored must be eventually consumed or discarded as waste. Waste disposal invoices can be used to estimate the quantity of wastes being disposed as well as to identify the cost of disposal.

The second method of collecting information is to observe the unit's operations and activities by conducting a walk through. A walk through can help the recycling team create a profile of the unit's waste generating processes and operations. The following are suggestions to help conduct a walk through:

- Conduct the walk through as a group.
- Conduct the walk through during normal activity hours. This will allow firsthand observations of operations and a chance to talk with personnel.
- Establish the assessment agenda. List the areas to be inspected and the order in which to inspect them.
- Follow the life of materials from when they enter the unit to when they become waste products.
- Use checklists and tables to help organize the information collected during the walk through. This information can be used to determine the composition and quantities of waste.
- Record observations and discussions to document findings and allow comparisons with future assessments.

Examples of checklists and tables that can be used for organizing data collected during a walk through are given in Figures 5-1 through 5-3. Appendix E contains a volume to weight conversion table that is helpful when it is necessary to calculate the gross weight of material from the gross volume. This could be helpful because most waste collection costs are based on gross volume while waste disposal costs are usually based on gross weight of the material.

A third method of collecting data is to collect waste for a specific time period (e.g., single day, couple of days, a week) and sort through the waste to identify the types and quantities. This method is more appropriate for smaller units which generate smaller quantities of waste than larger units. When using this method, a CG unit should sort through the waste every few years in order to monitor any changes.

Use this table to record how waste is moved from inside a building to locations outside the building. The goal is to produce a record of materials and quantities which is representative of a typical day's waste.

A	B	C	D	E	F	G	H	I	J	K
Location (Waste generating station)	**Size/ Type of Container**	**No. of Containers**	**List of Recyclable Materials**	**% of Each Material Typically Disposed (estimate)**	**No. of Times Emptied per Day**	**No. of Days Emptied per Month**	**Where Emptied and by Whom**	**Total Volume per Location per Month (BxCxFxG)**	**Volume of Each Material per Month (gal.)**	**Volume of Each Material per Month (cubic yard) (J x 0.005)**
Example:										
Second floor copy room (next to copier)	20 gal. plastic	1	office paper	80%	1	20	outside dumpster by evening custodian	400 gal.	320 gal.	1.6 yd^3
			paper cups	20%					80 gal.	0.4 yd^3

Figure 5-1: Waste Assessment: Inside Building

Use this table to list all outside collection containers by location.

A	B	C	D	E	F	H
Location	**Name of Hauler (or self-hauled)**	**Type and Size of Container**	**Number of Containers**	**Number of Pulls per Week**	**% Full When Pulled**	**Total Volume of Waste per Week**
		Total			**Total**	

Figure 5-2: Waste Assessment - Outside Collection

Use this table to organize the information by material. List only the recyclables.

A Recyclable Materials (from Fig. 5-1, Column D)	B Locations & Departments Where Material is Generated (from Fig. 5-1, Column A)	C Total Quantity Generated per month (from Fig. 5-1, Column K)	D Volume Total per Year (column C x 52 weeks/yr of operation = quantity/year)
	1.		
	2.		
	3.		
	4.		
	Subtotals		
	1.		
	2.		
	3.		
	4.		
	Subtotals		
	1.		
	2.		
	3.		
	4.		
	Subtotals		
	Total of All Subtotals		

Figure 5-3: Quantification of Recyclables

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SECTION 6.0 - RECYCLABLE MATERIALS

The following is neither an all inclusive list of recyclable materials nor is it meant to limit or exclude materials considered for recycling.

6.1 RECYCLABLE MATERIALS

To optimize recovery in the recycling program, typical recyclable materials can be divided into the following categories:

- Paper
  - Newsprint (newspaper)
  - Office (high grade or mixed)
  - Glossy/Magazine
  - Cardboard (e.g., corrugated, waxed)
  - Other
- Glass
  - Container (e.g., bottle)
  - Non-container
- Metal
  - Aluminum cans
  - Ferrous cans (e.g., steel, tin)
  - Bimetal cans
  - Other aluminum
  - Other ferrous metal (e.g., iron, steel)
  - Other non-ferrous metal (e.g., copper, lead, nickel)
  - White goods (e.g., appliances)
  - Scrap metal (e.g., buoys, chain, wiring, aluminum boats, brass casings, etc.)

Note: Precious metals such as gold, platinum, and silver are not eligible for the QRP program and should be recycled through DRMO.

- Plastic
  - Polyethylene terephthalate (PET), (e.g., soft drink bottles)
  - High-density polyethylene (HDPE), (e.g., milk jugs)
  - Other
- Rubber waste (e.g., fenders)
- Wood waste (e.g., pallets, furniture)

Note: Piers treated with creosote or other marine preservatives/treatment should be tested before recycling/disposal. They also can be used or sold for landscaping applications.

- Construction and demolition (C&D) debris
- Household hazardous materials (HHM)
- Grounds maintenance waste (e.g., leaf waste, grass clippings, stumps, and brush - compost first)

- Food waste
- Motor vehicle waste
- Miscellaneous waste

6.2 RECYCLABLE MATERIAL DESCRIPTIONS AND SOURCES

6.2.1 Paper

Paper waste is broadly classified into the categories of **clean** and **soiled**. Paper waste that has been in contact with garbage or other contaminants is classified as "soiled". The demand for soiled paper waste is very low except for use as fuel for energy recovery facilities. Waste paper that is recycled must be free from other wastes that can contaminate the paper with bacteria and cause odor, particularly food wastes. Ideally the paper must also be free of metal, rubber, plastic, textiles, wood, and other extraneous materials. These contaminants are not easily removed in the recycling process.

There are 51 grades of paper with the major recyclable categories being newsprint, office paper, glossy/magazine, and corrugated cardboard. The typical method for recycling newspaper is curbside collection. Refer to Sections 7.1.2 and 7.1.3 for a discussion of curbside collection. Paper buyers usually require delivery to their premises, although some will make pickups if quantities are sufficient. Large buyers may provide containers to high-volume customers and make pickups on a regular schedule. To ensure a steady supply of high-grade paper, buyers encourage long-term contracts (typically three year), often with flexible terms to account for changing market conditions.

6.2.1.1 Newsprint (Newspapers)

Newsprint includes lightweight, non-durable, low-cost paper made primarily from mechanical pulps. Newsprint is primarily derived from newspapers. Newsprint does not include coated paper such as magazine paper.

6.2.1.2 Office

White office paper is considered high-grade when free of glue, staples, paper clips, and coatings. However, the feedstock for office paper is extremely varied in composition. The major grade classifications that comprise printing and writing paper include uncoated and coated free sheet, bleached bristol, and coated and uncoated groundwood. Within these major categories are many subcategories that can be sorted to obtain the highest value recycled paper.

6.2.1.3 Glossy/magazine

Glossy/magazine paper includes magazines, catalogs, and newspaper advertisements printed on glossy paper. Magazine paper is usually heavily inked with fillers and coatings, reducing the fiber content per tonnage compared to newsprint or other types of paper. Markets for glossy paper and magazines are being developed as the technology for de-inking improves.

6.2.1.4 Corrugated

Corrugated is a general grade of paper stock manufactured in a series of wrinkles or folds into alternating ridges or grooves. It includes cardboard and paper bags. Corrugated wastes are easily recognizable by handlers at a recovery facility, and therefore is easily separated and has a high recovery rate. The resale value for corrugated is higher than for most other paper types.

6.2.1.5 Other

Other paper primarily comprises paper food wrappers, paper towels, waxed products and blueprint paper. Markets for mixed waste paper have declined as a result of the replacement of waste paper with fiberglass in the manufacture of roofing materials.

6.2.2 Glass

Glass is an inorganic product of fusion that has cooled to a rigid condition without crystallizing. In the waste stream, it is typically clear (i.e., flint), green, and brown in color. Breakage can occur in the waste stream, causing a lower recovery rate and contamination of other potentially recoverable materials. The common method for recycling glass is curbside collection. Glass may be sorted by color to create higher-valued pure streams or processed together without regards to color creating a lower valued product. In addition to characterizing glass by color, it can also be categorized as container and non-container glass.

6.2.2.1 Container Glass

Container glass is the glass used to make bottles and jars including soft-drink bottles, beer bottles, wine/liquor bottles, pickle jars, baby-food jars, and mayonnaise jars. Container glass is usually separated for recycling by color to obtain the highest market price. Many states currently impose a deposit on glass beverage containers to encourage recycling.

6.2.2.2 Non-Container Glass

Window panes, light bulbs, mirrors, windshields, and crystal are considered contaminants in container glass recycling. This type of glass has a different chemical composition and melting point than container glass.

6.2.3 Metal

Metal waste types are divided into seven categories: aluminum cans, ferrous cans, bimetal cans, other aluminum, other ferrous metal, other metals, and white goods. Many states currently impose a deposit on metal cans to encourage recycling.

6.2.3.1 Aluminum cans

Aluminum cans are a type of beverage can containing only aluminum. Aluminum cans are easily separated from non-aluminum cans at a material recovery center by magnetic means. Aluminum cans are accepted in curbside pickup programs, at buy-back locations, at recycling collection centers, and by scrap metal dealers. A number of states have mandatory deposits for beverage containers and have established redemption centers at supermarkets.

6.2.3.2 Ferrous cans

Ferrous cans include cans constructed from magnetic metals, such as steel beverage cans, tin food cans, steel paint cans, and aerosol canisters. Steel cans are typically recovered from the consumer waste stream through curbside collection programs and at collection centers or material recovery facilities (MRFs). The major obstacle to recycling steel cans is the high cost of transportation. The market price for steel cans is limited by the price of new steel. Typically, recycling centers recover their costs to collect, process, and deliver cans only if the buyer is close geographically, because the transportation cost to a detaining facility is usually the major expense. Despite the marginal

economics, steel can recycling programs are expected to increase as a result of landfill-diversion legislation.

6.2.3.3 Bimetal cans

Bimetal cans include beverage and other cans that contain magnetic steel sides and aluminum ends. Bimetal cans are easily segregated from all-aluminum cans at a metal-recovery facility using magnets. Steel beverage cans with an aluminum top are the best example of bimetal cans.

6.2.3.4 Other aluminum

Other aluminum that is not used as part of beverage cans includes aluminum foil, aluminum sheeting, and aluminum components (e.g., aircraft, automobiles, trucks, appliances, and furniture). Scrap metal dealers also buy wrought and cast aluminum. Aluminum manufacturers complete the loop through contracts with independent recyclers, scrap dealers, aluminum fabricators, and auto dismantlers. Noncontainer scrap and aluminum alloys are not reclaimed with cans because aluminum cans are a particular alloy.

6.2.3.5 Other ferrous metal

Other ferrous metal includes magnetic metals derived from iron found in objects other than cans, such as container lids and scrap metal. This waste type can be removed from other waste types at separation facilities using large magnets. Scrap dealers consolidate and bale the waste to meet the specifications required by mills and brokers; in turn, dealers have requirements for materials they purchase. For example, auto dismantlers are required to remove radiators and other nonferrous parts from vehicles, and vendors must remove compressors and motors from appliances. Most dealers buy scrap "as is" from the public; if extensive processing is required, the material is usually accepted but the offering price is reduced. For example, appliances requiring removal of the motors and nonmetallic materials might be accepted at half the value of those in clean condition. It should be noted that some CG facilities generate large quantities of scrap metal which presents a great opportunity to recycle.

6.2.3.6 Other non-ferrous metal

Other non-ferrous metal includes items made up of metals other than iron or aluminum (e.g., copper, lead, zinc), precious metals (e.g., gold, silver, platinum), special metals (e.g., titanium, cobalt, chromium, tungsten), and alloys (e.g., brass, bronze). Copper can be reclaimed from automobile radiators, telephone and utility wire and cable, electrical motors, plumbing fixtures, and piping. Lead can be recovered from auto batteries and cable sheathing. Nickel can be recovered from stainless steel appliances. Silver can be recovered from spent photographic film.

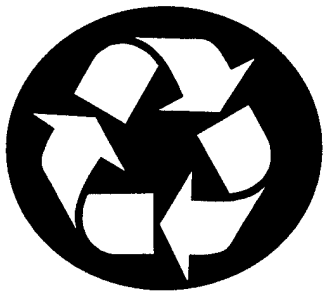
6.2.3.7 White goods

White goods consist of large household appliances such as refrigerators, stoves, air conditioners, and washing machines. Some recyclers will not except appliances that contain chlorofluorocarbons (CFCs) such as refrigerators and freezers. When considering recycling appliances that contain CFCs contact potential recyclers to ensure they will except them. For further information on recycling options for white goods, refer to "Other ferrous metal" (section 6.2.3.5).

6.2.4 Plastic

Plastic waste categories include polyethylene terephthalate (PET), high density polyethylene (HDPE), and other plastics. The Society of the Plastics Industry (SPI) developed a coding system for identifying plastic bottles and containers by the resins used to form the material. The code is a triangular arrow (see figure below) with a number in the center and letters underneath indicating the resin used to form the plastic. The resin codes are as follows:

- 1 Polyethylene terephthalate
- 2 High density polyethylene
- 3 Vinyl
- 4 Low-density polyethylene
- 5 Polypropylene
- 6 Polystyrene
- 7 Other



The first six resins account for 97 percent of the plastics used in packaging. Many states currently impose a deposit on plastic beverage containers to encourage recycling. This has resulted in the establishment of redemption centers at municipal Material Recovery Facilities (MRFs).

6.2.4.1 PET

PET is a type of plastic commonly used in manufacturing soft-drink containers, excluding the basecup. PET containers are identified by the SPI symbol 1. Many states currently impose a deposit on plastic beverage containers made of PET to encourage recycling.

6.2.4.2 HDPE

HDPE is a plastic primarily used to manufacture milk jugs and basecups of beverage containers. Colored HDPE is used for shampoo, detergent, and cleaner bottles, and is identified by the SPI symbol 2.

6.2.4.3 Other plastics

Other plastics include plastics that are not PET or HDPE, such as polystyrene and polyvinyl chloride (PVC). These other plastics are commonly used in the manufacture of flexible food wrap, vegetable oil bottles, and toothpaste containers. These include containers marked with the SPI symbols 3,4,5,6, and 7. No segregation of other plastics is performed. Currently, mixed plastics have a smaller market and less reusability than PET and HDPE plastics. If these mixed plastics were further segregated, higher prices and greater markets might be available.

6.2.5 Rubber Waste

Tires are the primary component of rubber wastes. Other rubber waste includes car and boat bumpers/fenders and shoe soles.

6.2.6 Wood Waste

Wood waste includes discarded lumber, furniture, and pallets. Wood waste is typically discarded as part of the municipal solid waste (MSW) stream.

6.2.7 Construction and Demolition Debris

Construction and demolition debris is waste material removed from building and demolition sites consisting of steel, asphalt, asphalt shingles, siding, painted wood, concrete, brick, plaster, wallboard, and piping. Most construction and demolition debris is relatively inert, but it sometimes contains regulated substances such as asbestos. Although a relatively small percentage of construction and demolition debris are now recovered, significantly greater amounts will probably be recycled in the future as a result of higher tipping fees, mandatory landfill diversion legislation, and the success of entrepreneurs in processing both source-separated and mixed wastes. For those municipalities where construction and demolition debris are presently combined with household wastes, recycling programs afford an excellent opportunity to meet diversion goals and extend landfill life.

6.2.8 Recyclable Hazardous Materials

Some discarded portions of products used in normal cleaning and maintenance are considered recyclabe hazardous materials (HM). Any product that is poisonous, toxic, flammable, caustic, corrosive, reactive, explosive, or radioactive is considered hazardous. HM is any product that can threaten human health and the environment if disposed of improperly. Recyclable HM products include cleaning (e.g., detergents, cleaners, furniture polishes), maintenance (e.g., pesticides, paints, thinners, solvents), and personal (e.g., cosmetics, pharmaceuticals, fireworks) products. Municipalities commonly hold a monthly HM day in which residents can drop off the above mentioned types of HM at a central collection center. Common CG HM include lead-acid batteries, paints and solvents.

6.2.9 Grounds Maintenance Waste

Yard waste consists of leaves, grass clippings, pruning and other organic matter discarded as part of regular grounds maintenance. Other grounds maintenance wastes include stumps and brush, but these wastes are not usually handled at a composting facility. A viable option for the recycling of Grounds Maintenance Waste is composting (refer to Section 7.2).

6.2.10 Food Waste

Food waste consists of meats, vegetables, fruits, breads, and other edibles left in the Municipal Solid Waste (MSW) stream and food contaminated waste (e.g., cardboard). Specific examples include excess food, rinds, peels, spoiled food, and residues left in bottles and cans. A viable option for the recycling of food waste is composting (refer to Section 7.2).

6.2.11 Miscellaneous Municipal Waste (MSW)

Miscellaneous waste consists of wastes that are not included in the other waste categories, such as diapers, textiles, dirt, rocks, and ceramics. These wastes are typically disposed of as municipal solid waste.

6.2.12 Motor Vehicle Waste

In addition to MSW, CG facilities may generate substantial motor vehicle or other potentially hazardous wastes. Some items in this category are considered hazardous under certain circumstances

or in combinations, such as used oil which contains waste solvent. Exercise caution in recycling hazardous or potentially hazardous materials. Wastes generated in the maintenance of vehicles includes used batteries, motor oil, antifreeze, hydraulic fluids, cleaning solvent, oily water, paints, chlorofluorocarbons (CFCs), and tires.

6.2.12.1 Used batteries

All parts of spent lead acid batteries are recyclable. Used batteries should be accumulated on a regular basis and transported off site by a reputable licensed battery recycler. To prevent short circuits and protect against leaks, store batteries destined for recycling in an isolated, diked area with an impermeable surface (such as a paved area with a shed/roof cover). In the case of damaged batteries, store in two 6 millimeter polyethylene bags prior to recycling; replace any missing caps. If the facility is in a state which considers recycled batteries as hazardous waste, a hazardous waste manifest must be completed prior to the contractor transporting the batteries off-site (Note: Contractor is not to sign the hazardous waste manifest). The CG (i.e., generator), storage facility, and transporter must retain copies of the manifest for three years.

6.2.12.2 Motor oil

Motor oil can be re-refined and used again in vehicles or reprocessed and used as a heating fuel or energy source. Facility recycling coordinators should check state and local regulations regarding used motor oil before disposing of it. If waste solvents are mixed with the oil, it is considered a hazardous waste. Segregate and store used motor oil for pickup and recycling by an oil handler. Contact the handler for storage, purity, and other requirements.

6.2.12.3 Antifreeze

Antifreeze, also referred to as engine coolant, is used primarily in vehicle radiators to prevent overheating or freezing of the engine. The major ingredient of most antifreeze is ethylene glycol. Antifreeze used as a coolant in automobile engines becomes contaminated with traces of fuel, oil, metal particles (e.g., lead, zinc, and copper) and grit. It also breaks down over time to form organic acids that corrode cooling systems. In the past, antifreeze has typically been disposed of through municipal sewer systems, dry wells, and storm drains. Under current regulations, these disposal options are inconsistent with CG policy, especially since antifreeze can be recycled easily and economically. On site recycling of antifreeze is possible with the purchase/lease of filtration systems or distillation units. In addition, off site antifreeze recyclers are now prevalent and can be used.

6.2.12.4 Other Vehicle Fluids

Brake fluid, transmission fluid, hydraulic oils, and refrigerants are generally not considered financially feasible for recycling. Brake fluid may contain chlorinated compounds and should be disposed of as hazardous waste. Hydraulic fluid can be considered a hazardous waste if it leaks or is replaced. A nontoxic, biodegradable hydraulic fluid has been developed and is accepted by the U.S. Environmental Protection Agency (EPA). The refrigerant CFC-12, used in most motor vehicle air conditioners, is a chlorofluorocarbon that contributes to ozone depletion and global warming.

6.2.12.5 Oily Water

Segregate oil-laden water from steam cleaning engines and parts and from stormwater runoff by allowing the solids to settle. The resulting sludge can possibly be sold to an oil handler for use as a

fuel additive. If the sludge cannot be recycled, it must be disposed of as a hazardous waste.

6.2.12.6 Tires

Tire recycling is now prevalent across the United States. Options include retreading or recapping "decent-quality" tires for reuse; using whole tires for playground equipment or in reef construction; chopping, shredding and grinding used tires and reusing the rubber in smaller rubber parts such as rubber mats and molded rubber objects; and mixing ground rubber from tires with asphalt to produce rubberized paving materials. Reuse as a fuel may also be an option.

6.2.13 Contaminated Soil

To recycle contaminated soil, the CG unit should first have the servicing CEU inspect the soil. Once the CEU has approved the soil for recycling, a contractor can be contacted to recycle the soil. The contractor must submit written evidence that the recycling process is approved by EPA and state or local regulatory agencies. The contractor must submit a detailed manifest, delivery tickets, and acceptance tickets (signed and dated) for all soils removed from the CG site and received at the recycling plant. Landfill is the last choice for soil disposal. If landfilling is selected the site must be fully permitted to receive that type of CG waste. The CG must obtain prior written notification that the landfill meets these requirements. The landfill must provide certificates of recycling or bills of lading indicating the quantity of waste deposited.

SECTION 7.0 - RECYCLABLE MATERIAL SEPARATION AND COLLECTION TECHNIQUES

Several municipal recycling techniques may be employed at CG facilities. These include material recovery and composting.

7.1 MATERIAL RECOVERY

Separation of recyclable and reusable waste is necessary to perform material recovery. Source separation is the segregation of the waste by generators (e.g., residences, offices, retailers) prior to pick-up by a waste hauler. The generator is responsible for sorting the recyclable materials from the rest of the garbage. The intent of source separation is to produce a quantity of recyclable materials without the cost of later separation from the stream of mixed waste. For source separation to be successful, personnel must be educated about how and what to separate. Separation procedures should be kept simple to increase participation level and effectiveness. Table 7-1 lists advantages and disadvantages of source separation.

Table 7-1: Advantages/Disadvantages of Source Separation

Advantages	Disadvantages
(1) Streams of recyclables are usually purer when separated at the source.	(1) Current collection systems must be modified to accommodate source separation.
(2) Greater recovery rates can be realized with source separation if participation rates are high.	(2) Low participation levels may offset some of the benefits.
(3) Source separation is generally less costly than processing the whole waste to recover recyclables.	(3) Community needs to be educated and prompted to participate.
(4) Newspaper is not easily captured from whole mixed waste.	

There are seven main separation and collection techniques to recycling:

7.1.1 No source separation, mixed collection

Generators do not segregate recyclable materials from other waste materials. One collection vehicle transports the mixed waste to a central processing facility, which employs numerous personnel and complex separation equipment to recover the recyclable materials.

7.1.2 Curbside separation

Generator places unsorted recyclable material at the curbside. The MSW collector separates the recyclable materials into individual components at the curbside. The separate components are

collected at the same time in a specially designed multi-compartment recycling vehicle. The segregated components are transported to a consolidation site where each component is stored until sufficient amount can be accumulated for further processing or shipment to markets.

7.1.3 Source commingled curbside collection

Generators segregate their recyclable materials from non-recyclable materials. The recyclable materials are placed in a specially-marked container for collection. Newspapers are often kept separate from the rest of the commingled recyclable materials to prevent contamination and to improve collection vehicle efficiency. The recyclable materials are transported in a standard garbage truck to a centrally located material recovery facility (MRF) where they are sorted into each recyclable component.

7.1.4 Multiple source separated collection

Generators separate recyclable materials into individual components. The separate components are collected at the same time in a specially designed multi-compartment recycling vehicle, or collected individually in a single-compartment truck. The segregated components are transported to a consolidation site where each component is stored until sufficient amount can be accumulated for either further processing or shipment to markets.

7.1.5 Multi-facility dwelling drop-off centers

Participants bring their recyclable materials to a centralized storage area within the complex (e.g., basement or outside storage area). Several small-capacity containers temporarily store the materials for regular pickup and transportation to market or a central consolidation facility.

7.1.6 Drop-off location

Generators take their recyclable materials to a central collection site. The center can be located at a waste transfer station or any suitable location where people go on a regular basis (e.g., malls, grocery stores, schools). Several industrial sized bins (e.g., semi-trailer or compartmentalized dumpster/roll-off) are provided for specific items so that the recyclable materials are kept segregated. The recyclable materials are transported to market or to a consolidation facility.

7.1.7 Buy-back Center

Generators are financially compensated for materials brought to a drop-off center (e.g., soda cans). Table 7-2 presents the advantages and disadvantages of the various separation/collection methods. The point of collection may vary for waste type. A drop-off center may be best for recyclables such as glass, cardboard, and household hazardous waste. The point of collection may also be influenced by historical precedent in the community. Commercial waste collection usually takes place at dumpsters at each establishment. Some municipalities take responsibility for collecting refuse from commercial generators. However, a collection company is usually hired at the expense of individual businesses or building managers.

Table 7-2: Separation/Collection Techniques

Method	Advantages	Disadvantages
No Source separation, mixed refuse collection/processing	• Mixed refuse collection requires the least effort from the generator.	• Mixed refuse collection represents greater cost and effort in later separation.
Blue Bags (plastic trash bags dedicated to recycables)	• There is a time savings because trash collectors need not return reusable containers to the curb. • More convenient to residents than drop-off centers. • Blue color is a symbolic reminder to recycle. • Bags, unlike containers, need not be supplied by the community. • No special collection vehicles are required.	• Preliminary studies show that as much as 25 percent of the recyclable materials are lost due to bag breakage. • Bags must be opened and dumped at the recycling center. • Paper can be contaminated if glass breakage occurs in the bags of commingled recyclable materials. • Broken glass cannot be captured for recycling.
Curbside Separation	• Less effort required for resident.	• Requires more effort and time on part of collectors. • Larger containers may be required. • Special collection vehicle required.
Source commingled curbside collection	• Providing the facility with special standardized containers can improve participation. • Studies have shown that when recyclable materials are collected on the same day as regular garbage, there is higher participation. • Commingled collection is more convenient to residents and provides a higher probability for participation. • Commingled collection is less costly (single bin trucks and less hassle for pickup crews).	• Residents must be made aware that their separation efforts are important (generator separation means less contaminants, and re-separation is quick and simple at the materials recovery facility). • high public training & education effort must be made • May require additional trucks for collection.
Multiple source separated collection	• Separate pristine collection results in minimal contamination of collected recyclable material. • Pristine collection can easily be implemented to coordinate with normal garbage collection procedures.	• Special collection equipment (such as compartmented collection vehicles) is required so that the source-separated recyclable materials are kept segregated from each other until processing at a MRF. • The generator must have several bins or other storage devices to allow the recyclable materials to be kept separate prior to collection. • Public education is required to ensure adequate participation. • Incentive programs may be required to ensure adequate participation. • The required special containers and collection vehicles can be costly.

Table 7-2 (continued):
Separation/Collection Techniques

Method	Advantages	Disadvantages
Multi-facility dwelling drop-off center	• No additional collection costs to the CG facility since materials are brought directly to the materials recovery facility.	• The convenience of the drop-off center (distance and location) directly affects participation. • Less convenient to the residents than multiple sites at convenient locations, and therefore probably a lower participation rate. • Much less convenient than curbside pickup. • Regular servicing of sites must occur to avoid unsightly overflow situations.
Drop-off locations	• More convenient to participants than central site drop-off • Helps increase citizen awareness and subsequent participation. • Can accept a greater variety of materials than are practical to collect at curbside.	• The facility hosting the drop-off centers must be supportive so that they will continue to provide space • Can have greater cost to manage than central site drop-off • More chance for contamination if participants are not fully trained in recyclable materials recognition. • Scavengers may raid unstaffed sites for high value materials like aluminum • The drop-off area must be kept clean of litter and debris so as to ensure the host's continued support • Less convenient to the participant than curbside pickup • Provisions must be made in the area of the drop-off area to accommodate the increased traffic
Buy-back center	• Most incentive for participation	• Cost of management • Changing market affects prices • Only certain materials would be accepted • Not as convenient as curbside collection

Bulky items, such as white goods (e.g., refrigerators, dishwashers), furniture, and stumps may demand unique collection practices. Options include collected items with other refuse, pickup at the homeowners request, and periodic pickups. Leaves can be collected in bags by an open-ended dump truck or a vacuum truck. Leaf collection methods are described in Table 7-3.

Table 7-3: Leaf Collection Methods

Method	Description	Advantages	Disadvantages
Separate open-ended dump truck	An open-ended dump truck used for picking up bagged leaves. A standard refuse collection truck still picks up all of the remaining MSW on its normal schedule.	• Use of a separate truck for leaf collection is convenient to participants, easy to implement, and moderately efficient. • Capital and operating costs for a separate open-ended dump truck are lower than for a vacuum truck.	• The use of a separate open-ended dump truck requires participants to use plastic bags, which generates additional expense and waste. • Leaves, grass clippings, and other yard waste must be bagged for collection separate from the rest of the MSW. • Contaminants (e.g., beverage cans) must be removed before bagging.
Vacuum truck	A special vacuum truck collects leaves and any other yard waste that residents rake to the curb. Usually, these trucks vacuum the material directly into a processor, which shreds it and stores it for transport.	• Use of a vacuum truck for leaf collection is convenient to residents, easy to implement, and very efficient. • Use of a vacuum truck for leaf collection does not require containers.	• Vacuum trucks are not very efficient for collecting grass clippings. • Ice and snow mixed with leaves may damage the vacuum truck. • Capital and operating costs for a vacuum truck are high. • Vacuum trucks have more operational problems than a separate dump truck. • Vacuum trucks are noisy. • The capital and operating costs for a vacuum truck are high since this equipment is used only in the autumn. • The vacuum truck can be damaged when an early freeze makes ice and snow in the leaf piles.

Special wastes, such as household hazardous wastes, used oil, and tires are not normally collected with other municipal solid waste, and require special handling practices. Table 7-4 lists the advantages and disadvantages of establishing special collection programs. Permanent collection sites increase recycling of paints, automotive batteries, and other wastes. They are also cheaper than one-day collection programs, and serve a larger percentage of the public.

Table 7-4: Special Collection Programs

Items	Advantages	Disadvantages
Tires	• Tires can be recycled into a few useful products. • Tires can be a valuable energy resource. • Special collection of tires eliminates numerous potential hazards to a landfill.	• The market for recapped tires (especially auto tires) is not good. • Methods for processing tires to recycle the rubber are expensive.
Wood	• Removal of oversized wood waste (e.g., pallets, tree stumps) saves valuable landfill space and eliminates the difficulty of processing the solid waste stream for composting or energy recovery. • Revenue can sometimes be generated by reselling shredded wood as wood chips or mulch.	• Collection of large wood items (e.g., trees, stumps, pallets) requires appropriate processing systems (e.g., wood shredder for mulch or hog fuel production) which can be expensive.
Construction and demolition (C&D) waste	• Special fill areas are often available for C&D debris so this material does not use valuable landfill space. • Segregated C&D debris can sometimes be disposed less expensively.	• Special processing, which is more expensive, must be used for debris that contains hazardous material (e.g., asbestos, PCBs).
Hazardous waste (HW) from cleaning, maintenance and personal products	• Elimination of HW from cleaning, maintenance and personal products from the landfill provides environmental protection and increases participant awareness of their role in the community's waste management. • Collection of used oil keeps this hazardous material out of landfills. Used motor oil can be processed and re-refined for sale, which saves a valuable resource.	• An extensive public education program is necessary to get a meaningful part of the CG to participate in HHW collection. • Opportunities may not exist for the CG to resell any recovered materials. Oil reclaimers do not pay for used oil, but rather charge the generator to accept it.

7.2 COMPOSTING

Composting is a process by which microorganisms use organic material in wastes as a food source, thereby reducing the waste volume and forming useful by-products, such as humus and mulch. The

organic feedstock for composting can be yard waste only, source separated organics, or the whole processed municipal solid waste. Table 7-5 summarizes the concerns, advantages, and disadvantages of each compost feedstock material.

The specific organisms (e.g., bacteria, fungi, worms) that are active in a compost pile depend on the temperature, raw material, and methods used. Composting of wastes is accomplished most quickly in aerobic conditions. Anaerobic conditions cause odors, incomplete breakdown of wastes, toxic by-products, and slower processing times. Generally, wastes are placed in elongated triangular piles called *windrows*. Windrow size can be used to regulate temperature and moisture conditions. Frequent turning of the pile will aerate the compost material, accelerating the breakdown of wastes and homogenizing materials. Shredders, grinders, and chippers may be used to shorten composting time for bulky items. Composting can be used as a recycling technology for yard waste, sewage and industrial sludges, food wastes, and other organic wastes.

There are several factors that affect the success of the composting effort. Timing for turning, curing, and refining of compost is important. Also, unless windrows are large enough to sustain a high internal temperature, the pile will not continue to degrade during winter. Another consideration is that facilities will generate grass clippings, which are high in nitrogen, in the spring and summer, but generate leaves in the fall, which are high in carbon. A storage or staging area would be necessary for mixing the two. The carbon/nitrogen (C/N) ratio also has significant impact on the ability of organisms to degrade waste materials. A C/N ratio between 20 and 35 is best, however, materials with different C/N ratios can be mixed to produce a more optimum proportion.

7.2.1 Backyard and Unit Composting

Backyard composting involves facilities installing a compost pile on their property for degradation of yard waste and if desired, select food wastes. Backyard composting is a source reduction measure, reducing the amount of municipal solid waste. Windrows may be from 2 to 5 feet high, and are periodically turned with a large fork and covered during rainy periods. There are several different compost enclosure designs and methods available depending on aesthetic quality and cost. Another source reduction activity is to leave grass clippings on the lawn (i.e., use a mulching mower) instead of bagging, reducing the amount of yard waste collected.

Several site-specific factors must be evaluated when considering a site and approach for a unit composting program. A buffer zone between the composting facility and neighboring residences and businesses is necessary to minimize odor, noise, dust, and visual impacts from the composting facility. Environmental considerations include stream encroachment, slope and grading, percolation, water table depth, and proximity of a water supply. Compost pile runoff is a concern

Table 7-5: Compost Feedstock Materials

Material	Description	Advantages	Disadvantages
Grounds maintenance waste only	Grounds maintenance waste is discarded organic material consisting of grass clippings, leaves, twigs, branches, flowers, and weeds. Grounds maintenance waste is bagged separately from the remaining municipal solid waste stream. Leaves can be vacuum collected at the curb. It does not include treated paper, cans, bottles, or other trash collected while doing yard work.	• Composting is an environmentally appropriate use of grounds maintenance waste. • Removal of grounds maintenance waste makes the remaining waste stream more amenable to energy recovery.	• The separate collection of grounds maintenance waste can be expensive. • Roadside litter is often inadvertently collected with grounds maintenance waste. • Participants must understand that trash (e.g., cans, bottles) causes serious problems in the compost processing and must not be mixed with the waste. • The presence of glass severely limits the marketability of compost product.
Source separated (SS) organics	SS organics include compostable organics other than grounds maintenance waste from the municipal waste stream such as textiles, wood and paper. SS organics are bagged separately from the remaining municipal solid waste stream and must not contain inorganic contaminants (e.g., plastics, glass, metal).	• Keeping the SS organics separate from the other garbage increases the quality of the compost feedstock (raw material). • Removal of SS organics makes the remaining waste stream more amenable to energy recovery.	• Participants may be reluctant to perform separation of organics. • Non-compostables and large, difficult-to-shred items should be removed from the SS organics. Large pieces of rubber, leather, and wood will be difficult for the preprocessing equipment to handle. Plastics, especially plastic film, should be kept out of the SS organics stream.

Table 7-5 (continued): Compost Feedstock Materials

Material	Description	Advantages	Disadvantages
Whole processed municipal solid waste (MSW)	The entire MSW stream is taken into the compost facility; sorted mechanically and manually, if necessary; and size reduced to create a compost feedstock.	• Despite grass and leaf bans, some grounds maintenance waste will be present in the MSW stream. Processing the entire MSW stream will capture most of this grounds maintenance waste. • Processed MSW usually requires nutrient addition for successful composting; therefore, co-composting with municipal sludge is often practiced.	• Levels of contaminants to the composting process will be high in the whole processed MSW. • Processing the whole MSW stream for composting is costly. • The cost for nutrients to compost processed MSW is high. • The market for whole processed MSW, which is a low grade feedstock, is low. • Processing the entire municipal solid waste stream generally yields a lower quality feedstock with contaminants (e.g., broken glass, shredded plastics, and metal pieces). • Composting of the entire MSW stream is more appropriate when used with preprocessing, such as a materials recovery facility. • The limited market for compost may be over-saturated by the volume of compost produced.

because of high nitrogen and phosphorous levels. These may cause unwanted algae blooms in receiving streams and water supplies. The facility should also restrict public access to prevent illegal dumping and vandalism.

Windrows for backyard composting can be constructed from material at the facility or can be purchased from local hardware stores.

7.2.2 Levels of Compost Technologies

There are three levels of compost technologies: low, intermediate, and high-level. The low-level technology approach involves forming windrows that are turned a few times per year. Backyard composting is an example of low-level composting. Because of infrequent turning, decomposition will take longer than with the other technologies. The material is suitable for composting after one to three years. The compost product is not homogenous and may not be marketable for certain applications. This low-level technology requires the least labor and material of the three levels of technologies and would be the most advantageous method for most of the smaller to mid size CG units.

The intermediate and high-level technologies are designed for large quantities of compost and would not be appropriate at the majority of CG facilities. A general discussion of these two technologies is given to inform larger CG facilities of alternative composting methods to the low-level backyard technology.

The intermediate technology approach is similar to the low-level approach except that windrow-turning machines are used on a weekly basis. With this approach, the compost product is ready in four to six months. Capital and operating costs are higher because of the more frequent operations and the expenses associated with buying windrow-turning machines.

The high-level technology approach involves using forced aeration to optimize composting conditions. A blower is used to cool the pile and evaporate water vapor. Forced aeration takes place for 2 to 10 weeks, at which time the blowers are removed and the piles are turned periodically until composting is completed, usually within one year. An advantage of this technology is that large windrows can be formed, reducing area requirements, without creating anaerobic conditions and odor problems. Operating and capital costs are higher because of the costs associated with the aeration equipment and increased frequency of turning. However, this technology produces the highest quality material for marketing. Table 7-6 summarizes the advantages and disadvantages of the three composting methods.

The compost product is most often used as a soil amendment in a variety of applications. Typical compost markets include residential gardens, plant nurseries, golf courses, landscapers, cemeteries, public parks, roadsides, median strips, and landfill cover. Grounds maintenance wastes are the most commonly composted materials. Septic, sewage, and industrial sludges, animal wastes, and food wastes may also be composted, however, the organisms used in the composting process, as well as

the temperature and oxygen requirements may vary. If these other wastes are used for composting, the compost material and product should be monitored for the presence of pathogens.

Table 7-6: Composting Methods

Method	Description	Concerns	Advantages	Disadvantages
Low rate static pile	Low rate static pile puts organic materials into piles up to 6 feet high by 12 to 14 feet wide. After the first burst of microbial activity, two piles may be formed after 10 to 11 months. Piles are turned several times per year with a front-end loader. The entire process requires 16 months to 18 months. The space requirements are approximately 1 acre per 3500 cubic yards. Leaves require additional water and wood requires shredding.	• Approximately 1 acre of land is needed for every 3,500 cubic yards of waste. • Odor problems are a common perception, and may be true when co-composting with sewage sludge. • The complete process time is long (e.g., 16 months). • Runoff represents a potential water pollution problem.	• Low rate static pile composting is relatively inexpensive. • Low rate static pile facilities are smaller due to the reduced buffer zone (approximately 10 acres).	• Low rate static pile facilities require more composting space. • Low rate static pile facilities require a long process time (e.g., 16 months). • Odor problems are often perceived around composting facilities, especially when co-composting with sewage sludge.
Mechanically-turned windrows	Mechanically-turned windrows composting piles compost feedstock into long shallow rows and turns these piles weekly with windrow turning machines. Because of the improved aeration resulting from more frequent turning, the process proceeds more rapidly than the static pile method. The complete process requires 4 to 6 months.	• Capital and operating investment may be difficult to justify because of the poor marketability of compost. • Runoff represents a potential water pollution problem.	• The processing time for mechanically-turned windrows is much shorter (e.g., 4 to 6 months). • Mechanically-turned windrows provide greater volume reduction than static pile composting.	• Frequent turning boosts the operation costs. • Windrow turning machines are more expensive than front-end loaders, which are used in static pile composting. • Mechanically-turned windrows require greater composting area because the piles are smaller.

Table 7-6 (continued): Composting Methods

Method	Description	Concerns	Advantages	Disadvantages
Forced aeration	Forced aeration composting is usually carried out in a closed vessel and forces air into the bottom of the compost piles to maximize the rate of biological activity. Air blowers cool the piles and remove water vapor. The blowers are removed after 2 to 10 weeks. After the blowers are removed, piles are turned periodically during the curing process. The entire process requires a few months.	• Capital and operating investment may be difficult to justify because of the poor marketability of compost.	• The composting rate for forced aeration composting is very rapid, and therefore, less space is required than for other composting methods. • Larger windrows are possible with forced aeration without creating anaerobic conditions, which produces odors. • The potential for water pollution problems is less for forced aeration composting because it takes place in closed vessels.	• Aeration equipment requires a high capital investment. • Forced aeration composting has a higher operating cost because of the special equipment needed to achieve the high rate of biological degradation.

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SECTION 8.0 - FACILITIES AND EQUIPMENT

The size and type of recycling program selected by the CG installation is influenced by the availability of equipment and facilities. For example, if a warehouse is unavailable, the recycling program would probably consist of source separation and some version of curbside collection where collected material is taken directly to the buyer, user, or refuse/recycling facility. The availability of a warehouse, or material sorting facility, would enable collection of unsorted material, while sorting could be performed at the warehouse. A warehouse would also enable collection of materials discarded in small quantities, and provide adequate space for accumulation.

An overview of common unit operations and facilities used for the separation and processing of waste materials is provided in this section. Unit operations used for the separation and processing of separated and commingled wastes are designed (1) to modify the physical characteristics of the waste so that the waste components can be removed more easily, (2) to remove specific components and contaminants from the waste stream, and (3) to process and prepare the separated materials for subsequent uses. Typically, recycling facilities and unit operations are appropriate for larger CG facilities which generate a significant amount of waste (i.e., QRP facilities).

8.1 FACILITIES

Facilities for the recycling center do not need to be complex. Typically, the center consists of a warehouse with an area set aside for an office and telephone. A fenced area is also preferred, but is not critical. If balers, crushers, or other equipment are to be installed, the structural soundness of the floor must be ensured, and adequate power must be available.

There are three primary reasons for a warehouse. One reason is to provide workers with a sorting area. Regardless of how conscientious participants are, there will be some mixing of recyclables. A warehouse provides an area for the workers to sort the material. A second reason for the warehouse is to enable the center to accumulate recyclables. This will allow bulk transportation, which reduces costs. Finally, the warehouse will provide the required space to setup the appropriate recycling equipment.

A warehouse is not critical if source separation is used. An alternative is a fenced area with multiple enclosed or covered dumpsters. Material can be collected until these dumpsters are full. This strategy allows the recycling program to begin with a small budget; loose recyclables (as opposed to compacted), however, generally sell for a lower price.

8.2 EQUIPMENT

There are many types and styles of recycling equipment available. The equipment is used to assist in collection, compaction, shredding, sorting and other tasks associated with recycling. Ease of use,

simplicity, cost, and effectiveness of the equipment must all be considered prior to purchasing any equipment . Typical capacity and cost data for various types of equipment are given in Table 8-2.

8.2.1 Collection Containers

Collection containers are chosen based on the material collected, expected volume, type of collection strategy, frequency of collection, and costs. Consideration should also be given to the fire safety and overall safety of the equipment.

Curbside collection containers should be small bins that one person can move without difficulty. For consolidated collection, a simple plastic bin can be used. If source separation is used, either bins with compartments or multiple bins are required. A prime consideration is the amount of space the bins will need. Participants in small housing units or cramped offices cannot reasonably be expected to have several interior bins, or one very large interior bin. Stackable bins may warrant consideration for indoor use. Exterior bins should be considered for housing areas.

Drop off collection containers are generally some type of dumpster. There are a variety of styles and sizes. Dumpster size will depend upon material collected, equipment available for handling dumpsters (e.g., forklift), and collection strategy. Large dumpsters require some type of handling equipment, while smaller self-dumping dumpsters, can often be managed by one individual without special equipment. Table 8-1 provides data for various containers used for on-site storage of solid wastes.

8.2.2 Compactors and Balers

Compactors are used to package material into more manageable bundles. Compacted items are less bulky, and often command higher prices. A self-loading unit carries a higher initial cost, but will greatly reduce labor requirements. While the use of compactors reduces the bulk volume of the wastes to be handled, the weight of course remains the same. Typically, the compacted volume will vary from 20 to 60 percent or less of the original volume. Unless baled solid wastes are broken up, it is impossible to recover individual components from compacted wastes. Therefore, compactors should not be used with commingled wastes containing recyclables. Otherwise, the wastes will be required to be broken up in order to recover the recyclable waste stream.

Balers are an alternative to compaction equipment. Operating under high pressure, typically 100 to 200 lb/in^2, they produce relatively small, compact bales of solid waste or recovered materials. Typical bale sizes range from 48 X 30 X 42 in. up to 72 X 30 X 44 in. Weight of the bales depends on the material and ranges from 1150 to 1800 lb for the small and large bales of corrugated cardboard. The predominant use of baling is in the preparation of recovered materials for shipment to buyers of recycled materials. Virtually all of the most common recycled materials can be baled, including cardboard, newsprint, plastic, PETE bottles, and aluminum cans. Baled materials are easy to load with standard forklifts and can be economically shipped because of their high bulk density.

Refer to Table 8-2 for capacity and cost data for various compactors and balers.

8.2.3 Shredders and Sorters

Shredders reduce the bulk of many materials (e.g., cans, plastics), but may or may not be warranted. The three most common types of shredding devices used to reduce the size of MSW are the hammer mill, the flail mill (shear) shredder, and the tub grinder. The hammermill is very effective with brittle materials. The shear shredder uses two opposing counter-rotating blades to cut ductile materials in a scissor-like action. The tub grinder is widely used in the processing of yard wastes. Each type of shredder has unique properties that suit it to specific applications. These properties can be used to meet different size reduction goals.

Sorters are used to separate metals. A simple magnetic sorter will enable separation of metal and aluminum cans. Magnetic separation is a unit operation whereby ferrous metals are separated from other waste materials by utilizing their magnetic properties. Typically, for a QRP facility, recyclable materials will be separated at the source. Although source separation is not 100 percent effective, a minor amount of manual separation at the centralized drop off location should be sufficient for most CG facilities. Therefore, the purchase of sorters for CG facilities will generally not be required.

Refer to Table 8-1 for capacity and cost data for various shredders and sorters.

8.2.4 Materials Handling

Equipment to load and handle the recyclables is required. Types of equipment may include: front, rear-, and side-end loaders, forklifts, pickup trucks, and compartmentalized vehicles. Mechanized collection increases worker safety and productivity.

Refer to Table 8-1 for capacity and cost data for various types of materials handling equipment.

8.2.5 Composting Equipment

As described in Section 7.2, composting is a process in which microorganisms use organic material in wastes as a food source, thereby reducing the waste volume and forming useful by-products, such as humus and mulch. A small "backyard" composting setup would be most appropriate for CG facilities at which grounds maintenance waste is generated. In "backyard" composting the individual places the material to be composted into a pile and occasionally waters and turns it to provide moisture and oxygen to the microorganisms within the pile. The compost pile can be contained within a simple fenced enclosure in a convenient location at the CG facility. In addition, many prefabricated composting units are now available for low volume composting operations.

Table 8-1: Data on the types and sizes of containers used for on-site storage of solid wastes

	Capacity			Dimensions[1]	
Type	**Unit**	**Range**	**Typical**	**Unit**	**Typical**
Small					
Container, plastic or galvanized metal	gal	20-40	30	in	20D x 26H (30 gal)
Barrel, plastic, aluminum, or fiber	gal	20-65	30	in	20D x 26H (30 gal)
Disposable paper bags					
Standard	gal	20-55	30	in	15W x 12d x 43H (30 gal)
Leak-resistant	gal	20-55	30	in	15W x 12d x 43H (30 gal)
Leak-proof	gal	20-55	30	in	15W x 12d x 43H (30 gal)
Disposable plastic bag					18W x 15d x 40H (30 gal)
					30W x 40H (30 gal)
Medium					
Container	yd^3	1-10	4	in	72W x 42d x 65H (30 gal)
Large					
Container					
Open top, roll off (debris box)	yd^3	12-50	Varies	ft	8W x 6H x 20L (35 yd^3)
Used w/ stationary compactor	yd^3	20-40	Varies	ft	8W x 6H x 18L (30 yd^3)
Equipped w/ self contained compaction mechanism	yd^3	20-40	Varies	ft	8W x 8H x 22L (30 yd^3)
Container, trailer mounted					
Open top	yd^3	20-50	Varies	ft	8W x 12H x 20L (35 yd^3)
Enclosed, equipped w/ self contained compaction mechanism	yd^3	20-40	Varies	ft	8W x 12H x 24L (35 yd^3)

[1] D = diameter, H = height, L = length, W = width, d = depth

Table 8-2: Data for Solid Waste Management Equipment[2]

Type of Equipment	Size, rated capacity, or gross weight (GW)		Approximate cost range, $(1,000)
	Unit	Value	
Storage containers			
Small Capacity			
Rectangular	gal	12-14	0.004-0.00675
	gal	16-22	0.005-0.00925
Round	gal	5-7	0.00165-0.0035
Stackable (qty. of 3)	gal	20-32	0.006-0.0115
	gal	36-42	0.014-0.02
Wheeled	gal	32	0.018-0.0375
	gal	45-55	0.025-0.055
	gal	60-80	0.05-0.07
	gal	90-105	0.045-0.075
Steel Bins	yd^3	2	0.3-0.35
	yd^3	6	0.6-0.8
	yd^3	8	0.8-0.9
	yd^3	20	2.4-2.6
	yd^3	30	2.7-3.0
	yd^3	40	3.0-3.3
Collection Vehicles			
Tilt-frame	yd^3	15	70-90
Tilt-frame	yd^3	25	80-100
Front-Loaded Compactor	yd^3	30	100-120
	yd^3	40	120-130
Side-Loaded Compactor	yd^3	28	60-130

[2]Equipment costs do not include miscellaneous installation costs such as labor, special foundations, or electrical supply.

Table 8-2: (continued)

Type of Equipment	Size, rated capacity, or gross weight (GW)		Approximate cost range, $(1,000)
	Unit	Value	
Rear-Loaded Compactor	yd^3	20	60-70
	yd^3	25	110-130
Multi-bin Curbside Recycler			85-120
Recycling/Transfer Equipment			
Forklift	lb. cap.	1000	8-10
	lb. cap.	8000	25-32
Bobcat	lb.	3400	23-38
Compacting and Densifying			
Refuse Compactors	ton/h	25	230-260
	ton/h	62.5	375-400
	ton/h	100	400-430
Pelletizers	ton/h	6	150-200
Recyclables Balers	ton/h	0.3-2	8-50
	ton/h	3-12	80-200
	ton/h	10-20	120-200
	ton/h	20-34	200-425
Aluminum Flatteners/blowers	ton/h	0-2	5-11
Aluminum Densifiers	lb/h	500-900	16-21
	lb/h	1,000-3,600	24-45
Glass Crushers	lb/h	up to 7,000	3-4
Shredders			
Tub Grinders	ton/h (wood)	10-18	90-140
Rotary	hp	150-250	120-180
	hp	400-500	270-340
Hammer Mills	hp	300-400	80-100
Portable (Construction/Demo)	ton/h	40-50	400-500
Magnets			
Cross-belt magnets	ton/h	0-20	5-60

SECTION 9.0 - STRATEGIES FOR MARKETING RECYCLABLE MATERIALS

One of the major challenges of implementing a successful recycling program is identifying and developing markets for the recyclable materials. Marketing is the act of finding purchasers for the facility's recyclable materials so that they can be reused for the manufacturing of new products. The procedures to be followed by CG facilities when selling recyclable materials are given in COMDTINST 16477.5 Section 7. Sale of Recyclable Materials and Section 8. Management of Proceeds from Recycled Materials. Section 7 states that if the sale of material is expected to exceed $5,000, the sale, and therefore the marketing, should be conducted by the GSA Regional Office and/or DRMO. If the sale is not expected to exceed $5,000, the CG facility can sell the material directly themselves. This section includes a summary of Sections 7 and 8 as well as methods to assist facilities with the marketing of the materials when they are responsible for the sale (when the sale does not exceed $5,000). The entire text of COMDTINST 16477.5 is contained in Appendix F.

9.1 SUMMARY OF SECTION 7 & 8 OF COMDTINST 16477.5

The following is a summary of COMDTINST 16477.5 Sections 3c, 7 and 8:

- Although the establishment of a QRP is optional, all units are required to recycle or participate in a community recycling program, to the maximum extent possible, regardless of whether or not they are a participating QRP facility.
- CG facilities may sell recyclable materials only if the sale plus disposal cost savings result in proceeds or benefits that equal or exceed the cost of the recycling operating expenses or disposal.
- Only recyclable material from the operations of QRP facilities and/or tenants can be sold.
- Prior to selling hazardous material (HAZMAT) to recyclers, the facility should contact CEU and /or MLC to determine what qualifications a HAZMAT recycler must meet in a specific state, county, town, or city. There are risks associated with selling HAZMAT to recyclers and appropriate procedures should be taken in accordance with state and federal regulations to ensure proper handling.
- A sale of recyclable material that is expected to exceed $5,000 should be conducted by the GSA Regional Office or by DRMO. Prior agreement with the GSA and DRMO should be made regarding the appropriate procedures for CG retention of the proceeds.
- A sale of recyclable material that is not expected to exceed $5,000 can be conducted by the CG facility. The sale must be conducted by a competitive "sealed bid" method.

Sealed Bid Method: In a competitive "sealed bid", the selling facility solicits bids for the sale of the recyclable material. The interested vendors inspect the material and then respond to the solicitation by submitting sealed bids to the CG facility. The facility reviews the bids, selects the one which is most advantageous to the government, and then executes the sale. The sealed bid process is described in detail in COMDTINST 16477.5, Section 7.c.(2).

- When conducting a sale, the facility can enter into either "individual sales" or "term sales". An *individual sale* is a one time sale of recyclable material to a vendor with the sale not to exceed $5,000. A *term sale* is a contract that covers a one year time period and allows for a specified number of recyclable material pick-ups. Each individual pick-up must not exceed $5,000. The advantage of a term sales contract is that it is a once a year contractual effort. For more information regarding which type of contract to use contact COMDT G(SEC-3).
- QRP facilities that generate small amounts of recyclable materials are encouraged to pool their recyclables with other small generators to capitalize on bulk sales and enhance marketability.
- When recyclable materials cannot be sold to a recycling vendor, a CG facility should investigate a method of donating the materials to a local community, nearest DRMO, or GSA recycling facility.
- The proper management of the proceeds from a QRP is the responsibility of the facility. The facility must provide explicit instructions for the distribution of any recycling proceeds.

The following section gives suggestions on how a facility can market recyclable materials.

9.2 METHODS OF MARKETING RECYCLABLE MATERIALS

Marketing is the act of finding a buyer for a specific service or product, in this case recyclable material. In most cases different recyclable materials will have to be marketed to different buyers. The marketing process can be divided into four major activities:

1. Development of a marketing plan
2. Performance of a cost/benefit analysis to establish an upset price
3. Solicitation of bids
4. Awarding of the contract

9.2.1 Development of a Marketing Plan

A good place to start the marketing process is by developing a marketing plan. The major components of a marketing plan are:

- Identifying the materials that have the highest potential for cost-effective recycling
- Identifying potential buyers
- Collecting information from potential buyers

9.2.1.1 Identifying Recyclable Materials

The starting point of developing a marketing plan is to use the results from the waste stream assessment (Section 5.0). The waste stream assessment should have identified the types and

quantities of potentially recyclable materials. Using this information, the recycling team should target the materials which appear to have the most promise of being sold in a cost effective manner. In most cases, the recyclable materials which are being generated in the largest quantities will be the most cost effective to recycle. Figure 6-1 is an example of a worksheet that could be used to list the recyclable material that will be discussed with a potential buyer.

9.2.1.2 Identifying Potential Buyers

There are two basic types of potential buyers: brokers and end users. Brokers act as the middleperson between buyers and sellers. Brokers will buy recyclable materials from a source and then sell it to an end user. The advantage of selling to brokers is that they are more reliable and consistent buyers of material than end users. In order to stockpile material for future sales, a broker will continue to buy material even when the market is slow. Sales to an end user involves directly selling the recyclable material to an end user without the involvement of a middleperson or broker. End users will take the recyclable material and reprocess or remanufacture it to produce finished products. The advantage of selling to end users is they will usually pay a higher price than brokers. The disadvantages of selling to end users are they usually require a more stringent quality for the material than that of a broker, and they sometimes require the supplier to deliver the material, which results in additional transportation costs.

There are a variety of ways to locate potential buyers for recyclables. Information can be obtained by:

- Telephone book, listed under recycling
- Local newspapers
- Municipal solid waste managers
- Local paper, aluminum, or cardboard manufacturers
- Periodicals
- Local library
- Nearby military bases
- Other recyclers/generators in the area
- Local and state offices/agencies (Appendix A)

9.2.1.3 Collecting Information From Potential Buyers

Once the potential buyers' have been identified, each buyer should be contacted in order to collect information on the buyers prices and requirements. Information that should be obtained includes the following:

- Location of potential buyer
- Point of contact's name and telephone number
- The types and grades of recyclable material accepted by the potential buyer
- Maximum/minimum quantity requirements
- Recyclable material quality requirements; acceptable contamination levels

- Average prices paid for material
- Any costs that would be charged by buyer (e.g., pick-up or transportation charges)
- Availability of storage equipment (e.g., will buyer provide storage bin or trailer for hauling the material)
- Pick-up schedule
- Transportation requirements
- Any other information that will be useful in choosing a potential buyer

CG facilities can only sell recyclable materials if the sale plus disposal cost savings result in proceeds or benefits that exceed the cost of recycling (net benefit). If the proceeds do exceed the costs of recycling, the CG facility should consider establishing a QRP. In order to decide whether or not to establish a QRP, a cost/benefit analysis should be performed (cost/benefit analysis is discussed in Section 10.0). The information collected from potential buyers will be the basis for the cost/benefit analysis and will be crucial to the overall decision of whether or not to establish a QRP. Therefore, contacting a wide range of potential buyers and collecting accurate information are among the most important components of a QRP. A questionnaire is provided in Figure 9-2 to assist CG personnel during discussions with potential buyers. Figure 9-3 presents a sample worksheet for organizing the information obtained during discussions with potential buyers.

If the proceeds from the sale of recyclables does not exceed the recycling costs, the cost/benefit analysis can still be used to assist facilities in selecting a disposal contractor. Some disposal contractors will offer discounts and rebates when collecting recyclable materials. By gathering information from a variety of disposal contractors and comparing the costs and discounts, a facility can choose the most cost effective contractor.

The cost/benefit analysis is used to determine whether or not to establish a QRP. It should be noted that regardless of whether or not the sale of recyclable materials results in a net benefit, *all CG facilities are required to recycle whenever feasible.*

9.2.2 Performance of a Cost/Benefit Analysis to Establish an Upset Price

As stated in COMDTINST 16477.5, Section 7.c.(2)(f), upset prices must be established prior to any sales. An upset price is a minimal bid that will be accepted. Normally, bids below the upset price will not be considered unless justified. A method by which a facility can establish an upset price is by performing a cost/benefit analysis. This analysis can identify a break even price which can then be used as a basis for the upset price. The break even price is the price at which the proceeds of the sale will equal the costs incurred. A detailed discussion of cost/benefit analysis is given in Section 10.0. It should be noted that upset prices are to be confidential and must not be made known to prospective bidders.

9.2.3 Solicitation of Bids

The procedures to be followed for solicitation of bids is detailed in COMDTINST 16477.5, Section 7 (Appendix F).

9.2.4 Awarding of the Contract

The procedures to be followed for awarding a contract for recyclable materials are detailed in COMDTINST 16477.5, Section 7.

9.3 HAULERS AND RECYCLERS

Haulers and recyclers are often listed in the *Yellow Pages*. These operations should be evaluated to check that their activities are environmentally sound. Important information may become evident from a visit. Good recycling contractors have documented procedures for accepting recyclable materials and should be in compliance with all applicable federal and state requirements. Necessary inspections should have been conducted, and violations should have been corrected. After talking to the facility operator, verification can be made by calling the appropriate agencies and speaking with the local inspector.

List the recyclable materials that are to be discussed with the buyers

Material Name	Quantity Cubic Yard/Year	Quantity Tons/Year

Figure 9-1: Facility Recyclable Materials and Quantities

Use this questionnaire as a guide when conducting discussions with potential buyers. Feel free to add, delete, or change any of the following questions.

First, introduce yourself and explain the purpose of your call. Once you are sure you are speaking with the correct person in relation to the purchase of recyclable materials, you can begin collecting information.

1. What materials are you currently purchasing from the business sector?
2. Are you a broker of material or end user?
3. Our waste stream assessment indicates we collect these types of materials (list the recyclable materials from 5-1). Would you be willing to purchase any of these materials? If no, do you know of any other vendor who will purchase these types of materials?
4. Can you give me an idea of the prices you are currently paying for these materials? Do the prices tend to fluctuate greatly over time?
5. Are there any minimum or maximum quantity restrictions on the materials you purchase?
6. What are your specifications for purchasing these types of materials? Does the material have to be packed in a specific way, such as strapped, loose, or baled?
7. Do you have any quality requirements? Do you have unacceptable contamination levels?
8. Are you providing storage containers or hauling services? How is the material transported to your facility?
9. Are there any costs associated with the purchase of these materials? Do you charge for supplying storage bins or for hauling services? If yes, what are those charges?
10. How often do you pick-up the material? Once per week? Once per month?

Figure 9-2: Sample Questionnaire

Use your own format or the sample format shown here.

Potential Buyer's Name	Materials Accepted	Minimum Quantity Required	Special Requirements			
			Baled, Loose, Crushed, or Strapped	Contamination Specifications	Associated Costs ($)	Price Range ($)

Figure 9-3: Market Directory and Recycling Requirements

SECTION 10.0 - COST/BENEFIT ANALYSIS

As stated in COMDTINST 16477.5, Section 7, CG facilities can only sell recyclable materials if the sale results in proceeds or benefits, including cost savings, that exceed the cost of recycling. Therefore, in order to decide whether or not to recycle, a cost/benefit analysis must be performed. The objective of a cost/benefit analysis is to identify the costs and benefit of a project and then compare the two to see if the benefits exceed the costs. When the benefits do exceed the costs, the project is financially justified. Since the results of the cost/benefit analysis is a major factor in the ultimate decision to recycle, identification of all the associated benefits and costs is important.

With recycling, as with pollution prevention in general, there are many benefits. Some benefits can be quantified, such as reduced disposal costs and proceeds from the sales of recyclable materials. For example, reduced disposal costs may result from smaller dumpsters being used for non-recyclable waste or from fewer pick-ups being be made at the facility. Other benefits of recycling, such as reducing the amount of waste in landfills, and reducing the demand for raw materials, are more intangible and less easily quantified. The cost/benefit analysis discussed in this guide will consider only the direct benefits of recycling (i.e., proceeds from the sale of materials and direct cost savings).

There are basically two types of costs associated with any type of project, capital costs and annual costs. Capital costs are the one-time costs that are incurred during the initial set-up of the recycling program. Capital costs are purchased equipment, installation hardware, labor to install equipment, and any other one-time costs that result from initiating the program. Annual costs are the on-going costs that are incurred throughout the life of the program. Annual costs include monitoring, recordkeeping, material purchased on a continuous basis, maintenance labor and material, and operational labor and material.

The cost/benefit method discussed in this guide can be used as a means of deciding whether or not a recycling program is financial feasible. A cost/benefit method which can be used to calculate a basis for establishing an upset price will also be described. First, a cost/benefit analysis will be described that can be used to calculate the net cost or benefit of a recycling project. Then a method of calculating a basis for the upset price will be described.

10.1 METHOD OF COST/BENEFIT ANALYSIS FOR CALCULATING NET BENEFIT

This method is based on the estimated annual benefits and costs associated with recycling. Each waste stream identified as a candidate for recycling should be analyzed separately. First, the costs of waste disposal using the existing method is estimated (status quo). Then the costs of recycling are estimated along with the proceeds from the sale of the recycled material. If the cost and proceeds from recycling exceed the status quo costs, there is a net benefit and the CG

installation should consider establishing a QRP. The following is a detailed discussion of the cost/benefit analysis. A detailed example is included at the end of this section.

Step 1: Estimating Status Quo Costs:

Calculate the annual costs incurred from the existing methods of disposing the targeted waste. These costs include collection, storage, pick-up, and hauling. These costs can be estimated by conducting a walk through of the installation, discussions with personnel responsible for the disposal of the targeted waste and by reviewing past invoices from disposal contractors.

Step 2: Estimating the Costs of Recycling:

These costs are the new costs that will be incurred if the recycling program is established. First estimate the annual cost of disposing the targeted waste after a recycling program has been implemented. These will be the same type of disposal costs mentioned in Step 1, however the amount of the costs might be less or eliminated. For example, by recycling certain types of paper the disposal costs may be reduced for the non-recyclable paper due to fewer pick-ups by custodial personnel.

Second, estimate the new additional annual costs that will be incurred each year if the recycling project is implemented. These costs might include rent for storage bins, hauling of recyclable material, annual maintenance of recycling equipment, monitoring and recordkeeping of recycling program, promotional materials, training and education.

In addition to estimating the annual costs mentioned above, the one-time capital costs of equipment, material and labor that would be incurred in setting up the recycling program need to be included in the cost of recycling. The capital costs need to be distributed over the life of the equipment or the life of the recycling project, whichever is less. The capital costs are distributed by converting the total cost to an annualized cost. The annualized cost is calculated by multiplying the total cost of the equipment by the annualized cost factor. The annualized cost factor is found from Table 10-1 by finding the number of years the capital equipment is believed to be useful (far left column) and going across the row to the appropriate interest rate column. The interest rate can be estimated by the installation or can be obtained by contacting the appropriate accounting office.

Proceeds from Sale
Calculate the annual proceeds from the sale of the targeted waste by multiplying the expected price of the recyclable material by the estimated annual quantity. The market price of the recyclable waste can be obtained from recycling companies or brokers who deal with recyclable materials (see Section 9.0 Strategies for Marketing Recyclable Materials for more detailed information).

Net Recycling Cost

The net recycling cost is simply the difference between the recycling costs and the proceeds from the sale of the recyclable material.

Step 3: Calculating the Net Benefit:

The net benefit is the difference between the annual status quo cost and the net recycling costs. If the annual status quo cost exceeds the net annual recycling costs, the CG installation should consider establishing a QRP, which will allow them to use the proceeds from the sale.

Step 4: Calculating the Upset Price:

An upset price is a minimal bid that will be accepted for the sale of a recyclable material. COMDTINST 16477.5 Section 7.c.(2)(f) states that upset prices must be established prior to any sales. An upset price can be established by calculating the sales price needed to cover any additional costs from establishing a recycling program. To calculate an upset price simply subtract the annual status quo cost from the annual cost of recycling and then divide by the quantity of recyclable material.

10.2 EXAMPLE OF COST/BENEFIT ANALYSIS

Preliminary Data

A facility has conducted a waste stream assessment and has targeted office paper as a possible material for recycling. The following data were collected prior to the analysis.

From discussions with potential buyers, the following information was gathered:

1. The current price for waste office paper is $230/ton.
2. The paper must be separated from other types of paper, such as newspapers, carbon paper, etc.
3. No storage bins are provided by the buyer.
4. The buyer will pick-up the paper once per month at no charge to the facility.

From a walk through of the facility, the following information was gathered:

5. The current quantity of paper being discharged is 30 tons/year.
6. Approximately 50% of the paper being discharged is recyclable office paper.
7. Trash is picked-up and hauled off the facility once per week. It is assumed that the reduction of paper being discarded as trash (resulting from the office paper recycling) will reduce the number of trash pick-ups at the facility, reducing the disposal cost from $1,500/year (status quo) to $1,200/year.
8. It is estimated that if office paper is recycled, labor hours for disposal of unrecyclable waste paper will be reduced from 210 hrs/year (status quo) to 170 hrs/year.

Estimated additional costs from implementing an office paper recycling plan:

9. Purchase recycling collection bins for $1,000. The expected life span is 5 years.
10. Custodial personnel will collect office paper once per week. Time needed for extra collection is estimated to be 52 hours/year.
11. Promotional activities will be conducted every year to promote recycling plan. Estimated labor hours are 40 hours/year.
12. Additional recordkeeping will need to be done by an administrative person. It is estimated the additional time will be 80 hours/year.

EXAMPLE
COST/BENEFIT ANALYSIS FOR CALCULATING NET BENEFIT OF RECYCLING

STEP 1	**Status Quo**			
	Labor to collect and dispose waste paper (hrs/yr)	210		
	Hourly wage	$15.00		
	Labor cost		$3,150	
	Cost of trash pick-up and disposal		$1,500	
	TOTAL ANNUAL STATUS QUO COST		**$4,650**	**A**
STEP 2	**Recycling Cost**			
	Labor to collect and dispose waste paper (hrs/yr)	170		
	Labor to collect and dispose recyclable paper (hrs/yr)	52		
	Labor hours	222		
	Hourly wage	$15.00		
	Labor cost		$3,330	
	Administative labor (contracting, record keeping) (hrs/yr)	80		
	Promotional activities (hrs/yr)	40		
	Labor hours	120		
	Hourly wage	$20.00		
	Labor cost		$2,400	
	Cost of trash pick-up and disposal (non-recyclale paper)		$1,200	
	Capital cost of collection bins	$1,000		
	i=6.5% n=5 years cost factor (Table 5-1) 0.2406		$241	
	Cost of Recycling Paper		**$7,171**	**B**
	Annual quantity of recyclable paper (tons)	15		
	Market price of recyclable paper ($/ton)	$230		
	Proceeds from Sale		**$3,450**	**C**
	NET ANNUAL RECYCLING COSTS		**$3,721**	**D (B-C)**
STEP 3	**NET BENEFIT**		**$929**	**A - D**
STEP 4	**UPSET PRICE (15 tons/yr) ($/ton)**		**$168**	**(B-A)/15**

Table 10-1: Annualized Cost Factors

Years	Interest Rate (i)											
	1.00%	1.50%	2.00%	2.50%	3.00%	3.50%	4.00%	4.50%	5.00%	5.50%	6.00%	6.50%
1	1.0100	1.0150	1.0200	1.0250	1.0300	1.0350	1.0400	1.0450	1.0500	1.0550	1.0600	1.0650
2	0.5075	0.5113	0.5150	0.5188	0.5226	0.5264	0.5302	0.5340	0.5378	0.5416	0.5454	0.5493
3	0.3400	0.3434	0.3468	0.3501	0.3535	0.3569	0.3603	0.3638	0.3672	0.3707	0.3741	0.3776
4	0.2563	0.2594	0.2626	0.2658	0.2690	0.2723	0.2755	0.2787	0.2820	0.2853	0.2886	0.2919
5	0.2060	0.2091	0.2122	0.2152	0.2184	0.2215	0.2246	0.2278	0.2310	0.2342	0.2374	0.2406
6	0.1725	0.1755	0.1785	0.1815	0.1846	0.1877	0.1908	0.1939	0.1970	0.2002	0.2034	0.2066
7	0.1486	0.1516	0.1545	0.1575	0.1605	0.1635	0.1666	0.1697	0.1728	0.1760	0.1791	0.1823
8	0.1307	0.1336	0.1365	0.1395	0.1425	0.1455	0.1485	0.1516	0.1547	0.1579	0.1610	0.1642
9	0.1167	0.1196	0.1225	0.1255	0.1284	0.1314	0.1345	0.1376	0.1407	0.1438	0.1470	0.1502
10	0.1056	0.1084	0.1113	0.1143	0.1172	0.1202	0.1233	0.1264	0.1295	0.1327	0.1359	0.1391
11	0.0965	0.0993	0.1022	0.1051	0.1081	0.1111	0.1141	0.1172	0.1204	0.1236	0.1268	0.1301
12	0.0888	0.0917	0.0946	0.0975	0.1005	0.1035	0.1066	0.1097	0.1128	0.1160	0.1193	0.1226
13	0.0824	0.0852	0.0881	0.0910	0.0940	0.0971	0.1001	0.1033	0.1065	0.1097	0.1130	0.1163
14	0.0769	0.0797	0.0826	0.0855	0.0885	0.0916	0.0947	0.0978	0.1010	0.1043	0.1076	0.1109
15	0.0721	0.0749	0.0778	0.0808	0.0838	0.0868	0.0899	0.0931	0.0963	0.0996	0.1030	0.1064
16	0.0679	0.0708	0.0737	0.0766	0.0796	0.0827	0.0858	0.0890	0.0923	0.0956	0.0990	0.1024
17	0.0643	0.0671	0.0700	0.0729	0.0760	0.0790	0.0822	0.0854	0.0887	0.0920	0.0954	0.0989
18	0.0610	0.0638	0.0667	0.0697	0.0727	0.0758	0.0790	0.0822	0.0855	0.0889	0.0924	0.0959
19	0.0581	0.0609	0.0638	0.0668	0.0698	0.0729	0.0761	0.0794	0.0827	0.0862	0.0896	0.0932
20	0.0554	0.0582	0.0612	0.0641	0.0672	0.0704	0.0736	0.0769	0.0802	0.0837	0.0872	0.0908
21	0.0530	0.0559	0.0588	0.0618	0.0649	0.0680	0.0713	0.0746	0.0780	0.0815	0.0850	0.0886
22	0.0509	0.0537	0.0566	0.0596	0.0627	0.0659	0.0692	0.0725	0.0760	0.0795	0.0830	0.0867
23	0.0489	0.0517	0.0547	0.0577	0.0608	0.0640	0.0673	0.0707	0.0741	0.0777	0.0813	0.0850
24	0.0471	0.0499	0.0529	0.0559	0.0590	0.0623	0.0656	0.0690	0.0725	0.0760	0.0797	0.0834
25	0.0454	0.0483	0.0512	0.0543	0.0574	0.0607	0.0640	0.0674	0.0710	0.0745	0.0782	0.0820
26	0.0439	0.0467	0.0497	0.0528	0.0559	0.0592	0.0626	0.0660	0.0696	0.0732	0.0769	0.0807
27	0.0424	0.0453	0.0483	0.0514	0.0546	0.0579	0.0612	0.0647	0.0683	0.0720	0.0757	0.0795
28	0.0411	0.0440	0.0470	0.0501	0.0533	0.0566	0.0600	0.0635	0.0671	0.0708	0.0746	0.0785
29	0.0399	0.0428	0.0458	0.0489	0.0521	0.0554	0.0589	0.0624	0.0660	0.0698	0.0736	0.0775
30	0.0387	0.0416	0.0446	0.0478	0.0510	0.0544	0.0578	0.0614	0.0651	0.0688	0.0726	0.0766

Table 10-1: Annualized Cost Factor (continued)

Years	Interest Rate (i)											
	7.00%	7.50%	8.00%	8.50%	9.00%	9.50%	10.00%	10.50%	11.00%	11.50%	12.00%	12.50%
1	1.0700	1.0750	1.0800	1.0850	1.0900	1.0950	1.1000	1.1050	1.1100	1.1150	1.1200	1.1250
2	0.5531	0.5569	0.5608	0.5646	0.5685	0.5723	0.5762	0.5801	0.5839	0.5878	0.5917	0.5956
3	0.3811	0.3845	0.3880	0.3915	0.3951	0.3986	0.4021	0.4057	0.4092	0.4128	0.4163	0.4199
4	0.2952	0.2986	0.3019	0.3053	0.3087	0.3121	0.3155	0.3189	0.3223	0.3258	0.3292	0.3327
5	0.2439	0.2472	0.2505	0.2538	0.2571	0.2604	0.2638	0.2672	0.2706	0.2740	0.2774	0.2809
6	0.2098	0.2130	0.2163	0.2196	0.2229	0.2263	0.2296	0.2330	0.2364	0.2398	0.2432	0.2467
7	0.1856	0.1888	0.1921	0.1954	0.1987	0.2020	0.2054	0.2088	0.2122	0.2157	0.2191	0.2226
8	0.1675	0.1707	0.1740	0.1773	0.1807	0.1840	0.1874	0.1909	0.1943	0.1978	0.2013	0.2048
9	0.1535	0.1568	0.1601	0.1634	0.1668	0.1702	0.1736	0.1771	0.1806	0.1841	0.1877	0.1913
10	0.1424	0.1457	0.1490	0.1524	0.1558	0.1593	0.1627	0.1663	0.1698	0.1734	0.1770	0.1806
11	0.1334	0.1367	0.1401	0.1435	0.1469	0.1504	0.1540	0.1575	0.1611	0.1648	0.1684	0.1721
12	0.1259	0.1293	0.1327	0.1362	0.1397	0.1432	0.1468	0.1504	0.1540	0.1577	0.1614	0.1652
13	0.1197	0.1231	0.1265	0.1300	0.1336	0.1372	0.1408	0.1444	0.1482	0.1519	0.1557	0.1595
14	0.1143	0.1178	0.1213	0.1248	0.1284	0.1321	0.1357	0.1395	0.1432	0.1470	0.1509	0.1548
15	0.1098	0.1133	0.1168	0.1204	0.1241	0.1277	0.1315	0.1352	0.1391	0.1429	0.1468	0.1508
16	0.1059	0.1094	0.1130	0.1166	0.1203	0.1240	0.1278	0.1316	0.1355	0.1394	0.1434	0.1474
17	0.1024	0.1060	0.1096	0.1133	0.1170	0.1208	0.1247	0.1285	0.1325	0.1364	0.1405	0.1445
18	0.0994	0.1030	0.1067	0.1104	0.1142	0.1180	0.1219	0.1259	0.1298	0.1339	0.1379	0.1420
19	0.0968	0.1004	0.1041	0.1079	0.1117	0.1156	0.1195	0.1235	0.1276	0.1316	0.1358	0.1399
20	0.0944	0.0981	0.1019	0.1057	0.1095	0.1135	0.1175	0.1215	0.1256	0.1297	0.1339	0.1381
21	0.0923	0.0960	0.0998	0.1037	0.1076	0.1116	0.1156	0.1197	0.1238	0.1280	0.1322	0.1365
22	0.0904	0.0942	0.0980	0.1019	0.1059	0.1099	0.1140	0.1181	0.1223	0.1265	0.1308	0.1351
23	0.0887	0.0925	0.0964	0.1004	0.1044	0.1084	0.1126	0.1167	0.1210	0.1252	0.1296	0.1339
24	0.0872	0.0911	0.0950	0.0990	0.1030	0.1071	0.1113	0.1155	0.1198	0.1241	0.1285	0.1329
25	0.0858	0.0897	0.0937	0.0977	0.1018	0.1060	0.1102	0.1144	0.1187	0.1231	0.1275	0.1319
26	0.0846	0.0885	0.0925	0.0966	0.1007	0.1049	0.1092	0.1135	0.1178	0.1222	0.1267	0.1311
27	0.0834	0.0874	0.0914	0.0956	0.0997	0.1040	0.1083	0.1126	0.1170	0.1214	0.1259	0.1304
28	0.0824	0.0864	0.0905	0.0946	0.0989	0.1031	0.1075	0.1118	0.1163	0.1207	0.1252	0.1298
29	0.0814	0.0855	0.0896	0.0938	0.0981	0.1024	0.1067	0.1111	0.1156	0.1201	0.1247	0.1292
30	0.0806	0.0847	0.0888	0.0931	0.0973	0.1017	0.1061	0.1105	0.1150	0.1196	0.1241	0.1288

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SECTION 11.0 - EDUCATION/PROMOTIONAL ACTIVITIES

People are the key to any recycling effort. No recycling program can be successful if people do not participate. The quality of a source separation program depends on employee education, awareness, cooperation, enthusiasm, and action. The endorsement and commitment of top management to the program will help ensure success and encourage employees to participate. A vigorous education campaign explaining the goals and mechanisms of the recycling program is crucial to establishing initial employee participation as well as maintaining that participation over time.

Major elements of the education campaign are:

- A kick-off memorandum from the top administrator of the organization to all personnel
- Scheduling and conducting education sessions for management, program monitors, collection staff, and other employees
- Acquiring and/or developing posters, slide shows, and other publicity materials
- Employee involvement, through a waste reduction group or suggestion box
- Conducting ongoing publicity and education before recycling program start-up

11.1 DISTRIBUTING THE PROGRAM KICK-OFF MEMORANDUM

The purpose of the kick-off memo is to demonstrate top-level support and cooperation for the implementation of the recycling program. Distribution of this memorandum should occur a few weeks prior to the education session, leaving sufficient time to ensure employee attendance and interest. The memo should include:

- Endorsement of the recycling program by top-level management and a clear statement of the organization's goal to reduce waste
- Environmental and economic benefits of recycling
- Potential for revenues and savings and where they will go
- Separation and collection procedures and the ease with which they can be incorporated into daily routines
- Identification of the recycling program's organizational structure
- Announcement of the educational sessions and a schedule of when they will be conducted

Appendix C provides an example of a kick-off memorandum.

11.2 SCHEDULING AND CONDUCTING THE EDUCATION SESSIONS

The next step is to inform each worker about how the recycling program will work. A schedule of the education sessions should accompany the kick-off memorandum. Attendance at the education

sessions should be mandatory, and it is important that sessions are organized and scheduled to be as convenient as possible for all employees. Once an employee has attended the session, participation in the recycling program immediately begins. All other aspects of the employee education program, including posters and other publicity materials, should be in place prior to the education sessions.

The schedule of education sessions is dependent upon the facility's management, size, and available meeting space. Many organizations have procedures in place for conducting education activities. When scheduling sessions, the following items should be considered:

- Conduct sessions for management prior to distribution of the kick-off memorandum. Informed managers will be better able to communicate the importance of attendance to their subordinates.
- Educate personnel involved in program operations prior to the general office sessions. They must have a working knowledge of program mechanics before implementation.
- Arrange follow-up briefings for those employees who are unable to attend the initial sessions.
- Arrange sessions in mid-morning and mid-afternoon; avoid scheduling at the beginning and end of the day, near holidays, and at lunch (unless employees are agreeable to "brown-bag" sessions).

Education sessions should be no longer than 15 to 20 minutes and should include time for questions and answers. Include the following key elements in the formal presentation:

- A concise description of the recycling program operation
- Pictures or displays of all collection equipment
- Detailed description of acceptable and non-acceptable items
- A description of the environmental benefits of recycling and the end products of the recycling process.

Slide shows or videos can be an effective means to convey the key aspects of the recycling program. Posters and flyers should appear several days before the first employee education session. If desk-top containers will be distributed, as part of the recycling program, distribute them during or immediately following the educational sessions. It is helpful to place a "how to" memo on the container highlighting the reasons for recycling and important features of the recycling program, how it works, the types of acceptable materials, central container locations, and a telephone number to call in case of questions.

Employees should leave the session and begin recycling as soon as they return to their desks. New employees should receive the same information and handouts including their own desk-top container during orientation and/or training on their first day.

11.3 DEVELOPING OR PROCURING PUBLICITY MATERIALS

Successful recycling programs require continual monitoring and reminders. Initial publicity materials, such as posters and "how to" memos should be available at the time the education sessions are held. Publicity materials aimed at employees should support and reinforce the information provided during the education sessions, and should continually remind employees of the role they play in making the recycling program successful.

Publicity tools include:

- Program logos and slogans
- Posters
- Newsletters and news articles
- Brochures, leaflets, and memos

A program logo or slogan can serve as the key unifying and identifying element for the recycling program. A logo can be repeated on essentially all physical components in the program, including desk-top and central collection containers, posters, and other publicity materials.

Posters designating acceptable and non-acceptable materials may be used to mark central container locations or just to announce and reinforce the recycling program. Posters serve as strong visual reminders, and should be updated from time-to-time to reinforce participation in the program.

In-house or agency-wide newsletters, newspaper articles, brochures, memorandums, and notices also serve as constant reminders of recycling program operation. These are effective tools in the initial and continuing education of employees. These communications convey changes in procedures or program progress/performance.

It may be desirable to publicize the recycling program in the local newspaper and/or the organization's newsletter. Such a measure improves public relations and boosts employee morale and support for the program. Recycling can be a visible demonstration of the CG's "good neighbor policy."

Memorandums, newsletters, and brochures, can be produced in-house or by outside services which specialize in production of posters, slide shows, or videos. Some publicity materials may be available through federal, state, or private organizations. Sources of recycling information appear in Appendix A. Local waste dealers, or recycling consultants may have additional materials and offer other program start-up services. There are a large number of resources available to keep up the momentum and enthusiasm that has been established in the recycling program.

11.4 EMPLOYEE INVOLVEMENT

Recycling programs benefit from employee involvement in suggesting source reduction strategies, either through a waste reduction group or a suggestion box. Employee involvement brings people together from different aspects of the business, so waste reduction efforts can be discussed on many levels. It allows people in different areas, such as in the administrative offices, computer division, and facility installations to make suggestions for their own areas and find the greatest opportunities for reducing waste.

Suggestion boxes allow participants to make recommendations at their convenience. Suggestions are deposited in a central location, and convey written proposals to the coordinators. The suggestion boxes are even more important if the recycling coordinators are extremely busy with other work, and their access is limited.

11.5 ON-GOING PUBLICITY AND EDUCATION

The publicity and education campaigns should be continuous. There must be immediate and sustained reinforcement of the habit changes required for recycling. It must be clear that the recycling program is permanent, and that it will work only through the cooperation of all participants. Ongoing publicity materials should highlight recycling program accomplishments, modifications, and revenues that have been received from the sale of recyclables. A continuing employee education program can assure increasing participation, while placing few demands on employees. Another aspect of ongoing education is new employee orientation. It is essential that new employees are well informed about the recycling program through literature, handouts, and orientation sessions.

REFERENCES

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Fishbein, Bette K. Making Less Garbage: A Planning Guide for Communities. New York: Inform Inc., 1992.

Seattle Solid Waste Utility, On the Road to Recovery, Seattle's Integrated Solid Waste Management Plan, Ms. Ginny Stevenson, 505 Dexter Horton Bldg., 710 Second Avenue, Seattle, WA 98104, (206) 684-7688, August, 1989.

Tchobanoglous, G. Solid Waste Management: Engineering Principles and Management Issues. New York: McGraw Hill, 1993.

Texas Instruments, Texas Instruments Non-Hazardous Solid Waste Recycling Program, Mr. Tim Mikus, Texas Instruments, PO 655012 M/S 56, Dallas, TX 75265, (214) 995-9090, June 1993.

U.S. Air Force. Air Force Recycling, How-to-Guide. HQ AFCEE, Pollution Prevention Directorate, Brooks AFB, TX, June, 1994.

U.S. Environmental Protection Agency. Developing A Comprehensive Federal Office Recycling Program. EPA/202/92-007, October 1990.

U.S. Environmental Protection Agency. Federal Facility Pollution Prevention Planning Guide. EPA/300-B-94-013, December, 1994.

U.S. Environmental Protection Agency. How to Set Up A Local Program to Recycle Used Oil. EPA/530-SW-89-039A, May 1989.

U.S. Environmental Protection Agency. Office Paper Recycling, An Implementation Manual. EPA/530-SW-90-001, January 1990.

U.S. Postal Service. Recycling Guide. Handbook AS-550, August, 1991.

U.S. Environmental Protection Agency. State and Local Solutions to Solid Waste Management Problems. EPA/530-SW-89-014, January, 1989.

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APPENDIX A - SOURCES OF RECYCLING INFORMATION

CG POLLUTION PREVENTION CONTACT
T.J. Granito, Pollution Prevention and Recycling Coordinator
U.S. Coast Guard
COMDT (G-SEC-3)
2100 2nd Street, SW
Washington, D.C. 20593
202-267-1941

For more information about recycling , call the EPA Solid Waste Hotline at 1-800-424-9346 or 1-800-CLEAN-UP. In D.C., call 382-3000. The following is a list of additional sources of recycling information for the United States:

ALABAMA
Department of Environmental Management
Solid Waste Division
1715 Congressman Wm. Dickinson Drive
Montgomery, AL 36130
(205) 271-7700

ALASKA
Department of Environmental Conservation
Solid and Hazardous Waste Program
RCRA Technical Assistance
410 Willoughby Avenue
P.O. Box 0
Juneau, AK 99801
1-800-550-7272

ARIZONA
Department of Environmental Quality
Recycling Unit
Phoenix, AZ 85004
(602) 207-4143

AZ Recycling Coalition
101 S. Central
Phoenix, AZ 85004
(602) 256-3170

ARKANSAS
Department of Pollution Control and Ecology
Recycling Division
8001 National Drive
Little Rock, AK 72219
(501) 562-6533 ext. 897

CALIFORNIA
Department of Conservation
Recycling Division
819 19th Street
Sacramento, CA 95814
(916) 323-3743

CA Resource Recovery Association
4395 Gold Trail Way
Loomis, CA 95659-8901
(916) 652-4450

COLORADO
Colorado Recycles
8745 West 14th Avenue
Suite 216
Lakewood, CO 80215
(303) 231-9972

Rocky Mt. Recycling Association
10748 E. Dorado Pl.
Boulder, CO 80111
(303) 441-9445

CONNECTICUT
Department of Environmental Protection
Recycling Program
79 Elm Street
Hartford, CT 06106-5127
(203) 424-3365

CT Recyclers Coalition
PO Box 4038
Old Lyme, CT 06371
(203) 774-1253

DELAWARE
Department of Natural Resources and
Environmental Control
Solid Waste Management Branch
89 Kings Highway
P.O. Box 1401
Dover, DE 19903
(302) 739-3820

DISTRICT OF COLUMBIA
Public Space and Maintenance
Administration
4701 Shepard Parkway, S.W.
Washington, DC 20032
(202) 727-5856

FLORIDA
Department of Environmental Protection
Waste Reduction Section
2600 Blairstone Road
Tallahassee, FL 32201
(904) 488-0300

Recycle Florida
222 Westmonte Drive
Altamonte Spring, FL 32714
(407) 774-7880

GEORGIA
Department of Community Affairs
40 Marietta St., N.W., 8th Floor
Atlanta, GA 30303
(404) 656-3851

HAWAII
Department of Health
Litter Control Office
205 Koula Street
Honolulu, HI 96813
(808) 586-8400

HAWAII (Continued)
Recycling Association of Hawaii
162 N. King street
Honolulu, HI 96817
(808) 599-1976

IDAHO
Department of Environmental Quality
Permits and Enforcement
450 W. State Street
Boise, ID 83720
(208) 334-5898

ILLINOIS
Illinois EPA
Land Pollution Control Division
2200 Churchill Road
P.O. Box 19276
Springfield, IL 62706
(217) 785-8604

IL Recycling Services
407 S. Dearborn St.
Chicago, IL 60605
(312) 733-1255

INDIANA
Department of Environmental Management
Office of Solid Waste Management
105 S. Meridian St.
Indianapolis, IN 46225
(317) 232-4445

IN Recycling Coalition
PO Box 20444
Indianapolis, IN 46220-0444
(317) 283-6226

IOWA
Department of Natural Resources
Waste Management Division
Wallace State Office Building
Des Moines, IA 50319
(515) 281-8176

IA Recycling Association
2742 S.E. Market Street
Des Moines, IA 50317
(515) 265-4275

KANSAS
Department of Health and Environment
Bureau of Waste Management
Solid Waste Section
Topeka, KS 66620
(913) 296-1603

KENTUCKY
Resources Conservation and Local Assistance Branch
Division of Waste Management
18 Reilly Road
Frankfort, KY 40601
(502) 564-6716

KY Recyclers Association
2207 Eastern Ave.
Covington, KY 41014
(606) 356-8555

LOUISIANA
Department of Environmental Quality
P.O. Box 44307
Baton Rouge, LA 70804
(504) 765-0249

MAINE
Department of Economic and Community Development
Office of Waste Reduction and Recycling
State House Station #130
Augusta, ME 04333
(207) 287-5300

MARYLAND
Department of Environment
Office of Recycling
2500 Broening Highway
Building 40
Baltimore, MD 21224
(410) 631-3315

MARYLAND (continued)
MD Recyclers Coalition, c/o COG
777 N. Capitol St., NE, Suite 300
Washington, DC 20002-4201
(202) 962-3358

MASSACHUSETTS
Department of Environmental Protection
Division of Solid Waste Management
Recycling Program
1 Winter Street, 4th Floor
Boston, MA 02108
(617) 292-5745

MassRecycle
60 Temple Place
2nd Floor
Boston, MA 02111
(617) 338-0244

MICHIGAN
Department of Natural Resources
Waste Management Division
P.O. Box 30028
Lansing, MI 48909
(517) 373-8148

MI Recycling Coalition
PO Box 10240
Lansing, MI 48901
(517) 371-7073

MINNESOTA
Office of Environmental Assistance
520 Lafayette Road
St. Paul, MN 55155
(612) 296-3417

Recycling Association of MN
PO Box 292
Circle Pines, MN 55014
(612) 422-8788

MISSISSIPPI
Department of Natural Resources
Bureau of Pollution Control
Non-Hazardous Waste Section
P.O. Box 10385
(601) 961-5002

MISSOURI
Department of Natural Resources
Solid Waste Management Program
P.O. Box 176
Jefferson City, MO 65102
(314) 751-5401

MO State Recycling Association
PO Box 10220
Kansas City, MO 64171
(816) 561-1087

MONTANA
Department of Health and Environmental Science
Solid Waste Management Program
Cogswell Building, Room B201
Helena, MT 596220
(406) 444-2821

Associated Recyclers of MT
450 Charles Street
Billings, MT 59101
(406) 252-5721 or 1120

NEBRASKA
Department of Environmental Quality
Integrated Waste Section
P.O. Box 98922
Lincoln, NE 68509
(402) 471-4210

NE State Recycling Association
1615 Howard St.
Omaha, NE 68102
(402) 444-4188

NEVADA
Nevada Division of Environmental Protection
Carson City, NV 89710
(702) 687-4670

NV Recycling Coalition
PO Box 70393
Reno, NV 89507-0393
(702) 829-6872

NEW HAMPSHIRE
Department of Environmental Services
Waste Management Division
6 Hazen Drive
Concord, NH 03301
(603) 271-2900

NEW HAMPSHIRE (Continued)
Northeast Resource Recovery Assoc.
PO Box 721
Concord, NH 03302-0721
(603) 224-6996

NEW JERSEY
Department of Environmental Protection
Division of Solid & Hazardous Waste
CN 414
840 Bear Cavern Road
West Trenton, NJ 08625
(609) 530-8208

Association of NJ Recyclers
120 Finderne Ave.
Bridgewater, NJ 08807
(908) 722-7575

NEW MEXICO
Environmental Department
Solid Waste Management Bureau
1190 St. Francis Drive
Santa Fe, NM 87503
(505) 827-2653

NEW YORK
Department of Environmental Conservation
Bureau of Waste Reduction and Recycling
50 Wolf Road, Room 208
Albany, NY 12233
(518) 457-7337

NY State Association for Recycling
46 E. Bridge Street
Oswego, NY 13126
(315) 349-8329

NORTH CAROLINA
Department of Human Resources
Division of Solid Waste Management
P.O. Box 2091
Raleigh, NC 27602
(919) 733-0692

NORTH CAROLINA (continued)
NC Recycling Association
7330 Chapel Hill Rd, Suite 207
Raleigh, NC 27607
(919) 851-8444

NORTH DAKOTA
Department of Health
Division of Waste Management
1200 Missouri Avenue, Room 302
Box 5520
Bismark, ND 58502-5520
(701) 328-5166

ND Recyclers Association
PO Box 1196
Bismarck, ND 58502
(701) 223-6850

OHIO
Ohio EPA
Division of Litter Prevention and Recycling
Fountain Square Building, E-1
Columbus, OH 43224
(614) 265-7061

Association of Ohio Recyclers
1300 Weathervane Lane
Akron, OH 44313
(216) 665-1559

OREGON
Department of Environmental Quality
Waste Management & Cleanup Division
811 S.W. Sixth
Portland, OR 97204
(503) 229-5913

Association of OR Recyclers
PO Box 15279
Portland, OR 97215
(503) 255-5087

PENNSYLVANIA
Department of Environmental Resources
Division of Waste Minimization and Planning
Waste Reduction and Recycling Section
P.O. Box 2063
Harrisburg, PA 17120
(717) 787-9870

PA Resources Council
PO Box 88
Media, PA 19063
(610) 353-1555

RHODE ISLAND
Department of Environmental Management
Office of Environmental Coordination
83 Park Street
Providence, RI 02903
(401) 277-3434

RI Recycling Association
51 Bridge Street
Newport, RI 02840
(401) 849-2380

SOUTH CAROLINA
Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201
(803) 734-5360

SC Recycling Association
1205 Pendleton St., Suite 517
Columbia, SC 29201
(803) 252-9250

SOUTH DAKOTA
Environment and Natural Resources
Waste Management Division
523 E. Capitol
Pierre, SD 57501
(605) 773-3153

Recycling Coalition of SD
PO Box 84041
Sioux Falls, SD 57105
(605) 332-9490

TENNESSEE
Department of Public Health
Recycling Division
LNC Tower, 5th Floor
401 Church Street
Nashville, TN 37243-1535
(615) 532-0091

TN Recycling Coalition
401 Church St., 14th Floor
Nashville, TN 37243-0455
(615) 532-0074

TEXAS
Department of Health
Recycling Division
1100 W. 49th Street
Austin, TX 78756
(512) 239-6750

Recycling Coalition of TX
Austin, TX 78768
(512) 469-6079

UTAH
Department of Environmental Health
Recycling Coordinator for Utah
P.O. Box 16690
Salt Lake City, UT 84116-0690
(801) 536-4477

VERMONT
Agency of Natural Resources
Recycling Hotline
103 S. Main Street, West Building
Waterbury, VT 05676
(800) 932-7100

Association of VT Recyclers
PO Box 1244
Montpelier, VT 05601-1244
(802) 229-1833

VIRGINIA
Department of Waste Management
Division of Litter Control and Recycling
11th Floor, Monroe Building
101 N. 14th Street
Richmond, VA 23219
(804) 762-4000

VA Recycling Association
2735 Hartland Road
Falls Church, VA 22043
(703) 549-9263

WASHINGTON
WA State Recycling Association
203 E 4th St, Suite 422
Olympia, WA 98501
(206) 352-8737

WEST VIRGINIA
Department of Natural Resources
Conservation, and Litter Control
1800 Washington Street E.
Charleston, WV 25305
(304) 558-3370

WISCONSIN
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707
(608) 267-7566

WYOMING
Department of Environmental Quality
State Recycling Coordinator
Lander Field Office
250 Lincoln Street
Lander, WY 82520
(307) 332-6924

Call these EPA regional offices for further assistance.

REGION 1
Environmental Protection Agency
John F. Kennedy Federal Building
Room 2203
Boston, MA 02203-2211
FTS: 8-835-3715
DDD: (617) 565-3715
Hours: 8:30am-5:00pm EST/EDT

REGION 2
Environmental Protection Agency
26 Federal Plaza
New York, NY 10278-0012
FTS: 8-264-2525
DDD: (212) 264-2525
Hours: 8:30am-6:00pm EST/EDT

REGION 3
Environmental Protection Agency
841 Chestnut Street
Philadelphia, PA 19107-4431
FTS: 8-597-9800
DDD: (215) 597-9800
Hours: 8:00am-4:30pm EST/EDT

REGION 4
Environmental Protection Agency
345 Courtland Street NE
Atlanta, GA 30308-3420
FTS: 8-257-4727
DDD: (404) 347-4727
Hours: 7:00am-5:45pm EST/EDT

REGION 5
Environmental Protection Agency
230 South Dearborn Street
Chicago, IL 60604-1502
FTS: 8-353-2000
DDD: (312) 353-2000
Hours: 8:00am-4:30pm CST/CDT

REGION 6
Environmental Protection Agency
1445 Ross Avenue
12th Floor Suite 1200
Dallas, TX 75270-4748
FTS: 8-255-6444
DDD: (214) 655-6444
Hours: 8:00am-4:30pm CST/CDT

REGION 7
Environmental Protection Agency
726 Minnesota Avenue
Kansas City, KS 66101-2704
FTS: 8-757-2800
DDD: (913) 236-2800
Hours: 7:30am-5:00pm CST/CDT

REGION 8
Environmental Protection Agency
999 18th Street Suite 500
Denver, CO 80202-2405
FTS: 8-564-1603
DDD: (303) 293-1603
Hours: 8:00am-4:30pm MST/MDT

REGION 9
Environmental Protection Agency
215 Fremont Street
San Francisco, CA 94105-2306
FTS: 8-454-8071
DDD: (415) 974-8071
Hours: 8:00am-4:30pm PST/PDT

REGION 10
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101-1128
FTS: 8-399-5810
DDD: (206) 442-5810
Hours: 8:00am-4:30pm PST/PDT

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APPENDIX B - PAPER GRADE DEFINITIONS

Computer Printout: Consists of white sulfite or sulfate papers in forms manufactured for use in data processing machines. This grade may contain colored stripes and/or impact or non-impact (e.g., laser) computer printing, and may contain not more than 5% of groundwood in the packing. All stock must be untreated and uncoated.

Sorted White Ledger: Consists of printed or unprinted sheets, shavings, guillotined books, quire waste, and cuttings of white sulfite or sulfate ledger, bond, writing paper, and all other papers which have a similar fiber and filler content. This grade must be free of treated, coated, padded, or heavily printed stock.

Hard White Shavings: Consists of baled shavings or sheets of all untreated white bond ledger or writing papers. Must be free from printing and groundwood.

Manila Tabulating Cards: Consists of manila-colored cards, predominantly sulfite or sulfate, which have been manufactured for use in tabulating machines. This grade may contain manila-colored tabulating cards with tinted margins.

For the above paper grades the following restrictions apply:

Prohibitive materials.....None Permitted
Total Out-throws may not exceed.....2%

OUT-THROWS

The term "Out-throws" is defined as "all papers that are so manufactured or treated or are in such a form as to be unsuitable for consumption as the grade specified."

PROHIBITIVE MATERIALS

The term "Prohibitive materials" is defined as:

- Any materials which by their presence in a packing stock, in excess of the amount allowed, will make the packaging unusable as the grade specified
- Any materials that may be damaging to equipment

Note: The maximum quantity of "Out-throws" indicated in connection with the following grade definitions is understood to be the TOTAL of "Out-throws" and "Prohibitive Materials."

A material can be classified as an "Out-throw" in one grade, and as a "Prohibitive Material" in another grade. Carbon paper, for instance, is "UNSUITABLE" in Mixed Paper and is, therefore, classified as an "Out-throw", whereas it is "UNUSABLE" in White Ledger and in this case classified as a "Prohibitive Material."

Reference: U.S. EPA, 1990.

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APPENDIX C - SAMPLE KICK-OFF MEMORANDUM

This memorandum should be formatted to be consistent with the proper CG Memorandum format (see Figure C-1).

TO: All U.S. Coast Guard Personnel
FROM: John Doe, Officer-in-Charge
DATE: May 24, 1995
SUBJECT: Office Paper Recycling at Coast Guard Facilities

Studies show that each office worker throws away an average of a half-pound of recyclable paper every day. That's the equivalent of (X) tons a year from our office alone. This means that over (Y) trees and (Z) gallons of oil are needed each year just to keep our office afloat in paper.[3] We're starting a recycling program to put this paper to better use. By recycling, we'll lower our garbage disposal costs, earn revenue from the sale of our paper, and do our part to improve the environment.

Participation in this program will require only small changes in your daily habits. You will be given a desk-top container for storing white paper and computer paper. When your desk-top container is full, simply empty the contents into the central container nearest your desk. The locations of the central containers will be:

NEXT TO ALL OF THE COPY MACHINES
ROOMS 200, 319, AND 452;
OUTSIDE THE COFFEE ROOM

Please attend a short orientation session to learn more about how the program works. Three fifteen minute sessions have been scheduled for June 15, 1995. The sessions will start at 9:30 AM, 10:30 AM, and 1:30 PM. Your supervisor has a sign up sheet.

Your participation in this program does make a difference! For every piece of paper you recycle, you will:

- Protect the environment and save natural resources
- Conserve scarce landfill space
- Save money for the Coast Guard

If you have any questions about the program, please contact JOHN SMITH, at Extension 1234. Thanks for your cooperation.

---

[3] X = (# of Employees) x (0.5 lbs.) x (240 working days per year)/2,000 lbs.
Y = (17 trees) x (X tons of paper)
Z = (682.5 gallons of oil) x (X tons of paper)
Reference: Your Office Paper Recycling Guide.

Figure C-1

MEMORANDUM WITH DISTRIBUTION BLOCK

U.S. Department of Transportation
United States Coast Guard

Memorandum

Subject: HOW TO PREPARE A MEMORANDUM

Date: 15 Oct 87
5216

Reply to: G-CPA
Attn of: Parker: 267-5432

From: Chief of Staff

To: Distribution

1
2 Ref: (a) Correspondence Manual, COMDTINST M5216.4B
1
2

1. If you have so many action addressees that a memo would be top heavy with them, you may substitute a distribution block for the to block. Type Distribution in the to block. Then type Dist: at the left margin on the second line below the enclosure block, if any, or the signature block. Starting two spaces to the right of the colon, list all action addressees one below the other.

2. Memoranda are authorized only when action and copy to addressees total 20 or less. If you have more than 20 action addressees, issue a directive.

3. Be aware when addressing Headquarters memoranda using organizational names alone. Some divisions located in different offices have very similar organizational names. Avoid having memoranda misrouted by using the organizational title, followed by the authorizing routing symbol in parenthesis.

4. Makes copies of a multiple address memorandum as if preparing a multiple address letter (see 3.B. on p. 3-1).

5. Headquarters offices can send copies of internal memoranda to the field for "information" purposes only. Show this as a blind copy on the yellow.

1
2
3
4 T. A. JONES
1
2

Dist: G-CAS
G-CBU
G-CMA
G-CPE
G-CSP

APPENDIX D - OFFICE PAPER RECYCLING PROGRAM

The desk-top system is emphasized in this section because it has the most success in getting people involved. The desk-top system requires that employees accumulate paper at their desks and deposit it in central containers at their convenience. The paper is then collected from central containers and consolidated in the main storage area by custodial or general service labor groups within the facility. A simple and reliable system must be developed for collecting and storing the recovered paper. Key components in developing and implementing the collection and storage system include:

- Selecting and distributing easily identifiable desk-top or desk-side containers, including the identification of acceptable and unacceptable materials
- Determining central container locations and selecting/distributing central containers
- Acquiring and routing collecting personnel
- Considering necessary equipment (e.g., storage containers, collection equipment, shredders, etc.)
- Acquiring storage space
- Determining methods of collecting and storing confidential wastes

D.1 SELECTING AND DISTRIBUTING DESKTOP CONTAINERS

Through the distribution of individual containers, everyone becomes immediately involved in the recycling program. A variety of desk-top containers are available through the General Services Administration (GSA) as well as commercially through office suppliers and recycling vendors. Desk-top containers may also be available from the waste paper contractor. Sources for locating recycling equipment vendors include magazines and publications such as Resource Recycling, Waste Age, Recycling Today, and the American Recycling Market Annual Directory/Reference Manual, among others. In addition, Appendix A of this guide provides sources of assistance for recycling information.

General Services Administration (GSA) can supply containers (cardboard vertical file boxes and central containers with a lid and slit in the top) to federal agencies through their catalogue and the Customer Supply Center in Washington, D.C. Catalogues may be obtained through Customer Service at (202) 755-0320, while orders may be placed with the Supply Center at (703) 557-3131. Alternatively, private vendors of recycling equipment may be contacted for these containers.

The desk-top containers may be made of paperboard or plastic, and resemble vertical napkin holders, heavy duty vertical file folders, vertical boxes, or horizontal in-boxes. The container selected should be stable, durable, and require a small amount of desk space. However, the selection of a practical desk-top container depends on the needs and requirements of the specific facility, aesthetic preferences, and budgetary constraints. Vertical containers are often preferred because of the large

paper capacity, and reduced amount of desk space required when compared to horizontal containers.

A consistent desk-top container, style and color, should be used throughout the recycling program. Each container should be clearly labeled or printed identifying the recycling program and listing what can and cannot be recycled. The label also may include the telephone number of the program coordinator so that employees may call in case of questions or problems.

Desk-top containers are supplied to each employee, usually during recycling program education sessions. At smaller facilities, containers may be distributed to employees at their desks during or after education sessions. Making sure each worker has his/her own container will ensure greater participation and, in the end, greater overall success.

D.2 CENTRAL CONTAINER LOCATION, SELECTION, AND DISTRIBUTION

Clear organization is required in order for a successful recycling program. Participants need to know what to recycle, and where to recycle it. Central containers to serve from 15 to 50 employees should be located throughout the office facility. Locations for each container depend on the available space in the building, local building fire codes, and practical considerations. For example, some fire codes may prohibit the placement of containers in hallways or entrances. If possible, containers should be stationed in locations accessible and visible to both general office employees and collection crews. Central containers should be placed in computer centers, record rooms, reproduction rooms, and other areas where large volumes of paper are generated.

Central containers may vary in size and shape from 1.5 ft^3 (11-gallon) cardboard boxes to 6 ft^3 (44-gallon) rubber or plastic cylindrical containers with swing lids. When selecting central containers, the amount of paper generated per area and the frequency of collections should be considered. Small table-top containers may be suitable for general office locations with cramped quarters or low paper generation rates. Larger containers or bins may be necessary in areas with high rates of paper generation, such as photocopy rooms. Each container should have sufficient storage capacity to hold the paper between collections, which may vary from daily to weekly, depending on the recycling program.

Fire codes can dictate the choice of central containers. For example, some fire codes may specify the use of covered lids. Program budgets may play a role in container selection. Programs with available funds will probably purchase permanent containers, such as plastic, rubber or canvas wheeled bins or hampers. Programs with budgetary constraints could use empty copy paper supply boxes, but these boxes must be clearly marked as recycled paper containers.

Central containers should be clearly identified using the same color and program logo used on the desk-top containers to avoid being used as trash containers, or thrown away themselves. In addition, a list of acceptable or unacceptable items should be posted on or near each container location. If computer and high-grade paper are collected separately, the type of paper that the container is

intended to hold should be identified (e.g., "Computer Paper Only").

Some waste paper dealers will provide central collection containers. However, these containers may not work with the desired program theme or given spatial constraints. Regardless of how or where they are arranged, container locations must be obvious and accessible to every employee.

D.3 ACQUIRING AND ROUTING COLLECTION PERSONNEL

Paper deposited by employees into the central containers must be consolidated and transferred to the main storage area. Collection personnel perform this task. Studies performed by the EPA have shown that facilities housing from 100 to 500 employees may use part-time labor to collect recovered paper, while larger installations (over 2,500 employees) will likely have to allocate the equivalent to eight hours a day or a full-time position to perform this task (EPA, 1990). The amount of paper generated by the facility and the number of collection stations also must be considered to estimate needed collection labor.

The recycling coordinator should make every effort to meet these collection labor needs with existing staff or contract labor in order to minimize program costs. Most programs successfully accomplish recycling collection activities using the existing labor force, including custodial staff, contractors for furniture moving and facility maintenance, mail room, supply distribution, general service, or other available service staff. Custodial staff or other collection labor must be trained and educated about the recycling program and their tasks, especially to avoid mixing of recyclable paper and trash. In many cases, contracted maintenance or general service agreements can be re-negotiated to include the additional job of paper collection.

Several options may be available for integrating waste and paper collection activities. Recycled paper and other remaining wastes may be collected simultaneously, each deposited in separate bags or bins on a collection cart, and taken to separate storage areas. With simultaneous collection, efforts must be made to ensure that the recovered paper is kept separate to prevent contamination. As an alternate, some offices use a rotating collection system in which the custodial staff collect the separated paper and other wastes on alternate nights. Another method is to keep recycled paper collection separate from other waste collection altogether. In this situation, members of the custodial staff may be assigned to independently collect recyclable paper.

When integrating paper collection with existing office routines, a number of factors should be considered, such as the number of custodians servicing the building, the nature of their employment (i.e., in-house, contract, union), their hourly availability (i.e., day or night shift), and other personnel who could perform these duties. If existing personnel cannot be used to perform the consolidation activities, contracting or hiring additional labor may become necessary. Many government agencies and private organizations participate in temporary or full-time hiring programs for local high school or college students, minority or under-privileged groups, or the disabled.

Paper collection must be supervised closely to maintain high participation rates. It is important to continue communication with collection personnel regarding changes in the program, overflowing central containers, or other key information. For this reason, it may be beneficial to arrange for paper collection operations to be performed during the day, when the program coordinator and monitors are available to communicate with the collection staff.

Collection personnel must begin servicing central collection containers as soon as the program begins. In large buildings, it may be beneficial to conduct a "dry run" before program implementation and to ensure that each collector has a floor plan showing where central containers are located. In this manner, the collection staff becomes familiar with central container locations and the most practical collection routes. A month of program operation will serve to establish appropriate collection routes, the proper frequency of collections, and any added labor requirements.

D.4 COLLECTION EQUIPMENT

The collection and transport of recovered office paper can be integrated with other materials handling activities within the facility, such as maintenance, mail and supply distribution, or waste collection. Existing equipment may be available for the collection of office paper. Collection and handling equipment commonly used in office buildings for a paper recycling program includes:

- Wheeled canvas bins or barrels
- Mail carts
- Canvas bags
- Hand carts, dollies or gurneys
- Forklifts
- Balers

If existing equipment is unsuitable or unavailable, leasing of equipment from the waste paper dealer, or purchase of additional equipment may be necessary. Factors to be considered when purchasing equipment include hallway width, doorway width, type of floor covering, and freight elevator size. Wheeled bins are the most common transport equipment. Some recycling programs use 11 ft^3 (44-gallon) containers both to collect and transport paper. When the central collection container is full, it is simply wheeled to the main storage area, emptied, and returned to the floor or replaced with an empty container.

If paper is stored in pallet boxes, a pallet jack or forklift will be needed to move the full pallets (each pallet will weigh between 1,000 and 1,500 pounds). Collected paper can be bailed, particularly in buildings already equipped with a high-speed baler or when a significant premium can be obtained for baled paper.

D.5 STORAGE SPACE

Acquiring storage space is an important step towards development of a paper recycling program. The storage space must be large enough to store the waste paper and also be an area that will keep the paper dry at all times. The program coordinator can play a major role in working with the building manager and sales contractor to locate and obtain appropriate storage space.

The amount of storage space needed will be determined by the quantity of paper collected, the requirements of the pickup contract, and the method of storage. Most contracts require the accumulation of a specified minimum tonnage before pickup. To determine the necessary space, calculate the number of storage containers needed and multiply by the base square footage of each. Table 11-1 presents rough data necessary to make estimated calculations of needed space. Additional space may be needed around containers so that they are accessible and conform with fire and safety regulations.

Table I-1: Space Requirements for Different Methods of Storage

Container Specifications	Mobile Hampers	Pallets	Bulk Containers
Size	1.5 yd^3	2.5 yd^3	4 yd^3
Capacity	400 lbs.	1,000 - 1,500 lbs.	2,000 lbs.
Floor space requirements per unit	12 ft^2	20 ft^2	30 ft^2

Source: U.S. EPA, 1990

Some sales contracts may stipulate specific collection frequencies or pickup days regardless of paper accumulation. In this case, spatial requirements will depend on the amount of paper generated between pickup days. If this amount is known, then the storage space requirements can be calculated using the above data by simply multiplying the number of containers needed by the space each requires.

Accumulated paper should be kept as close to the point of pickup as possible, perhaps in the basement or loading dock area of the building. The space should be convenient to the freight elevator and secured to prevent potential contamination, tampering, or theft of the paper. In addition, the space should meet local fire code requirements, which may include sprinkler protection, or other provisions. If space near the loading dock is unavailable, paper may be kept in central containers until the day of pickup or placed in a temporary storage area, and delivered to the loading dock by consolidation staff on the day of pickup. Paper also may be stored outdoors in large bulk containers. If outdoor storage is necessary, the paper must be protected from bad weather and secured from theft.

D.6 RECYCLING OF CONFIDENTIAL WASTE PAPER

Many office facilities generate large amounts of confidential or classified materials that are printed on high-grade recyclable paper. Regulations often require these materials to be incinerated, pulped, or shredded. Recycling of this confidential waste paper may be possible. The contracted waste paper dealer needs to be contacted to determine if shredded documents are marketable. Management of these special wastes may require separate collection and secure storage of the shredded or unshredded confidential paper. If separate collection and/or storage is necessary, some estimate should be made of the quantity of confidential paper being recycled. Shredded paper, however, takes up more space than flat or crumpled paper.

APPENDIX E - VOLUME TO WEIGHT CONVERSION TABLE

Figures may vary depending on the handling and processing circumstances and on how tightly the loads are packed. Weights for paper can be affected by moisture or humidity.

Materials	Volume	Weight in Pounds	Weight in Tons
Newsprint, loose	1 cubic yard	360-800	0.18-0.4
Newsprint, compacted	1 cubic yard	720-1,000	0.36-0.5
Newsprint	12-inch stack	35	0.0175
Corrugated cardboard, loose	1 cubic yard	300	0.15
Corrugated cardboard, baled	1 cubic yard	1,000-1,200	0.5-0.6
Glass, whole bottles	1 cubic yard	600 - 1,000	0.3 - 0.5
Glass, semi-crushed	1 cubic yard	1,000-1,800	0.5-0.9
Glass, crushed (mechanically)	1 cubic yard	800-2,700	0.4-1.35
Glass, whole bottles	1 full grocery bag	16	0.008
Glass, uncrushed to manually broken	55-gallon drum	125 - 500	0.0652 - 0.25
Aluminum cans, whole	1 cubic yard	50 - 74	0.025-0.037
Aluminum cans, flattened	1 cubic yard	250	0.125
Aluminum cans	full grocery bag	1.5	0.00075
Aluminum cans	55 gallon plastic bag	13 - 20	0.0065-0.01
Ferrous cans, whole	1 cubic yard	150	0.075
Ferrous cans, flattened	1 cubic yard	850	0.425
PET*, soda bottles, whole, loose	1 cubic yard	30-40	0.15-0.02
PET, soda bottles, whole, loose	1 gaylord***	40-53	0.02-0.0265
PET, soda bottles, baled	30"x48"x62" bale	500	0.25
PET, soda bottles, granulated	1 gaylord	700-750	0.35-0.375
Film, baled	30"x42"x48" bale	1,100	0.55
HDPE**(diary only), whole, loose	1 cubic yard	24	0.012

Materials	Volume	Weight in Pounds	Weight in Tons
HDPE (diary only), baled	30"x42"x48" bale	500-800	0.25-0.4
HDPE (mixed), baled	30"x42"x48" bale	600-900	0.3-0.45
HDPE (mixed), granulated	1 gaylord	800-1000	0.4 - 0.5
Mixed PET and diary, whole, loose	1 cubic yard	average 32	0.016
Mixed PET, diary and other rigid, whole, loose	1 cubic yard	average 38	0.019
Used motor oil	1 gallon	7	0.0035
Tire, passenger car	one	12	.006
Tire, truck	one	60	.03
Food waste, solid and liquid fats	55 gallon drum	412	0.206

* PET is polyethylene terephthalate.
**HDPE is high-density polyethylene.
***Gaylord size most commonly used: 40"x48"x36"

APPENDIX F

United States Coast Guard
Commandant Instruction 16477.5
(COMDTINST 16477.5)

U.S. Department of Transportation

United States Coast Guard

Commandant (G-ECV)
United States Coast Guard

MAILING ADDRESS:
Washington, DC 20593-0001
(202) 267-1907

COMDTINST 16477.5

16 MAR 1994

COMMANDANT INSTRUCTION 16477.5

Subj: COAST GUARD QUALIFIED RECYCLING PROGRAM (QRP) POLICY

Ref: (a) Executive Order 12873 - Federal Acquisition, Recycling and Waste Prevention, of 20 OCT 93
(b) 14 U.S.C. 641, as amended by, CG Authorization Act of 1992, P.L. 102-587, 106 Stat. 5071
(c) Hazardous Waste Management Manual, COMDTINST M16478.1B
(d) Property Management Manual, COMDTINST M4500.5, Chapter 8
(e) Federal Property Management Regulations, 41 C.F.R. Parts 101-45 (NOTAL)

1. **PURPOSE**. The purpose of this Instruction is to provide policy guidance for establishing a "Qualified Recycling Program" (QRP) and reporting requirements for recycling activities.

2. **ACTION**. Area and district commanders, commanders of maintenance and logistics commands, and commanding officers of Headquarters units shall ensure that the provisions of this Instruction and reference (a) are complied with throughout their areas of responsibility.

3. **DISCUSSION**.

   a. The objective of the Coast Guard's (CG) recycling program is to prevent pollution, reduce contribution to overcrowded landfills, conserve our finite supply of natural and fiscal resources, and minimize routine waste disposal costs by reducing waste, reusing resources, and procuring products made of recycled materials, as well as materials that are readily recyclable and therefore environmentally preferable.

   b. The QRP is an effort to take advantage of recent legislation, as outlined in reference (b). This legislation provides incentives for "installations" to meet the objectives of

DISTRIBUTION - SDL No. 132

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A	1	1	1		1	1							1	1	1	1	1	1	1		1					
B		8	20*	1	1	1		1	2	1	2	2	1	2	2	1		1	1	2	1					
C	1	1		2	1	1	2		1	1	2		1		1		1				1	1	1	1		
D	1	1	1	2	1								1						1	1			1	1	1	1
E							1	1						1	1		1		1	1		1				
F																										
G																										
H																										

NON-STANDARD DISTRIBUTION: *B;c Six (6) extra (MLCs)

Recycled Recyclable

preventing pollution, reducing waste and conserving natural resources. The incentive is the return of proceeds from the sale of recyclable material to help support unit Morale, Welfare and Recreation (MWR) activities and to finance pollution abatement, energy conservation, and occupational safety and health projects.

c. Although the establishment of a QRP is optional, all units are required to recycle or participate in a community recycling program, to the maximum extent possible, regardless of whether or not they are a participating QRP facility.

4. **DEFINITIONS**.

a. Qualified Recycling Program (QRP). A QRP is a designated recycling program in which proceeds from the sale of recyclable materials are credited to the installation. The program incorporates concerted efforts to divert or recover recyclable materials from the installation's waste streams, as well as efforts to identify, segregate, and maintain or enhance the marketability of the diverted materials.

b. Installation. An installation is any unit or activity under the jurisdiction of the Commandant.

c. Recyclable Materials. Recyclable materials are those products having no value other than their basic material content, but which can be altered through chemical or physical processes and are authorized for disposal in accordance with references (c) and (d). These materials include, but are not limited to, paper, glass, newspapers, plastics, cardboard and other packaging materials, aluminum and other scrap metal, food waste, and certain hazardous materials (see 7.d.) such as, used oil, spent Aid to Navigation (ATON) and motor vehicle batteries, and unused paints and solvents that are damaged or have expired shelf-life dates. **NOTE:** "Excess property" should be disposed of through General Service Administration (GSA) or Defense Reutilization and Marketing Office (DRMO) in accordance with reference (d), and is therefore not to be included in recyclable sales.

d. Proceeds. Proceeds are the monies collected from the sale of recyclable material.

e. Direct Operating Costs. Operating costs includes purchase of equipment, maintenance, program operation and expansion, cost of civilian labor, training, publicity, and overhead for processing recyclable materials.

f. Cost Avoidance/Savings. Any indirect or intangible savings resulting from diverting recyclable materials from the waste stream. This includes reductions in labor costs, hauling, treatment, permit fees and disposal fees.

5. **ESTABLISHING A QRP**. To be designated a QRP, a unit's commanding officer (CO) or officer-in-charge (OIC) must:

a. Designate a QRP manager/coordinator.

b. Promulgate an instruction delineating the following requirements. A sample instruction is included as enclosure (1).

(1) Establish a system for maintaining fiscal accountability for all funds collected and distributed through the program. Sample forms are included in enclosures (2) and (3). Additional guidance may be obtained from references (d) and (e).

(2) Establish a system for recording and reporting all recyclables processed. Forms and samples are included as enclosures (4) through (7).

(3) Establish a committee to review the progress of the program and recommend the disposition of the proceeds.

c. On completion of the above, submit the recycling instruction with a cover letter to COMDT (G-ECV-1B), requesting authorization to implement a QRP. This authorization is also the authority for FINCEN to collect and disburse the unit's recycling program funds.

6. **QRP ELIGIBILITY**

a. In general, units that dispose of their own solid waste (i.e., scrap, garbage or refuse) and recyclables are eligible to become a qualified recycling unit.

b. Units which are tenant commands, or units whose solid waste/recyclables are processed by consolidating with the host command, must coordinate distribution of their portion of the recycling proceeds with the host command.

c. Residents of CG housing, which are collocated with a QRP facility, may contribute non-hazardous recyclable materials to the QRP. Residents of off-base housing may contribute non-hazardous recyclables to a QRP, where approved by the unit's commanding officer, and when not in conflict with local recycling programs.

d. Smaller QRPs are encouraged to pool their recyclable resources with larger QRPs to capitalize on bulk sales and enhance marketability. Most recycling facilities or brokers are interested in bulk product, and offer a better price when the materials are segregated, compacted or bound, and free of contaminants.

e. This policy is not intended to interfere with any existing CG NAF (non-appropriated funds) or GSA building recycling activities.

7. **SALE OF RECYCLABLE MATERIALS.**

a. General. Any sale of recyclable materials by CG units shall be in accordance with reference (d). All materials sold must be recyclable materials from the operations of the QRP unit(s) and/or its CG tenants and be properly surveyed and authorized for disposal. Units may sell recyclable materials only if the sale is expected to result in proceeds or benefits (including cost avoidance) that equal or exceed the cost of operating expenses or disposal.

b. Sales greater than $5,000. Sales with anticipated proceeds exceeding $5,000 for any one sale (combining all the types of recyclable materials sold) will normally be conducted by the GSA Regional Office or through local DRMO. Prior agreement with GSA and DRMO should be made regarding appropriate administrative procedures for CG retention of sales proceeds.

c. Sales less than $5,000. Limited sales can be conducted in accordance with references (d) and (e) by CG units using competitive "sealed bid" methods, provided the expected sale proceeds do not exceed $5,000.

(1) Sealed Bid Sales - The selling unit shall advertise and solicit bids (preferably 3) for the sale of the recyclable materials. Bidders are required to submit sealed bids on items to be sold, after inspecting the material's condition. The selling unit chooses the bid most advantageous to the government and executes a sales contract.

(a) "Term Sales" contracts are sealed bid transactions that cover a period not to exceed one year, and allow for a specified number of recyclable material pickups/deliveries, depending on generation frequency and estimated weight of the material during that period. The advantage to this type of sale contract is that it is a once a year contractual effort, with each pickup not to exceed $5,000 as specified in the terms of the contract.

(2) The sealed bid process is described as follows and can be used for individual sales contracts, or term sales contracts which would not exceed one year.

(a) The sales offering shall be prepared using the Optional Form (OF) 15 poster, "Sale of Government Property" [Figure 1-1]. The OF-15 shall describe the property in commercial terms, fully and accurately (**especially if the property contains hazardous material**), including all defects, using the best information available. **NOTE:** In addition to the OF-15 offering, you may also telephone local recyclers and material purchasers to solicit their participation in the "sealed bid" process. By notifying them directly of the sale, you will increase your recyclables marketability.

(b) The OF-15 should include reference to the "General Sales Terms and Conditions" in Standard Form (SF) 114C, "Special Sealed Bid Conditions" SF-114C-1, and "Special Sealed Bid -Term Conditions" SF-114C-2 [Figures 1-2(a-e)]. The appropriate SF-114C forms should be posted at the sale site or selling office throughout the process.

(c) The OF-15 should require certified payment within 10 days of the bid award and property removal within 15 days of sale, where possible.

(d) Advertise the sale by posting the OF-15 in public buildings, nearby public bulletin boards, or by direct mailings to at least 3 prospective bidders, where possible. If the expected sales proceeds, minus any advertising cost, are estimated to exceed $500, post at least one advertisement in the local newspaper circulated in the area where the property is located.

OPTIONAL FORM 15
DECEMBER 1960
GSA CIRCULAR NO. 226

5815-101

Consisting of .....

.....

.....

By .....

Time and Date .....

at .....

.....

Inspection .....

For Additional Information Contact .....

at .....

Refer to Sale No. .....

FIG 1-1

GPO : 1971 O - 446- 334

DO NOT RETURN WITH BID

SALE OF GOVERNMENT PROPERTY
GENERAL SALE TERMS AND CONDITIONS

INVITATION FOR BIDS NO.

PAGE

1. INSPECTION.

The Bidder is invited, urged, and cautioned to inspect the property prior to submitting a bid. Property will be available for inspection at the places and times specified in the Invitation.

2. CONDITION AND LOCATION OF PROPERTY.

Unless otherwise provided in the Invitation, all property listed therein is offered for sale "as is" and "where is." Unless otherwise provided in the Invitation, the Government makes no warranty, express or implied, as to quantity, kind, character, quality, weight, size, or description of any of the property, or its fitness for any use or purpose. Except as provided in Conditions No. 12 and 14 or other special conditions of the Invitation, no request for adjustment in price or for rescission of the sale will be considered. *This is not a sale by sample.*

3. CONSIDERATION OF BIDS.

(a) Unless otherwise provided in the Invitation, telegraphic or telephonic bids will not be considered.

(b) The Bidder agrees that his bid will not be withdrawn within the period of time specified for the acceptance thereof following the opening of bids (60 calendar days if no period is specified by the Government or by the Bidder, but not less than 10 calendar days in any case) and that during such period his bid will remain firm and irrevocable. The Government reserves the right to reject any or all bids, including bids under which a Bidder would take unfair advantage of the Government or other Bidders, to waive any technical defects in bids, and unless otherwise specified by the Government or by the Bidder, to accept any one item or group of items in the bid, as may be in the best interest of the Government. Unless the Invitation otherwise provides, a bid covering any listed item must be submitted on the basis of the unit specified for that item and must cover the total number of units designated for that item.

4. FORMS OF BID DEPOSITS AND PAYMENTS.

Unless otherwise provided in the Invitation, bid deposits (when required by the Invitation) and payments shall be in U.S. currency or any form of credit instruments other than promissory notes, made payable on demand in U.S. currency: *Provided,* That uncertified personal or business checks must be first party instruments: *Provided further,* That if in connection with any prior sale, the Bidder or Purchaser tendered an uncertified personal or business check which was not paid by the drawee for any reason and the Bidder, Purchaser, and the Drawer of the check were so notified in writing by the selling agency, uncertified personal or business checks will not be an acceptable form of bid deposit or payment. Bids submitted after the effective date specified in the written notification referred to which are not accompanied by the property bid deposit will be summarily rejected.

5. BID PRICE DETERMINATION.

When bids are solicited on a unit price basis, Bidders will insert their unit prices and total prices in the space provided for each item.

(a) In the event the Bidder inserts a total price on the item but fails to insert a unit price, the Government will determine the unit price by dividing the total price by the quantity of the item set out in the Invitation. The unit price so determined shall be used for the purpose of bid evaluation, award, and all phases of contract administration.

(b) When bids are solicited on a "lot" basis, Bidders should submit a single total price in the Total Price Bid column of the bid sheet. Bidders should not make any entry in the Unit Price Bid column. In the event a Bidder submits a total bid price and also a unit bid price which are not identical, the unit bid price will not be considered.

6. PAYMENT.

The Purchaser agrees to pay for property awarded to him in accordance with the prices quoted in his bid. Subject to any adjustment made pursuant to other provisions of this contract, payment of the full purchase price, after applying the total bid deposit, if any, must be made within the time specified in the Invitation and prior to delivery of any of the property. If an adjustment is made requiring additional payment, such payment must be made immediately upon notice of such adjustment. In the absence of any debts owed to the selling agency, where the total sum becoming due to the Government from the Purchaser on a contract awarded to him under the Invitation is less than the total amount deposited with his bid, the difference will be promptly refunded and also, deposits accompanying bids which are not accepted will be promptly refunded to the Bidder. No refund or demands will be made for any amount less than one dollar ($1).

7. TITLE.

Unless otherwise provided in the Invitation, title to the property sold hereunder shall vest in the Purchaser as and when removal is effected. On all motor vehicles and motor-propelled or motor-drawn equipment requiring licensing by a State motor vehicle regulatory agency, a certificate of release, Standard Form 97, will be furnished for each vehicle and piece of equipment unless otherwise provided in the Invitation.

8. DELIVERY, LOADING, AND REMOVAL OF PROPERTY.

(a) Unless otherwise provided in the Invitation, the Purchaser shall be entitled to obtain the property upon full payment therefor with delivery being made only from the exact place where the property is located within the installation. The Purchaser must make all arrangements necessary for packing, removal, and transportation of property. The Government will not act as liaison in any fashion between the Purchaser and carrier, nor will the Government recommend a specific common carrier. Loading will only be performed as set forth in the Invitation, and unless otherwise provided in the Invitation, loading will not be performed on Saturdays, Sundays, Federal holidays, or any day that the installation where the property is located is closed. Where it is provided that the Government will load, the Government will make the initial placement of the property on conveyance(s) furnished by the Purchaser and the initial placement on the Purchaser's conveyance shall be as determined by the Government. Unless otherwise provided in the Invitation, the Government will not block, chock, brace, lash, band, or in any other manner secure the cargo on such conveyance(s) furnished by the Purchaser.

(b) Where it is provided in the Invitation that the Government will not load or that the Purchaser will load, the Purchaser will make all arrangements and perform all work necessary to effect removal of the property. The Purchaser shall remove the property at his expense within the period of time allowed in the Invitation. If the Contracting Officer determines that the failure to remove the property within the period of time originally allowed arose out of causes beyond the control and without the fault or negligence of the Purchaser, such determination shall be reduced to writing, and a reasonable extension of time for removal shall be allowed. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather. If the Purchaser is permitted to remove the property after the expiration of the time originally allowed for removal or any additional time allowed by the Contracting Officer pursuant to this clause, the Government, without limiting any other rights which it may have, may require the Purchaser to pay a reasonable storage charge. The Purchaser shall reimburse the Government for any damage to Government property caused during the removal operations by the Purchaser or his authorized representative.

(c) Items purchased under the Invitation will be released only to the Purchaser or his authorized representative. The authorized representative must furnish authorization from the Purchaser to the Custodian of the property location before any delivery or release will be made. When property is described as being boxed, packed, crated, skidded, or in containers, the Government does not warrant that the property, as packaged, is suitable for shipment.

(d) Segregation, culling, or selection of property for the purpose of effecting partial or increment removals will not be permitted except as specifically authorized and prescribed by the Government.

9. DEFAULT.

If, after the award, the Purchaser breaches the contract by failure to make payment within the time allowed by the contract as required by Condition No. 6, or by failure to remove the property as required by Condition No. 8, then the Government may send the Purchaser a 15-day written notice of default (calculated from date of mailing), and upon Purchaser's failure to cure such default within that period (or such further period as the Contracting Officer may allow) the Purchaser shall lose all right, title, and interest which he might otherwise have acquired in and to such property as to which a default has occurred. The Purchaser agrees that in the event he fails to pay for the property or remove the same within the prescribed period(s) of time, the Government shall be entitled to retain (or collect) as liquidated damages a sum equal to the *greater* of (a) 20 percent of the purchase price of the item(s) as to which the default has occurred, or (b) $25, or the purchase price of such item(s) if the

purchase price is less than $25: *Provided,* That in the event of multiple awards of items under a single Invitation for Bids, the amount to be charged, if the minimum charge provided for in (b) above is applicable, shall be determined by the total purchase price reflected in the award documents: *Provided further,* That the maximum sum which may be recovered by the Government as damages for failure of the Purchaser to pay for and remove the property shall be the formula amount. The Government shall specifically apprise the Purchaser, either in its original notice of default (or in separate subsequent written notice), that upon the expiration of the period prescribed for curing the default, the formula amount will be retained (or collected) by the Government as liquidated damages. However, if the property was sold on a "per lot" basis and the Purchaser removes a portion of the lot but fails to remove the balance, no portion of the purchase price will be refunded. If the Purchaser otherwise fails in the performance of his obligations, the Government may exercise such rights and may pursue such remedies as are provided by law or under the contract.

10. SETOFF OF REFUNDS.

The Bidder or Purchaser agrees that the selling agency may use all or a portion of any bid deposit or refund due him to satisfy, in whole or in part, any debts arising out of prior transactions with the Government.

11. INTEREST.

Notwithstanding any other provision of this contract, unless paid within 30 calendar days from the date of first written demand, all amounts that become payable by the Purchaser to the Government under this contract shall bear simple interest at the rate which has been established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), from the date of first written demand until paid.

12. ADJUSTMENT FOR VARIATION IN QUANTITY OR WEIGHT.

Unless otherwise provided in the Invitation, when property is sold by a unit other than "weight," the Government reserves the right to vary the quantity tendered or delivered to the Purchaser by 10 percent; when the property is sold by "weight," the Government reserves the right to vary the weight tendered or delivered to the Purchaser by 25 percent. The purchase price will be adjusted upward or downward in accordance with the unit price and on the basis of the quantity or weight actually delivered. Unless otherwise specifically provided in the Invitation, no adjustment for such variation will be made where property is sold on a "price for the lot" basis.

13. WEIGHING, SWITCHING, AND SPOTTING.

Where weighing is necessary to determine the exact purchase price, the Purchaser shall arrange for and pay all expenses of weighing the property (unless Government scales are available on the premises). All switching and spotting charges shall be paid by the Purchaser unless such services are performed with Government-owned or Government-operated locomotives on Government property. When removal is by truck, weighing shall be under the supervision of the Government and at its option on: (a) Government scales, (b) certified scales, or (c) other scales acceptable to both parties. When removal is by rail, weighing shall be on railroad track scales, or by other means acceptable to the railroad for freight purposes.

14. RISK OF LOSS.

Unless otherwise provided in the Invitation, the Government will be responsible for the care and protection of the property subsequent to it being available for inspection and prior to its removal. Any loss, damage, or destruction occurring during such period will be adjusted by the Contracting Officer to the extent it was not caused directly or indirectly by the Purchaser, its agents, or employees. At the discretion of the Contracting Officer, the adjustment may consist of rescission. With respect to losses only, in the event the property is offered for sale by the "lot," no adjustment will be authorized under this provision unless the Government is notified of the loss prior to removal from the installation of any portion of the lot with respect to which the loss is claimed.

15. LIMITATION ON GOVERNMENT'S LIABILITY.

Except for reasonable packing, loading, and transportation costs (such packing, loading, and transportation costs being recoverable only when a return of property at Government cost is specifically authorized in writing by the Contracting Officer) the measure of the Government's liability in any case where liability of the Government to the Purchaser has been established shall not exceed refund of such portion of the purchase price as the Government may have received.

16. ORAL STATEMENTS AND MODIFICATIONS.

Any oral statement or representation by any representative of the Government, changing or supplementing the Invitation or contract or any Condition thereof, is unauthorized and shall confer no right upon the Bidder or Purchaser. Further, no interpretation of any provision of the contract, including applicable performance requirements, shall be binding on the Government unless furnished or agreed to, in writing, by the Contracting Officer or his designated representative.

17. COVENANT AGAINST CONTINGENT FEES.

(a) The Purchaser warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee.

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a Purchaser for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by Purchaser and subject to the Purchaser's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

18. OFFICIALS NOT TO BENEFIT.

No member of or Delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit arising from it. However, this clause does not apply to this contract to the extent that this contract is made with a corporation for the corporation's general benefit.

19. CERTIFICATE OF INDEPENDENT PRICE DETERMINATION.

(a) The Purchaser certifies that—

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other Purchaser or competitor relating to (i) those prices, (ii) the intention to submit an offer, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this offer have not been and will not be knowingly disclosed by the Purchaser, directly or indirectly, to any other Purchaser or competitor before bid opening (in the case of a formally advertised solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the Purchaser to include any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory—

(1) Is the person in the Purchaser's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2)(i) Has been authorized, in writing, to act as agent for the principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(ii) As an authorized agent, does certify that the principals have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the Purchaser deletes or modifies subparagraph (a)(2) above, the Purchaser must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

20. ASSIGNMENTS OF CONTRACTS.

Any contract awarded under the Invitation is subject to the provisions of 41 U.S.C. 15 which generally precludes assignment of such contract.

21. CLAIMS LIABILITY.

The Bidder or Purchaser agrees to save the Government harmless from any and all actions, claims, debts, demands, judgments, liabilities, costs and attorneys' fees arising out of, claimed on account of, or in any manner predicated upon loss of or damage to property and injuries, illness or disabilities to or death of any and all persons whatsoever, including

*U.S. GPO: 1989-241-175/90111

FIG 1-2b

members of the general public, or to the property of any legal or political entity including State, local and interstate bodies, in any manner caused by or contributed to by the Bidder or Purchaser, its agents, servants, employees, or any person subject to its control while in, upon or about the sale site and/or the site on which the property is located, or while the property is in the possession of or subject to the control of the Bidder or Purchaser, its agents, servants or employees after the property has been removed from Government control.

22. WITHDRAWAL OF PROPERTY AFTER AWARD.

The Government reserves the right to withdraw for its use any or all of the property covered by this contract, if a bona fide requirement for the property develops or exists prior to actual removal of the property from Government control. In the event of a withdrawal under this condition, the Government shall be liable only for the refund of the contract price of the withdrawn property or such portion of the contract price as it may have received.

23. ELIGIBILITY OF BIDDERS.

The Bidder warrants that he is not: (a) under 18 years of age; (b) an employee of an agency of the Federal Government (either as a civilian or as a member of the Armed Forces of the United States, including the United States Coast Guard, on active duty) prohibited by the regulations of that agency from purchasing property sold hereunder; (c) an agent or immediate member of the household of the employee in (b), above. For breach of this warranty, the Government shall have the right to annul this contract without liability.

24. REQUIREMENTS TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS.

It is the Bidder's responsibility to ascertain and comply with all applicable Federal, State, local, and multi-jurisdictional laws, ordinances, and regulations pertaining to the registration, licensing, handling, possession, transportation, transfer, export, processing, manufacture, sale, use or disposal of the property listed in the Invitation. Purchasers or users of this property are not excused from any violation of such laws or regulations either because the United States is a party to this sale or has had any interest in the property at any time.

25. DEFINITIONS.

As used herein, the following terms shall have the meaning set forth below:

(a) "Telegraphic bid" and "telegraphic notice" include bids and notices by telegram or by mailgram.

(b) "Contracting Officer" means the person accepting the bid in whole or in part on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer; and includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of the representative's authority.

(c) A "small business concern" for the purpose of the sale of Government-owned property is a concern which can qualify under the small business classification criteria referenced in 13 CFR § 121.3-9.

DO NOT RETURN WITH BID

SALE OF GOVERNMENT PROPERTY SPECIAL SEALED BID CONDITIONS	INVITATION FOR BIDS NO.	PAGE

A. BID DEPOSITS.

Where a bid deposit is required by the Invitation, all bids must be accompanied by such deposit in the amount of 20% of the total amount bid which must be in the possession of the Contracting Officer by the time set for bid opening. Bid deposits shall be in the form prescribed in Condition No. 4, General Sale Terms and Conditions (Standard Form 114C). Deposit Bond-Individual Invitation, Sale of Government Personal Property (Standard Form 150) properly executed or, when provided for in the Invitation, reference to an approved Deposit Bond-Annual, Sale of Government Personal Property (Standard Form 151) are acceptable in lieu of the form of deposit authorized in Condition No. 4, General Sale Terms and Conditions (Standard Form 114C). Any bid which is not timely supported by an acceptable bid deposit may be rejected as nonresponsive. Any bid deposit received after bid opening will be considered in the same manner as late bids.

B. MODIFICATION OR WITHDRAWAL OF BIDS.

Bids may be modified or withdrawn by written or telegraphic notice and a bid also may be withdrawn in person by a bidder or his authorized representative, provided his identity is made known and he signs a receipt for the bid. Where a bid deposit is required by the Invitation, any modification which increases the amount of a bid already submitted or which submits bids on items not previously bid upon must provide for an increased bid deposit.

C. CONSIDERATION OF LATE BIDS, MODIFICATIONS, OR WITHDRAWALS.

Bids and modifications or withdrawals thereof, must be in the possession of the Contracting Officer by the time set for bid opening. Any bid, modification, or withdrawal received after the time set for bid opening will not be considered unless received by the Contracting Officer prior to award, was mailed (or telegraphed where authorized) and in fact delivered to the address specified in the Invitation for Bids in sufficient time to have been received by the Contracting Officer by the time and date set forth in the Invitation for the bid opening, and, except for delay attributable to personnel of the sales office or their designees, would have been received on time. In no event will hand-carried bids or withdrawals be considered if delivered to the Contracting Officer after the exact time and date set for bid opening. However, a modification which makes the terms of the otherwise successful bid more favorable to the Government will be considered at any time it is received prior to award and may be accepted.

D. AWARD OF CONTRACT.

The contract will be awarded to that responsible Bidder whose bid conforming to the Invitation will be most advantageous to the Government, price and other factors considered. A written award mailed (or otherwise furnished) to the successful Bidder within the time for acceptance provided in the Invitation shall be deemed to result in a binding contract without any further action by either party.

★U.S.GPO:1987-0-179-063/69058

STANDARD FORM 114C-1
JAN. 1970 EDITION
General Services Administration
FPMR (41 CFR) 101-45.3
114-405

FIG 1-2d

DO NOT RETURN WITH BID

SALE OF GOVERNMENT PROPERTY SPECIAL SEALED BID—TERM CONDITIONS	INVITATION FOR BIDS NO.	PAGE

A. BID DEPOSITS.

All bids must be accompanied by a bid deposit which must be in the possession of the Contracting Officer by the time set for bid opening. Bid deposits shall be in the form prescribed in Condition No. 4, General Sale Terms and Conditions (Standard Form 114C). Unless otherwise provided in the Invitation, a bid deposit of 20% of the estimated total contract price is required on sales not exceeding one year; sales exceeding one year's duration will require a bid deposit computed at 20% of the total price estimated for one year's removal of property. Deposit Bond-Individual Invitation, Sale of Government Personal Property (Standard Form 150), or Deposit Bond-Annual, Sale of Government Personal Property (Standard Form 151) are NOT acceptable as bid deposits. In accordance with Condition No. 6 of the General Sale Terms and Conditions entitled "Payment" (Standard Form 114C), the 20% bid deposit submitted by the Purchaser will be retained by the Government and applied against the last delivery effected under the contract. At the option of the successful bidder, a Performance Bond (Standard Form 25) may be substituted by the successful bidder for his bid deposit at any time after notification of award of the contract. Any bid which is not timely supported by a proper bid deposit may be rejected as non-responsive. Any bid deposit received after bid opening will be considered in the same manner as late bids.

B. MODIFICATION OR WITHDRAWAL OF BIDS.

Bids may be modified or withdrawn by written or telegraphic notice and a bid also may be withdrawn in person by a bidder or his authorized representative, provided his identity is made known and he signs a receipt for the bid. Any bid modification which increases the amount of a bid already submitted or which submits bids on items not previously bid on must provide for an increased bid deposit.

C. CONSIDERATION OF LATE BIDS, MODIFICATIONS, OR WITHDRAWALS.

Bids and modifications or withdrawals thereof, must be in the possession of the Contracting Officer by the time set for bid opening. Any bid, modification, or withdrawal received after the time set for bid opening will not be considered unless received by the Contracting Officer prior to award, was mailed (or telegraphed where authorized) and in fact delivered to the address specified in the Invitation for Bids in sufficient time to have been received by the Contracting Officer by the time and date set forth in the Invitation for the bid opening, and, except for delay attributable to personnel of the sales office or their designees, would have been received on time. In no event will hand-carried bids or withdrawals be considered if delivered to the Contracting Officer after the exact time and date set for bid opening. However, a modification which makes the terms of the otherwise sucessful bid more favorable to the Government will be considered at any time it is received prior to award and may be accepted.

D. ADJUSTMENT FOR VARIATION IN QUANTITY OR WEIGHT.

Condition No. 12, General Sale Terms and Conditions (Standard Form 114C) is modified to authorize the Government to vary the quantity or weight delivered by 50% from the quantity or weight listed in the Invitation.

E. TERMINATION.

Unless otherwise provided in the Invitation, this contract may be terminated by either party without cost to the Government upon 30 days' written notice to the other, to be calculated from the date the notice is mailed.

F. FAILURE TO PERFORM.

In the event the Purchaser fails to make payment as required by Condition No. 6, General Sale Terms and Conditions (Standard Form 114C), or fails to remove the property as required by Condition No. 8, General Sale Terms and Conditions, and fails to cure the default within the time allowed by the notice given in accordance with Condition No. 9, General Sale Terms and Conditions, the Purchaser will lose all right, title and interest which he might otherwise have acquired in and to the property as to which the default occurred and said Condition No. 9, is modified to provide that the Government shall be entitled to retain or collect as liquidated damages a sum equal to 20% of the contract price for the quantity estimated to be generated within a 30-day period.

G. AWARD OF CONTRACT.

The contract will be awarded to that responsible Bidder whose bid conforming to the Invitation will be most advantageous to the Government, price and other factors considered. A written award mailed (or otherwise furnished) to the successful Bidder within the time for acceptance provided in the Invitation shall be deemed to result in a binding contract without any further action by either party.

GPO : 1970 OF—378-460 (37-K)

STANDARD FORM 114C-2
JAN. 1970 EDITION
General Services Administration
FPMR (41 CFR) 101-45.3
114-406

FIG 1-2e

SALES SLIP
SALE OF GOVERNMENT PERSONAL PROPERTY

NO. 1049971

SELLING AGENCY

DATE OF SALE

BUYER'S NAME AND ADDRESS

SALE NO

REGISTRATION NO. *(If any)*

ALL PROPERTY LISTED BELOW MUST BE PAID FOR IN FULL AND REMOVED BY ▶

DATE

ITEM OR LOT NO.	DESCRIPTION	PRICE

REIMBURSABLE ACCOUNT NO *(If any)*

TOTAL AMOUNT ▶

PAYMENT RECEIVED

FOR GOVT — BY *(Signature)*

PAID ON DATE OF SALE ▶

FOR GOVT — BY *(Signature and date)*

BALANCE DUE ▶

NOTICE TO BUYER

This copy is to be retained by the buyer. When full payment is made, this copy will be so marked. An additional copy will be issued to the property custodian authorizing release of the property. Sign the release copy when the property is received. Please note the deadline date for final payment and removal of property indicated above. This sales slip is accepted subject to the General Sale Terms and Conditions of SF 114–C, a copy of which is on file and will be made available upon request.

1. BUYER'S COPY 5016-101 OPTIONAL FORM 16 DECEMBER 1960 *(GSA Circular No. 226)*

FIG 1-3

SALES SLIP
SALE OF GOVERNMENT PERSONAL PROPERTY

NO. 1049971

SELLING AGENCY

DATE OF SALE

BUYER'S NAME AND ADDRESS

SALE NO

REGISTRATION NO. *(If any)*

ALL PROPERTY LISTED BELOW MUST BE PAID FOR IN FULL AND REMOVED BY ▶

DATE

ITEM OR LOT NO.	DESCRIPTION	PRICE

REIMBURSABLE ACCOUNT NO *(If any)*

TOTAL AMOUNT ▶

PAYMENT RECEIVED

FOR GOVT — BY *(Signature)*

PAID ON DATE OF SALE ▶

FOR GOVT. — BY *(Signature and date)*

BALANCE DUE ▶

I ACKNOWLEDGE RECEIPT OF THE PROPERTY DESCRIBED ABOVE.

(Signature of Buyer or Authorized Representative)

(Date)

2. OPTIONAL FORM 16 DECEMBER 1960 *(GSA Circular No. 226)*

(e) Inspection Periods. An inspection period (1 to 5 days) should be included on the OF-15.

(f) Establish upset prices (minimal accepted bid) prior to sale. Normally, bids below the upset price will not be considered unless justified. Upset prices are confidential and must not be made known to prospective bidders.

(g) To determine high bidders, prepare a complete abstract to include all bidders names and bid prices by item number. The following dated and signed statement shall appear on all bid abstracts:

"I certify that I have personally opened and read all bids received, verified all entries on this abstract from those bids and find it correct."

(h) Prepare a sales contract, OF-16, "Sale of Government Personal Property," [Figure 1-3] for each line item or lot sold. Use this form as the notice of award (invoice), check receipt, permanent account record, and property release document. Successful bidders may be given notice of award via telephone or mail.

(i) Proceeds from sales shall be managed IAW paragraph 8 below, Management of Proceeds from Recycled Materials.

(j) Results of sale. Forward the results of the sale to the appropriate GSA Regional Sales Office within 10 working days.

7. d. Sale of Property Containing Hazardous Materials. There are risks inherent in selling hazardous materials (HAZMAT) to recyclers. For example, the CG is currently paying to clean-up and restore sites formerly run by recyclers who did not follow required procedures or good business practices. Prior to contracting for HAZMAT recycling, unit personnel should contact their servicing CEU and/or MLC to determine what qualifications a HAZMAT recycler must meet in your state/county. Appropriate procedures should be taken in accordance with state and federal regulations to ensure proper transportation and packaging of the HAZMAT.

In addition, all contracts that include the sale of property containing hazardous materials shall include:

The purchaser agrees:

(a) That the material purchased from Coast Guard will be properly transported, recycled, reused or disposed of in accordance with all applicable laws and regulations;

(b) To notify the Coast Guard if the materials are sold or transferred to another agent/brokerage company; and

(c) To allow Coast Guard officials to inspect their recycling (and/or disposal) operations.

7. e. Donating to Local, Municipal, or Other Recycling Programs: Where collected materials cannot be sold to a recycling contractor/broker, a CG unit should investigate a method to donate the recyclable material to a local community, nearest DRMO, or GSA recycling program, IAW reference (d). This practice will result in increased recyclable stock for the local community, as well as a disposal savings or cost avoidance to the CG.

8. **MANAGEMENT OF PROCEEDS FROM RECYCLED MATERIALS.**

a. General. The proper management of the proceeds of a QRP is the responsibility of the unit. While FINCEN may handle the accounting, including the receipts and disbursements of the recycling proceeds, it is done at the direction of the unit's commanding officer/officer-in-charge. The unit must provide explicit instructions for the distribution of any recycling proceeds.

b. Receipts. Proceeds* from the sale of recyclable material of a QRP shall be remitted to the following FINCEN lockbox, using this address,

U.S. COAST GUARD-OTHERS
P. O. BOX 7777-W8595
PHILADELPHIA, PA 19175-8595,

with a transmittal letter enclosure (5) and public voucher enclosure. (6) ***NOTE:** If in the unusual event that the entire proceeds benefit your Morale Fund, the check should be deposited locally into the unit Morale Account. Do not send this check to the Lockbox, but maintain records of all deposits for reporting purposes.

c. Methods of Deposits. The lockbox will accept certified or cashier's checks and money orders only, made payable to the "US COAST GUARD," and delivered via regular mail **Note:** Cash should be converted to money orders. (no overnight, express or courier deliveries).

9. **DISTRIBUTION OF PROCEEDS.**

a. Proceeds from the sale of recyclable materials shall first be credited to the unit's OE/AFC account in amounts sufficient to cover the operating costs of the recycling program as defined in paragraph 4.e. If, after funds are credited to cover the operating costs, a balance remains available, not more than 50 percent of that balance **may** be credited to the unit's OE/AFC account and used for pollution prevention, energy conservation and/or occupational safety and health activities. The remaining balance shall be credited to the unit's non-appropriated morale, welfare and recreation (MWR) account, as allocated in enclosure (5).

b. Within the guidance provided in paragraph 9.a., the unit's commanding officer/officer-in-charge will determine the amount of the proceeds to be transferred to the authorized accounts or projects.

c. At the end of the fiscal year, that portion of the balance available to the unit exceeding $200,000, if any, shall be deposited in the general fund (Miscellaneous Receipts) of the Treasury.

10. **POINTS OF CONTACT.** For additional information or guidance, contact the following program offices:

Financial Management	- COMDT (G-CFM-1),	202-267-1108
Property Management	- COMDT (G-CFM-3),	202-267-0654
Recycling Programs/Policy	- COMDT (G-ECV-1B),	202-267-1941
FINCEN Procedures -	- FINCEN (OG),	804-523-6764

11. **REPORTS/FORMS: RECORDKEEPING AND REPORTING REQUIREMENTS.**

a. All CG recycling activities (both QRP and non-QRP) shall maintain records of recycled materials collected, cost savings (cost avoidance), and revenues received (QRP only) from the QRP sales. This information includes documentation of all sales notices, bids, contracts, donations, and disposition of proceeds. Report data will be used to measure the CG's recycling program progress, demonstrate financial accountability and develop the DOT report to Congress.

b. Beginning FY95, units must submit an annual report to their respective District Office, NLT 30 June of each year, detailing the unit's recycling progress. Headquarters units shall submit reports to directly to COMDT (G-ECV-1). Enclosure (7) contains a report form (RCN 16477-01) based on current reporting needs, i.e. reporting period is 1 July to 30 June.

c. Since non-QRPs do not receive proceeds from sales, financial records are not required. However, non-QRPs shall maintain and report estimated weights of materials recycled, and the savings or cost avoidance (e.g. reduced municipal waste disposal cost or tipping fees) using form found in enclosure (7).

d. Each District shall designate a recycling coordinator who will compile their District unit recycling reports and forward a consolidated report, with the District Recycling Coordinator's name and telephone number, to COMDT (G-ECV-1) NLT 15 July each year. COMDT (G-ECV) will prepare the annual CG report required by DOT, EPA and Congress.

12. **FORMS AVAILABILITY**. Form CG-5579, Public Voucher for Recycling Refunds, Form CG-5559A, QRP and Non QRP Annual Report Form, Optional Form OF-15, Sale of Government Property, and Stanat Form SF-114C General Sales Terms and Conitions series may be locally produced.

R. E. Kramek

ROBERT E. KRAMEK
Chief of Staff

Encl: (1) Sample: Unit Instruction for Recycling Program
(2) Sample: Summary of Sale (3 Part Form)
(3) Sample: Bill of Sale
(4) Sample: Record (Monthly or Quarterly)
(5) Sample: QRP Transmittal Letter
(6) Public Voucher for Recycling Refunds (CG-5579)
(7) QRP and Non-QRP Annual Report Form (CG-5579A)

SAMPLE

ENCL. (1) TO COMDTINST 16477.5

Commanding Officer ( )
1 Coast Guard Boulevard
Landfill, PU 12345-6789
Telephone: (987) 654-3210

UNIT INST XXXXX

QUALIFIED RECYCLING PROGRAM (QRP) UNIT INSTRUCTION XXXXX

Subj: UNIT QUALIFIED RECYCLING PROGRAM (QRP)

Ref: (a) Coast Guard Authorization Act of 1992 (P.L. 102-587)
(b) COMDTINST 16477.5 - Coast Guard Qualified Recycling Program (QRP) Policy

1. PURPOSE. The purpose of this instruction is to establish procedures to ensure the sale of recyclable materials to commercial businesses for recycling are conducted in accordance with government regulations and with appropriate internal controls.

2. DIRECTIVES AFFECTED. None.

3. DISCUSSION. Reference (a) authorized Coast Guard (CG) units to retain the proceeds from sales of recyclable materials to be applied to specified unit projects and programs. The CG "Qualified Recycling Program," (QRP) allows the Recycling Unit to sell recyclable material directly to commercial businesses. The funds collected must first be used to cover the operating expenses of the recycling program. Not more than 50% of the balance remaining may be used for pollution prevention, energy conservation, or occupational health and safety activities, not to exceed 50% of the cost of a minor AC&I project. The balance remaining may be used for the unit's Morale, Welfare and Recreation program.

4. POLICIES.

a. All sales of recyclable material will be conducted in accordance with references (a) and (b) to ensure full and open competition. Sale transactions will be fully documented to ensure that compliance with references (a) and (b) are verifiable.

b. All sales will be recorded and tracked to ensure proper collection and deposit of the funds owed the government, and to document waste stream recoveries.

SAMPLE

4. c. Proceeds from the sale of materials will be remitted to the FINCEN's lockbox for credit to the unit's OE/AFC account for payment of QRP operational expenses, used to support pollution prevention, energy conservation, health and safety programs, or refunded to the unit's Morale, Welfare, and Recreation, (MWR) account after QRP operating expenses are paid IAW references (a) and (b).

d. All recyclable materials sold must be legitimate waste from the operations of the unit and its tenants or materials properly surveyed and authorized for disposal.

5. PROCEDURES:

a. Recycling Manager/Coordinator shall:

(1) Accumulate recyclable materials.

(2) Complete the OF-15, Sale of Government Property, to initiate a sale of the items specified. Copies of surveys or other required disposal authorization must be filed with the unit's copy of the OF-15.

(3) Assign personnel to the duties of Government Sales Clerk, and, if necessary, Accounts Receivable Clerk. These duties are never to be assigned to the same person.

(4) Conduct an annual audit each May of the sale files to ensure compliance with documentation and competitive requirements of this instruction. The audit will include a review of all sale files and a memo report to the Commanding Officer.

(5) If cash transactions have occurred, arrange for a Commissioned Officer to audit the cash receipts and accounts receivable records semiannually, in March and September, to verify that all cash has been promptly collected, converted to money order, and properly remitted to the FINCEN lockbox, IAW reference (b). A memo report shall be issued to the Commanding Officer.

(6) Submit annual report summarizing quantity (in lbs.) of recyclable materials collected, proceeds received, and cost savings realized to your District Recycling Coordinator IAW reference (b). [See enclosure (7) of reference (b) for sample form.]

5. b. The individual assigned to conduct the sale shall:

(1) Establish and maintain a list of qualified recyclers and brokers. Update this list as new companies enter the business and history is developed on buyers' service quality and payment records. Units should coordinate with CEU/MLCs to ensure that the HAZMAT recyclers meet federal/state qualifications.

(2) Obtain a minimum of 3 quotes (where possible) from independent buyers on sales of material. No buyer shall be awarded a sale if they have an outstanding balance in accounts receivable.

(3) Create a file to document each sale. The file shall be composed of:

- Optional Form 15, Sale of Government Property, Standard Form 114C, and copies of any announcements.

- Standard Form 114C, Sale of Government Property-General Sales Terms and Conditions.

- Optional Form 16, Sale of Government Personal Property.

- Surveys and documentation to support the status of the material.

c. The individual assigned to receipt for funds shall:

(1) Add the following information to the file:

- Copy of the buyer's check and scale weight certificates.

- Dunning letters and logs of all phone conversations to make collections.

- Copy of the transmittal letter to FINCEN lockbox for the check/cash received.

- Copy of the FINCEN's Public Voucher refunding proceeds to the MWR account.

(2) Maintain files to manage the accounts receivable and ensure collection of sale proceeds. The file shall be composed of:

- A consolidated list of all sales for the year clearly indicating those which are outstanding, those which have been paid, and those which have been receipted for by MWR.

5. b. The Morale Officer shall:

(1) Provide a receipt to the Recycling Manager/ Coordinator for all funds remitted to MWR.

(2) Deposit all receipts in the unit MWR bank account.

6. ACTION. Recycling Manager/Coordinator, Morale Officer and any unit's member involved in the QRP shall ensure compliance with this instruction.

SAMPLE

RECYCLING UNIT

SUMMARY OF SALE OF RECYCLABLE MATERIALS (PART I)

RECYCLING MANAGER

I. Specify items and disposal authority. Estimate value of sale.

TYPE MATERIAL/ITEM	ESTIMATED LBS.	ESTIMATED VALUE
1._____	_____lbs	$_____
2._____	_____lbs	$_____
3._____	_____lbs	$_____
4._____	_____lbs	$_____
5._____	_____lbs	$_____
6._____	_____lbs	$_____
Total:	_____lbs	$_____

DISPOSAL AUTHORITY: (Circle One)

(Attach copy of surveys/documents)

ITEM

1. Industrial Scrap Survey Other:_____
2. Industrial Scrap Survey Other:_____
3. Industrial Scrap Survey Other:_____
4. Industrial Scrap Survey Other:_____
5. Industrial Scrap Survey Other:_____
6. Industrial Scrap Survey Other:_____

SAMPLE FORM

Encl. (2) to COMDTINST 16477.5

RECYCLING UNIT

SUMMARY OF SALE OF RECYCLABLE MATERIALS (PART II)

COMPTROLLER DIVISION - GOVERNMENT SALES CLERK

II. Conduct Sale:

DATE_____ LESS THAN $5000 OBTAIN THREE (3) BIDS, WHERE POSSIBLE

GREATER THAN $5000, SELL THROUGH GSA or DRMO

SOLICIT BIDS:

		PRICE/LB		
COMPANY NAME	ITEM:	1	2	3
_____		____	_____	_____
_____		____	_____	_____
_____		____	_____	_____

Awarded to:_____

Buyer has no unpaid items in accounts receivable.

Initials of Accounts Receivable Clerk: _____

BASIS FOR FAIR AND REASONABLE PRICE: (if less than 3 bids)

____ Experience with prior sale - Date:_____

____ Compare with published prices - Source:_____

____ Other: _____

	Date Filed
Bill of Sale	_____
Buyer sale Documents	_____

SAMPLE FORM

RECYCLING UNIT

SUMMARY OF SALE OF RECYCLABLE MATERIALS (PART III)

COMPTROLLER DIVISION - ACCOUNTS RECEIVABLE CLERK

III. Make accounting entries and manage collections.

DATE

ENTER IN ACCTS

RECEIVABLE FILE: _____

POSTED IN LUFS: _____

DUNNING LETTERS

OR CALLS: _____ Person contacted: _____

_____ Person contacted: _____

_____ Person contacted: _____

CHECK/CASH REC'D _____ Amt: _____

SCALE TICKETS: _____

CHECK MAILED

TO FINCEN LOCKBOX: _____

PES REPORT: _____

SAMPLE FORM

Encl. (3) to COMDTINST 16477.5

U.S. COAST GUARD
RECYCLING UNIT

BILL OF SALE FOR RECYCLABLE MATERIALS

Sale Number: _____

ITEM	QTY	UNIT	$/UNIT	TOTAL
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
			TOTAL SALE	_____

Terms:

Payment is due 10 days from date of sale. No discounts apply.

Scale tickets must be submitted with remittance. Above prices include pick up and weighing.

The seller will provide labor and equipment to place the material on the buyer's vehicle. The buyer is responsible for directing the loading and is solely responsible for the material and all damages after it is loaded.

Authorized Seller: _____ Date:_____
Contracting Officer, U.S. Coast Guard
Agreement with above stated terms and conditions:
Buyer's Signature: _____ Date: _____
Printed: _____
Company:_____Phone:_____
Address:_____
_____

Remit payment to: Your Unit Address

(e.g.)

COMMANDING OFFICER (XXXXX)
123 COAST GUARD BLVD
LANDFILL, PU 12345-6789

Reminders:

1. Enclose scale tickets with your payment.
2. Please write the Sale Number on your check or enclose a copy of this Bill of Sale.

SAMPLE FORM

QUALIFIED RECYCLING UNIT

MONTHLY OR QUARTERLY RECORD

	TYPE MATERIAL/ITEM	TOTAL LBS.	SALE VALUE
1.	_____	_____lbs	$_____
2.	_____	_____lbs	$_____
3.	_____	_____lbs	$_____
4.	_____	_____lbs	$_____
5.	_____	_____lbs	$_____
6.	_____	_____lbs	$_____
7.	_____	_____lbs	$_____

UNIT RECYCLING OPERATIONAL EXPENSES (Direct Cost)

Storage $ _____

Equipment $ _____

Transportation $ _____

Energy $ _____

Personnel $ _____

TOTAL $ _____

SAVINGS or COST AVOIDANCE $ _____
(i.e. Reduced waste disposal cost)

SAMPLE FORM

Encl. (5) to COMDTINST 16477.5

QUALIFIED RECYCLING PROGRAM
TRANSMITTAL LETTER #_____
(OPFAC-SER-FY)

1. $_____ was collected from _____ for Quality Recycling Program (QRP). (Unit Name)

2. Please fill in the appropriate items for disposition:

a. ___ $_____ Credit this amount to the unit's operating expense (OE/AFC) account to cover the operating costs of the recycling program using Standard Dafis Document Number assigned by unit. Document type is 33 FY _____.

2/_/___/___/__/_/__/_____/____

b.___ $_____ Credit this amount to the unit's operating expense (OE/AFC) account to fund pollution prevention, energy conservation or health and safety projects using Standard Dafis Document Number assigned by unit. (This amount must be less that 50% of balance remaining after (a.) above. Document type is 33 FY _____.

2/_/___/___/__/_/__/_____/____

c. ___ $_____ Refund this amount to the unit Morale Fund. Attached is a public voucher for refund.

d. ___ $_____ Deposit this amount in Miscellaneous Receipt Account., (Balance in excess of $200,000 at end of Fiscal Year)

NOTE: If in the unusual event that the entire proceeds benefit your Morale Fund, please deposit check locally into your Morale Account. Do not send check to Finance Center or Philadelphia Lockbox for disposition, but be sure to maintain a record of the deposit for reporting purposes.

3. Unit point of contact on disposition of proceeds is _____ at (___) ___-____.

_____
By Direction

Encl:(1) Checks listed below
(2) Public Voucher for Refund

CHECK #	VENDOR NAME	CHECK AMOUNT

*U.S. G.P.O.:1994-301-717:80563

SAMPLE FORM

Encl (6) to COMDTINST 16477.5

Voucher No._____
Schedule No._____

PUBLIC VOUCHER
FOR "QRP" RECYCLING REFUNDS

U.S.C.G. *_____

Location: *_____

_____

Paid by

Appropriation or Fund *_____

NAME/ADDRESS TO FORWARD REFUND

To:

Address:

Deposit received from the above-named depositor on *_____, 19___
for *_____ has been applied as
herein stated and the balance indicated is returned herewith:

Amount of deposit..... $ _____

Credited to QRP unit OE/AFC Account..... $ _____

Balance authorized to be refunded to MWR.... $ _____

* ***TO BE COMPLETED BY FINCEN***

(*Sign original only*) _____
(Authorizing Signature)

Title _____

Refund by {Check No. _____
{
{Cash, $ _____
{
{Other method, $ _____
(Describe)

QRP AND NON-QRP ANNUAL REPORT FORM

RECYCLING MANAGER OR COORDINATOR

DIRECTION: Please complete the following form and return to COMDT (G-ECV-1) via District NLT 30 JUN.

QRP _____ **Non-QRP** _____ **(Check One)**

UNIT NAME _____ **OPFAC** _____

QRP POC _____ **TELE#** _____

CIRCLE ONE: Your unit is located in: CG Owned and Operated facilities, CG leased facility , GSA owned and operated, GSA leased space.

	TYPE MATERIAL/ITEM	TOTAL LBS.	SALE VALUE
1.	_____	_____lbs	$_____
2.	_____	_____lbs	$_____
3.	_____	_____lbs	$_____
4.	_____	_____lbs	$_____
5.	_____	_____lbs	$_____
6.	_____	_____lbs	$_____
7.	_____	_____lbs	$_____
8.	_____	_____lbs	$_____
9.	_____	_____lbs	$_____
10.	_____	_____lbs	$_____

TOTAL MATERIALS RECYCLED _____ **LBS.**

TOTAL ANNUAL INCOME $_____

ANNUAL RECYCLING OPERATIONAL EXPENSES (OE/AFC) $_____

ANNUAL UNIT MWR* INCOME $_____

* Includes proceeds from both FINCEN (Voucher) and direct Morale Fund deposit.

TOTAL ANNUAL COST SAVINGS/AVOIDANCE (see Para. 4.f.) $_____

U.S. Department
of Transportation

**United States
Coast Guard**

2100 Second St., S.W.
Washington, D.C. 20593

APPENDIX G

EXECUTIVE ORDERS 12856 & 12873

Vol. 58 No. 150 Friday, August 6, 1993 p 41981 (Exec Order)

Title 3-
The President

Executive Order 12856 of August 3, 1993

Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements

WHEREAS, the Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001-11050) (EPCRA) established programs to provide the public with important information on the hazardous and toxic chemicals in their communities, and established emergency planning and notification requirements to protect the public in the event of a release of extremely hazardous substances;

WHEREAS, the Federal Government should be a good neighbor to local communities by becoming a leader in providing information to the public concerning toxic and hazardous chemicals and extremely hazardous substances at Federal facilities, and in planning for and preventing harm to the public through the planned or unplanned releases of chemicals;

WHEREAS, the Pollution Prevention Act of 1990 (42 U.S.C. 13101-13109) (PPA) established that it is the national policy of the United States that, whenever feasible, pollution should be prevented or reduced at the source; that pollution that cannot be prevented should be recycled in an environmentally safe manner; that pollution that cannot be prevented or recycled should be treated in an environmentally safe manner; and that disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner;

WHEREAS, the PPA required the Administrator of the Environmental Protection Agency (EPA) to promote source reduction practices in other agencies;

WHEREAS, the Federal Government should become a leader in the

field of pollution prevention through the management of its facilities, its acquisition practices, and in supporting the development of innovative pollution prevention programs and technologies;

WHEREAS, the environmental, energy, and economic benefits of energy and water use reductions are very significant; the scope of innovative pollution prevention programs must be broad to adequately address the highest-risk environmental problems and to take full advantage of technological opportunities in sectors other than industrial manufacturing; the Energy Policy Act of 1992 (Public Law 102-486 of October 24, 1992) requires the Secretary of Energy to work with other Federal agencies to significantly reduce the use of energy and reduce the related environmental impacts by promoting use of energy efficiency and renewable energy technologies; and

WHEREAS, as the largest single consumer in the Nation, the Federal Government has the opportunity to realize significant economic as well as environmental benefits of pollution prevention;

AND IN ORDER TO:

Ensure that all Federal agencies conduct their facility management and acquisition activities so that, to the maximum extent practicable, the quantity of toxic chemicals entering any wastestream, including any releases to the environment, is reduced as expeditiously as possible through source reduction; that waste that is generated is recycled to the maximum extent practicable; and that any wastes remaining are stored, treated or disposed of in a manner protective of public health and the environment; Require Federal agencies to report in a public manner toxic chemicals entering any wastestream from their facilities, including any releases to the environment, and to improve local emergency planning, response, and accident notification; and help encourage markets for clean technologies and safe alternatives to extremely hazardous substances or toxic chemicals through revisions to specifications and standards, the acquisition and procurement process, and the testing of innovative pollution prevention technologies at Federal facilities or in acquisitions;

NOW THEREFORE, by the authority vested in me as President by the Constitution and the laws of the United States of America,

including the EPCRA, the PPA, and section 301 of title 5, United States Code, it is hereby ordered as follows:

Section 1. Applicability.

1-101. As delineated below, the head of each Federal agency is responsible for ensuring that all necessary actions are taken for the prevention of pollution with respect to that agency's activities and facilities, and for ensuring that agency's compliance with pollution prevention and emergency planning and community right-to-know provisions established pursuant to all implementing regulations issued pursuant to EPCRA and PPA.

1-102. Except as otherwise noted, this order is applicable to all Federal agencies that either own or operate a ``facility'' as that term is defined in section 329(4) of EPCRA, if such facility meets the threshold requirements set forth in EPCRA for compliance as modified by section 3-304(b) of this order (``covered facilities''). Except as provided in section 1-103 and section 1-104 below, each Federal agency must apply all of the provisions of this order to each of its covered facilities, including those facilities which are subject, independent of this order, to the provisions of EPCRA and PPA (e.g., certain Government-owned/contractor-operated facilities (GOCO's), for chemicals meeting EPCRA thresholds). This order does not apply to Federal agency facilities outside the customs territory of the United States, such as United States diplomatic and consular missions abroad.

1-103. Nothing in this order alters the obligations which GOCO's and Government corporation facilities have under EPCRA and PPA independent of this order or subjects such facilities to EPCRA or PPA if they are otherwise excluded. However, consistent with section 1-104 below, each Federal agency shall include the releases and transfers from all such facilities when meeting all of the Federal agency's responsibilities under this order.

1-104. To facilitate compliance with this order, each Federal agency shall provide, in all future contracts between the agency and its relevant contractors, for the contractor to supply to the Federal agency all information the Federal agency deems necessary for it to comply with this order. In addition, to the extent that compliance with this order is made more difficult due to lack of information from existing contractors, Federal agencies shall take practical steps to obtain the information

needed to comply with this order from such contractors.

Sec. 2-2. Definitions.

2-201. All definitions found in EPCRA and PPA and implementing regulations are incorporated in this order by reference, with the following exception: for the purposes of this order, the term ``person'', as defined in section 329(7) of EPCRA, also includes Federal agencies.

2-202. Federal agency means an Executive agency, as defined in 5 U.S.C. 105. For the purpose of this order, military departments, as defined in 5 U.S.C. 102, are covered under the auspices of the Department of Defense.

2-203. Pollution Prevention means ``source reduction,'' as defined in the PPA, and other practices that reduce or eliminate the creation of pollutants through: (a) increased efficiency in the use of raw materials, energy, water, or other resources; or (b) protection of natural resources by conservation.

2-204. GOCO means a Government-owned/contractor-operated facility which is owned by the Federal Government but all or portions of which are operated by private contractors.

2-205. Administrator means the Administrator of the EPA.

2-206. Toxic Chemical means a substance on the list described in section 313(c) of EPCRA.

2-207. Toxic Pollutants. For the purposes of section 3-302(a) of this order, the term ``toxic pollutants'' shall include, but is not necessarily limited to, those chemicals at a Federal facility subject to the provisions of section 313 of EPCRA as of December 1, 1993. Federal agencies also may choose to include releases and transfers of other chemicals, such as ``extremely hazardous chemicals'' as defined in section 329(3) of EPCRA, hazardous wastes as defined under the Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901-6986) (RCRA), or hazardous air pollutants under the Clean Air Act Amendments (42 U.S.C. 7403-7626); however, for the purposes of establishing the agency's baseline under 3-302(c), such ``other chemicals'' are in addition to (not instead of) the section 313 chemicals. The term ``toxic pollutants'' does not include hazardous waste subject to remedial action generated prior to the date of this order.

Sec. 3-3. Implementation.

3-301. Federal Agency Strategy. Within 12 months of the date of this order, the head of each Federal agency must develop a written pollution prevention strategy to achieve the requirements specified in sections 3-302 through 3-305 of this order for that agency. A copy thereof shall be provided to the Administrator. Federal agencies are encouraged to involve the public in developing the required strategies under this order and in monitoring their subsequent progress in meeting the requirements of this order. The strategy shall include, but shall not be limited to, the following elements:

(a) A pollution prevention policy statement, developed by each Federal agency, designating principal responsibilities for development, implementation, and evaluation of the strategy. The statement shall reflect the Federal agency's commitment to incorporate pollution prevention through source reduction in facility management and acquisition, and it shall identify an individual responsible for coordinating the Federal agency's efforts in this area.

(b) A commitment to utilize pollution prevention through source reduction, where practicable, as the primary means of achieving and maintaining compliance with all applicable Federal, State, and local environmental requirements.

3-302. Toxic Chemical Reduction Goals. (a) The head of each Federal agency subject to this order shall ensure that the agency develops voluntary goals to reduce the agency's total releases of toxic chemicals to the environment and off-site transfers of such toxic chemicals for treatment and disposal from acilities covered by this order by 50 percent by December 31, 1999. To the maximum extent practicable, such reductions shall be achieved by implementation of source reduction practices.

(b) The baseline for measuring reductions for purposes of achieving the 50 percent reduction goal for each Federal agency shall be the first year in which releases of toxic chemicals to the environment and off-site transfers of such chemicals for treatment and disposal are publicly reported. The baseline amount as to which the 50 percent reduction goal applies shall

be the aggregate amount of toxic chemicals reported in the baseline year for all of that Federal agency's facilities meeting the threshold applicability requirements set forth in section 1-102 of this order. In no event shall the baseline be later than the 1994 reporting year.

(c) Alternatively, a Federal agency may choose to achieve a 50 percent reduction goal for toxic pollutants. In such event, the Federal agency shall delineate the scope of its reduction program in the written pollution prevention strategy that is required by section 3-301 of this order. The baseline for measuring reductions for purposes of achieving the 50 percent reduction requirement for each Federal agency shall be the first year in which releases of toxic pollutants to the environment and off-site transfers of such chemicals for treatment and disposal are publicly reported for each of that Federal agency's facilities encompassed by section 3-301. In no event shall the baseline year be later than the 1994 reporting year. The baseline amount as to which the 50 percent reduction goal applies shall be the aggregate amount of toxic pollutants reported by the agency in the baseline year. For any toxic pollutants included by the agency in determining its baseline under this section, in addition to toxic chemicals under EPCRA, the agency shall report on such toxic pollutants annually under the provisions of section 3-304 of this order, if practicable, or through an agency report that is made available to the public.

(d) The head of each Federal agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995, which sets forth the facility's contribution to the goal established in section 3-302(a) of this order. Federal agencies shall conduct assessments of their facilities as necessary to ensure development of such plans and of the facilities' pollution prevention programs.

3-303. Acquisition and Procurement Goals. (a) Each Federal agency shall establish a plan and goals for eliminating or reducing the unnecessary acquisition by that agency of products containing extremely hazardous substances or toxic chemicals. Similarly, each Federal agency shall establish a plan and goal for voluntarily reducing its own manufacturing, processing, and use of extremely hazardous substances and toxic chemicals. Priorities shall be developed by Federal agencies, in coordination with EPA, for implementing this section.

(b) Within 24 months of the date of this order, the Department of Defense (DOD) and the General Services Administration (GSA), and other agencies, as appropriate, shall review their agency's standardized documents, including specifications and standards, and identify opportunities to eliminate or reduce the use by their agency of extremely hazardous substances and toxic chemicals, consistent with the safety and reliability requirements of their agency mission. The EPA shall assist agencies in meeting the requirements of this section, including identifying substitutes and setting priorities for these reviews. By 1999, DOD, GSA and other affected agencies shall make all appropriate revisions to these specifications and standards.

(c) Any revisions to the Federal Acquisition Regulation (FAR) necessary to implement this order shall be made within 24 months of the date of this order.

(d) Federal agencies are encouraged to develop and test innovative pollution prevention technologies at their facilities in order to encourage the development of strong markets for such technologies. Partnerships should be encouraged between industry, Federal agencies, Government laboratories, academia, and others to assess and deploy innovative environmental technologies for domestic use and for markets abroad.

3-304. Toxics Release Inventory/Pollution Prevention Act Reporting. (a) The head of each Federal agency shall comply with the provisions set forth in section 313 of EPCRA, section 6607 of PPA, all implementing regulations, and future amendments to these authorities, in light of applicable guidance as provided by EPA.

(b) The head of each Federal agency shall comply with these provisions without regard to the Standard Industrial Classification (SIC) delineations that apply to the Federal agency's facilities, and such reports shall be for all releases, transfers, and wastes at such Federal agency's facility without regard to the SIC code of the activity leading to the release, transfer, or waste. All other existing statutory or regulatory limitations or exemptions on the application of EPCRA section 313 shall apply to the reporting requirements set forth in section 3-304(a) of this order.

(c) The first year of compliance shall be no later than for the 1994 calendar year, with reports due on or before July 1, 1995.

3-305. Emergency Planning and Community Right-to-Know Reporting Responsibilities. The head of each Federal agency shall comply with the provisions set forth in sections 301 through 312 of EPCRA, all implementing regulations, and future amendments to these authorities, in light of any applicable guidance as provided by EPA. Effective dates for compliance shall be: (a) With respect to the provisions of section 302 of EPCRA, emergency planning notification shall be made no later than 7 months after the date of this order.

(b) With respect to the provisions of section 303 of EPCRA, all information necessary for the applicable Local Emergency Planning Committee (LEPC's) to prepare or revise local Emergency Response Plans shall be provided no later than 1 year after the date of this order.

(c) To the extent that a facility is required to maintain Material Safety Data Sheets under any provisions of law or Executive Order, information required under section 311 of EPCRA shall be submitted no later than 1 year after the date of this order,and the first year of compliance with section 312 shall be no later than the 1994 calendar year, with reports due on or before March 1, 1995.

(d) The provisions of section 304 of EPCRA shall be effective beginning January 1, 1994.

(e) These compliance dates are not intended to delay implementation of earlier timetables already agreed to by Federal agencies and are inapplicable to the extent they interfere with those timetables.

Sec. 4-4. Agency Coordination.

4-401. By February 1, 1994, the Administrator shall convene an Interagency Task Force composed of the Administrator, the Secretaries of Commerce, Defense, and Energy, the Administrator of General Services, the Administrator of the Office of Procurement Policy in the Office of Management and Budget, and such other agency officials as deemed appropriate based upon lists of potential participants submitted to the Administrator pursuant to this section by the agency head. Each agency head may designate other senior agency officials to act in his/her stead,

where appropriate. The Task Force will assist the agency heads in the implementation of the activities required under this order.

4-402. Federal agencies subject to the requirements of this order shall submit annual progress reports to the Administrator beginning on October 1, 1995. These reports shall include a description of the progress that the agency has made in complying with all aspects of this order, including the pollution reductions requirements. This reporting requirement shall expire after the report due on October 1, 2001.

4-403. Technical Advice. Upon request and to the extent practicable, the Administrator shall provide technical advice and assistance to Federal agencies in order to foster full compliance with this order. In addition, to the extent practicable, all Federal agencies subject to this order shall provide technical assistance, if requested, to LEPC's in their development of emergency response plans and in fulfillment of their community right-to-know and risk reduction responsibilities.

4-404. Federal agencies shall place high priority on obtaining funding and resources needed for implementing all aspects of this order, including the pollution prevention strategies, plans, and assessments required by this order, by identifying, requesting, and allocating funds through line-item or direct funding requests. Federal agencies shall make such requests as required in the Federal Agency Pollution Prevention and Abatement Planning Process and through agency budget requests as outlined in Office of Management and Budget (OMB) Circulars A-106 and A-11, respectively. Federal agencies should apply, to the maximum extent practicable, a life cycle analysis and total cost accounting principles to all projects needed to meet the requirements of this order.

4-405. Federal Government Environmental Challenge Program. The Administrator shall establish a ``Federal Government Environmental Challenge Program'' to recognize outstanding environmental management performance in Federal agencies and facilities. The program shall consist of two components that challenge Federal agencies; (a) to agree to a code of environmental principles to be developed by EPA, in cooperation with other agencies, that emphasizes pollution prevention, sustainable development and state-of-the-art environmental management programs, and (b) to submit applications to EPA for individual Federal agency facilities for recognition

as ``Model Installations.'' The program shall also include a means for recognizing individual Federal employees who demonstrate outstanding leadership in pollution prevention.

Sec. 5-5. Compliance.

5-501. By December 31, 1993, the head of each Federal agency shall provide the Administrator with a preliminary list of facilities that potentially meet the requirements for reporting under the threshold provisions of EPCRA, PPA, and this order.

5-502. The head of each Federal agency is responsible for ensuring that such agency take all necessary actions to prevent pollution in accordance with this order, and for that agency's compliance with the provisions of EPCRA and PPA. Compliance with EPCRA and PPA means compliance with the same substantive, procedural, and other statutory and regulatory requirements that would apply to a private person. Nothing in this order shall be construed as making the provisions of sections 325 and 326 of EPCRA applicable to any Federal agency or facility, except to the extent that such Federal agency or facility would independently be subject to such provisions. EPA shall consult with Federal agencies, if requested, to determine the applicability of this order to particular agency facilities.

5-503. Each Federal agency subject to this order shall conduct internal reviews and audits, and take such other steps, as may be necessary to monitor compliance with sections 3-304 and 3-305 of this order.

5-504. The Administrator, in consultation with the heads of Federal agencies, may conduct such reviews and inspections as may be necessary to monitor compliance with sections 3-304 and 3-305 of this order. Except as excluded under section 6-601 of this order, all Federal agencies are encouraged to cooperate fully with the efforts of the Administrator to ensure compliance with sections 3-304 and 3-305 of this order.

5-505. Federal agencies are further encouraged to comply with all state and local right-to-know and pollution prevention requirements to the extent that compliance with such laws and requirements is not otherwise already mandated.

5-506. Whenever the Administrator notifies a Federal agency that it is not in compliance with an applicable provision of

this order, the Federal agency shall achieve compliance as promptly as is practicable.

5-507. The EPA shall report annually to the President on Federal agency compliance with the provisions of section 3-304 of this order.

5-508. To the extent permitted by law and unless such documentation is withheld pursuant to section 6-601 of this order, the public shall be afforded ready access to all strategies, plans, and reports required to be prepared by Federal agencies under this order by the agency preparing the strategy, plan, or report. When the reports are submitted to EPA, EPA shall compile the strategies, plans, and reports and make them publicly available as well. Federal agencies are encouraged to provide such strategies, plans, and reports to the State and local authorities where their facilities are located for an additional point of access to the public.

Sec. 6-6. Exemption.

6-601. In the interest of national security, the head of a Federal agency may request from the President an exemption from complying with the provisions of any or all aspects of this order for particular Federal agency facilities, provided that the procedures set forth in section 120(j)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. 9620(j)(1)), are followed. To the maximum extent practicable, and without compromising national security, all Federal agencies shall strive to comply with the purposes, goals, and implementation steps set forth in this order.

Sec. 7-7. General Provisions.

7-701. Nothing in this order shall create any right or benefit, substantive or procedural, enforceable by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

<signature of President>

THE WHITE HOUSE,

August 3, 1993.

Vol. 58 No. 203 Friday, October 22, 1993 p 54911 (Exec Order)
Executive Order 12873 of October 20, 1993

Federal Acquisition, Recycling, and Waste Prevention

WHEREAS, the Nation's interest is served when the Federal Government can make more efficient use of natural resources by maximizing recycling and preventing waste wherever possible;

WHEREAS, this Administration is determined to strengthen the role of the Federal Government as an enlightened, environmentally conscious and concerned consumer;

WHEREAS, the Federal Government should-through cost-effective waste prevention and recycling activities-work to conserve disposal capacity, and serve as a model in this regard for private and other public institutions; and

WHEREAS, the use of recycled and environmentally preferable products and services by the Federal Government can spur private sector development of new technologies and use of such products, thereby creating business and employment opportunities and enhancing regional and local economies and the national economy;

NOW, THEREFORE, I, WILLIAM J. CLINTON, by the authority vested in me as President by the Constitution and the laws of the United States of America, including the Solid Waste Disposal Act, Public Law 89-272, 79 Stat. 997, as amended by the Resource Conservation and Recovery Act (``RCRA''), Public Law 94-580, 90 Stat. 2795 as amended (42 U.S.C. 6901-6907), and section 301 of title 3, United States Code, hereby order as follows:

PART 1-PREAMBLE

Section 101. Consistent with the demands of efficiency and cost effectiveness, the head of each Executive agency shall incorporate waste prevention and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater Federal Government preference and demand for such products.

Sec. 102. Consistent with policies established by Office of Federal Procurement Policy (``OFPP'') Policy Letter 92-4, agencies shall comply with executive branch policies for the

acquisition and use of environmentally preferable products and services and implement cost-effective procurement preference programs favoring the purchase of these products and services.

Sec. 103. This order creates a Federal Environmental Executive and establishes high-level Environmental Executive positions within each agency to be responsible for expediting the implementation of this order and statutes that pertain to this order.

PART 2-DEFINITIONS

For purposes of this order:

Sec. 201. ``Environmentally preferable'' means products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.

Sec. 202. ``Executive agency'' or ``agency'' means an Executive agency as defined in 5 U.S.C. 105. For the purpose of this order, military departments, as defined in 5 U.S.C. 102, are covered under the auspices of the Department of Defense.

Sec. 203. ``Postconsumer material'' means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. ``Postconsumer material'' is a part of the broader category of ``recovered material''.

Sec. 204. ``Acquisition'' means the acquiring by contract with appropriated funds for supplies or services (including construction) by and for the use of the Federal Government through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated and evaluated. Acquisition begins at the point when agency needs are established and includes the description of requirements to satisfy agency needs, solicitation and selection of sources, award of contracts, contract financing, contract performance, contract administration and those technical and management functions directly related to the process of fulfilling agency needs by contract.

Sec. 205. ``Recovered materials'' means waste materials and by-products which have been recovered or diverted from solid waste, but such term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process (42 U.S.C. 6903 (19)).

Sec. 206. ``Recyclability'' means the ability of a product or material to be recovered from, or otherwise diverted from, the solid waste stream for the purpose of recycling.

Sec. 207. ``Recycling'' means the series of activities, including collection, separation, and processing, by which products or other materials are recovered from the solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.

Sec. 208. ``Waste prevention,'' also known as ``source reduction,'' means any change in the design, manufacturing, purchase or use of materials or products (including packaging) to reduce their amount or toxicity before they become municipal solid waste. Waste prevention also refers to the reuse of products or materials.

Sec. 209. ``Waste reduction'' means preventing or decreasing the amount of waste being generated through waste prevention, recycling, or purchasing recycled and environmentally preferable products.

Sec. 210. ``Life Cycle Cost'' means the amortized annual cost of a product, including capital costs, installation costs, operating costs, maintenance costs and disposal costs discounted over the lifetime of the product.

Sec. 211. ``Life Cycle Analysis'' means the comprehensive examination of a product's environmental and economic effects throughout its lifetime including new material extraction, transportation, manufacturing, use, and disposal.

PART 3-THE ROLE OF THE FEDERAL ENVIRONMENTAL EXECUTIVE AND AGENCY ENVIRONMENTAL EXECUTIVES

Sec. 301. Federal Environmental Executive.
(a) A Federal Environmental Executive shall be designated by the President and shall be located within the Environmental

Protection Agency (``EPA''). The Federal Environmental Executive shall take all actions necessary to ensure that the agencies comply with the requirements of this order and shall generate an annual report to the Office of Management and Budget (``OMB''), at the time of agency budget submissions, on the actions taken by the agencies to comply with the requirements of this order. In carrying out his or her functions, the Federal Environmental Executive shall consult with the Director of the White House Office on Environmental Policy.

(b) Staffing. A minimum of four (4) full time staff persons are to be provided by the agencies listed below to assist the Federal Environmental Executive, one of whom shall have experience in specification review and program requirements, one of whom shall have experience in procurement practices, and one of whom shall have experience in solid waste prevention and recycling. These four staff persons shall be appointed and replaced as follows:

(1) a representative from the Department of Defense shall be detailed for not less than one year and no more than two years;

(2) a representative from the General Services Administration (``GSA'') shall be detailed for not less than one year and no more than two years;

(3) a representative from EPA shall be detailed for not less than one year and no more than two years; and

(4) a representative from one other agency determined by the Federal Environmental Executive shall be detailed on a rotational basis for not more than one year.

(c) Administration. Agencies are requested to make their services, personnel and facilities available to the Federal Environmental Executive to the maximum extent practicable for the performance of functions under this order.

(d) Committees and Work Groups. The Federal Environmental Executive shall establish committees and work groups to identify, assess, and recommend actions to be taken to fulfill the goals, responsibilities, and initiatives of the Federal Environmental Executive. As these committees and work groups are created, agencies are requested to designate appropriate personnel in the areas of procurement and acquisition, standards and specifications, electronic commerce, facilities management, waste prevention, and recycling, and others as needed to staff and work on the initiatives of the Executive.

(e) Duties. The Federal Environmental Executive, in consultation with the Agency Environmental Executives, shall:

(1) identify and recommend initiatives for government-wide implementation that will promote the purposes of this order, including:

(A) the development of a federal plan for agency implementation of this order and appropriate incentives to encourage the acquisition of recycled and environmentally preferable products by the Federal Government;

(B) the development of a federal implementation plan and guidance for instituting economically efficient federal waste prevention, energy and water efficiency programs, and recycling programs within each agency; and

(C) the development of a plan for making maximum use of available funding assistance programs;

(2) collect and disseminate information electronically concerning methods to reduce waste, materials that can be recycled, costs and savings associated with waste prevention and recycling, and current market sources of products that are environmentally preferable or produced with recovered materials;

(3) provide guidance and assistance to the agencies in setting up and reporting on agency programs and monitoring their effectiveness; and

(4) coordinate appropriate government-wide education and training programs for agencies.

Sec. 302. Agency Environmental Executives. Within 90 days after the effective date of this order, the head of each Executive department and major procuring agency shall designate an Agency Environmental Executive from among his or her staff, who serves at a level no lower than at the Deputy Assistant Secretary level or equivalent. The Agency Environmental Executive will be responsible for:

(a) coordinating all environmental programs in the areas of procurement and acquisition, standards and specification review, facilities management, waste prevention and recycling, and logistics;

(b) participating in the interagency development of a Federal plan to:

(1) create an awareness and outreach program for the private sector to facilitate markets for environmentally preferable and recycled products and services, promote new technologies, improve

awareness about federal efforts in this area, and expedite agency efforts to procure new products identified under this order;

(2) establish incentives, provide guidance and coordinate appropriate educational programs for agency employees; and

(3) coordinate the development of standard agency reports required by this order;

(c) reviewing agency programs and acquisitions to ensure compliance with this order.

PART 4-ACQUISITION PLANNING AND AFFIRMATIVE PROCUREMENT PROGRAMS

Sec. 401. Acquisition Planning. In developing plans, drawings, work statements, specifications, or other product descriptions, agencies shall consider the following factors: elimination of virgin material requirements; use of recovered materials; reuse of product; life cycle cost; recyclability; use of nvironmentally preferable products; waste prevention (including toxicity reduction or elimination); and ultimate disposal, as appropriate. These factors should be considered in acquisition planning for all procurements and in the evaluation and award of contracts, as appropriate. Program and acquisition managers should take an active role in these activities.

Sec. 402. Affirmative Procurement Programs. The head of each Executive agency shall develop and implement affirmative procurement programs in accordance with RCRA section 6002 (42 U.S.C. 6962) and this order. Agencies shall ensure that responsibilities for preparation, implementation and monitoring of affirmative procurement programs are shared between the program personnel and procurement personnel. For the purposes of all purchases made pursuant to this order, EPA, in consultation with such other Federal agencies as appropriate, shall endeavor to maximize environmental benefits, consistent with price, performance and availability considerations, and shall adjust bid solicitation guidelines as necessary in order to accomplish this goal.

(a) Agencies shall establish affirmative procurement programs for all designated EPA guideline items purchased by their agency. For newly designated items, agencies shall revise their internal programs within one year from the date EPA designated the new items.

(b) For the currently designated EPA guideline items, which are: (i) concrete and cement containing fly ash; (ii) recycled

paper products; (iii) re-refined lubricating oil; (iv) retread tires; and (v) insulation containing recovered materials; and for all future guideline items, agencies shall ensure that their affirmative procurement programs require that 100 percent of their purchases of products meet or exceed the EPA guideline standards unless written justification is provided that a product is not available competitively within a reasonable time frame, does not meet appropriate performance standards, or is only available at an unreasonable price.

(c) The Agency Environmental Executives will track agencies' purchases of designated EPA guideline items and report agencies' purchases of such guideline items to the Federal Environmental Executive. Agency Environmental Executives will be required to justify to the Federal Environmental Executive as to why the item(s) have not been purchased or submit a plan for how the agencies intend to increase their purchases of the designated item(s).

(d) Agency affirmative procurement programs, to the maximum extent practicable, shall encourage that:

(1) documents be transferred electronically,

(2) all government documents printed internally be printed double-sided, and

(3) contracts, grants, and cooperative agreements issued after the effective date of this order include provisions that require documents to be printed double-sided on recycled paper meeting or exceeding the standards established in this order or in future EPA guidelines.

Sec. 403. Procurement of Existing Guideline Items. Within 90 days after the effective date of this order, the head of each Executive agency that has not implemented an affirmative procurement program shall ensure that the affirmative procurement program has been established and is being implemented to the maximum extent practicable.

Sec. 404. Electronic Acquisition System. To reduce waste by eliminating unnecessary paper transactions in the acquisition process and to foster accurate data collection and reporting of agencies' purchases of recycled content and environmentally preferred products, the executive branch will implement an electronic commerce system consistent with the recommendations adopted as a result of the National Performance Review.

PART 5-STANDARDS, SPECIFICATIONS AND DESIGNATION OF ITEMS

Sec. 501. Specifications, Product Descriptions and Standards. Where applicable, Executive agencies shall review and revise federal and military specifications, product descriptions and standards to enhance Federal procurement of products made from recovered materials or that are environmentally preferable. When converting to a Commercial Item Description (CID), agencies shall ensure that environmental factors have been considered and that the CID meets or exceeds the environmentally preferable criteria of the government specification or product description. Agencies shall report annually on their compliance with this section to the Federal Environmental Executive for incorporation into the annual report to OMB referred to in section 301 of this order.

(a) If an inconsistency with RCRA Section 6002 or this order is identified in a specification, standard, or product description, the Federal Environmental Executive shall request that the Environmental Executive of the pertinent agency advise the Federal Environmental Executive as to why the specification cannot be revised or submit a plan for revising it within 60 days.

(b) If an agency is able to revise an inconsistent specification but cannot do so within 60 days, it is the responsibility of that agency's Environmental Executive to monitor and implement the plan for revising it.

Sec. 502. Designation of Items that Contain Recovered Materials. In order to expedite the process of designating items that are or can be made with recovered materials, EPA shall institute a new process for designating these items in accordance with RCRA section 6002(e) as follows.

(a) EPA shall issue a Comprehensive Procurement Guideline containing designated items that are or can be made with recovered materials.

(1) The proposed guideline shall be published for public comment in the Federal Register within 180 days after the effective date of this order and shall be updated annually after publication for comment to include additional items.

(2) Once items containing recovered materials have been designated by EPA through the new process established pursuant

to this section and in compliance with RCRA section 6002, agencies shall modify their affirmative procurement programs to require that, to the maximum extent practicable, their purchases of products meet or exceed the EPA guideline standards unless written justification is provided that a product is not available competitively, not available within a reasonable time frame, does not meet appropriate performance standards, or is only available at an unreasonable price.

(b) Concurrent with the issuance of the Comprehensive Procurement Guideline required by section 502(a) of this order, EPA shall publish for public comment in the Federal Register Recovered Material Advisory Notice(s) that present the range of recovered material content levels within which the designated recycled items are currently available. These levels shall be updated periodically after publication for comment to reflect changes in market conditions.

Sec. 503. Guidance for Environmentally Preferable Products. In accordance with this order, EPA shall issue guidance that recommends principles that Executive agencies should use in making determinations for the preference and purchase of environmentally preferable products.

(a) Proposed guidance shall be published for public comment in the Federal Register within 180 days after the effective date of this order, and may be updated after public comment, as necessary, thereafter. To the extent necessary, EPA may issue additional guidance for public comment on how the principles can be applied to specific product categories.

(b) Once final guidance for environmentally preferable products has been issued by EPA, Executive agencies shall use these principles, to the maximum extent practicable, in identifying and purchasing environmentally preferable products and shall modify their procurement programs by reviewing and revising specifications, solicitation procedures, and policies as appropriate.

Sec. 504. Minimum Content Standard for Printing and Writing Paper. Executive agency heads shall ensure that agencies shall meet or exceed the following minimum materials content standards when purchasing or causing the purchase of printing and writing paper:

(a) For high speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, and white woven envelopes, the minimum content standard shall be no less than 20 percent postconsumer materials beginning December 31, 1994. This minimum content standard shall be increased to 30 percent beginning on December 31, 1998.

(b) For other uncoated printing and writing paper, such as writing and office paper, book paper, cotton fiber paper, and cover stock, the minimum content standard shall be 50 percent recovered materials, including 20 percent postconsumer materials beginning on December 31, 1994. This standard shall be increased to 30 percent beginning on December 31, 1998.

(c) As an alternative to meeting the standards in sections 504(a) and (b), for all printing and writing papers, the minimum content standard shall be no less than 50 percent recovered materials that are a waste material byproduct of a finished product other than a paper or textile product which would otherwise be disposed of in a landfill, as determined by the State in which the facility is located.

(1) The decision not to procure recycled content printing and writing paper meeting the standards specified in this section shall be based solely on a determination by the contracting officer that a satisfactory level of competition does not exist, that the items are not available within a reasonable time period, or that the available items fail to meet reasonable performance standards established by the agency or are only available at an unreasonable price.

(2) Each agency should implement waste prevention techniques, as specified in section 402(d) of this order, so that total annual expenditures for recycled content printing and writing paper do not exceed current annual budgets for paper products as measured by average annual expenditures, adjusted for inflation based on the Consumer Price Index or other suitable indices. In determining a target budget for printing and writing paper, agencies may take into account such factors as employee increases or decreases, new agency or statutory initiatives, and episodic or unique requirements (e.g., census).

(3) Effective immediately, all agencies making solicitations for the purchase of printing and writing paper shall seek bids for paper with postconsumer material or recovered waste material as described in section 504(c).

Sec. 505. Revision of Brightness Specifications and Standards.

The General Services Administration and other Federal agencies are directed to identify, evaluate and revise or eliminate any standards or specifications unrelated to performance that present barriers to the purchase of paper or paper products made by production processes that minimize emissions of harmful byproducts. This evaluation shall include a review of unnecessary brightness and stock clause provisions, such as lignin content and chemical pulp requirements. The GSA shall complete the review and revision of such specifications within six months after the effective date of this order, and shall consult closely with the Joint Committee on Printing during such process. The GSA shall also compile any information or market studies that may be necessary to accomplish the objectives of this provision.

Sec. 506. Procurement of Re-refined Lubricating Oil and Retread Tires. Within 180 days after the effective date of this order, agencies shall implement the EPA procurement guidelines for re-refined lubricating oil and retread tires.

(a) Commodity managers shall finalize revisions to specifications for re-refined oil and retread tires, and develop and issue specifications for tire retreading services, as commodity managers shall take affirmative steps to procure these items in accordance with RCRA section 6002.

(b) Once these items become available, fleet managers shall take affirmative steps to procure these items in accordance with RCRA section 6002.

Sec. 507. Product Testing. The Secretary of Commerce, through the National Institute of Standards and Technology (``NIST''), shall establish a program for testing the performance of products containing recovered materials or deemed to be environmentally preferable. NIST shall work with EPA, GSA and other public and private sector organizations that conduct appropriate life cycle analyses to gather information that will assist agencies in making selections of products and services that are environmentally preferable.

(a) NIST shall publish appropriate reports describing testing programs, their results, and recommendations for testing methods and related specifications for use by Executive agencies and other interested parties.

(b) NIST shall coordinate with other Executive and State

agencies to avoid duplication with existing testing programs.

PART 6-AGENCY GOALS AND REPORTING REQUIREMENTS

Sec. 601. Goals for Waste Reduction. Each agency shall establish a goal for solid waste prevention and a goal for recycling to be achieved by the year 1995. These goals shall be submitted to the Federal Environmental Executive within 180 days after the effective date of this order. Progress on attaining these goals shall be reported by the agencies to the Federal Environmental Executive for the annual report specified in section 301 of this order.

Sec. 602. Goal for Increasing the Procurement of Recycled and Other Environmentally Preferable Products. Agencies shall strive to increase the procurement of products that are environmentally preferable or that are made with recovered materials and set annual goals to maximize the number of recycled products purchased, relative to non-recycled alternatives.

Sec. 603. Review of Implementation. The President's Council on Integrity and Efficiency (``PCIE'') will request that the Inspectors General periodically review agencies' affirmative procurement programs and reporting procedures to ensure their compliance with this order.

PART 7-APPLICABILITY AND OTHER REQUIREMENTS

Sec. 701. Contractor Operated Facilities. Contracts that provide for contractor operation of a government-owned or leased facility, awarded after the effective date of this order, shall include provisions that obligate the contractor to comply with the requirements of this order within the scope of its operations. In addition, to the extent permitted by law and where economically feasible, existing contracts should be modified.

Sec. 702. Real Property Acquisition and Management. Within 90 days after the effective date of this order, and to the extent permitted by law and where economically feasible, Executive agencies shall ensure compliance with the provisions of this order in the acquisition and management of federally owned and leased space. GSA and other Executive agencies shall also include environmental and recycling provisions in the acquisition of all leased space and in the construction of new federal buildings.

Sec. 703. Retention of Funds. Within 90 days after the effective date of this order, the Administrator of GSA shall develop a legislative proposal providing authority for Executive agencies to retain a share of the proceeds from the sale of materials recovered through recycling or waste prevention programs and specifying the eligibility requirements for the materials being recycled.

Sec. 704. Model Facility Programs. Each Executive department and major procuring agency shall establish model facility demonstration programs that include comprehensive waste prevention and recycling programs and emphasize the procurement of recycled and environmentally preferable products and services using an electronic data interchange (EDI) system.

Sec. 705. Recycling Programs. Each Executive agency that has not already done so shall initiate a program to promote cost effective waste prevention and recycling of reusable materials in all of its facilities. The recycling programs implemented pursuant to this section must be compatible with applicable State and local recycling requirements. Federal agencies shall also consider cooperative ventures with State and local governments to promote recycling and waste reduction in the community.

PART 8-AWARENESS

Sec. 801. Agency Awards Program. A government-wide award will be presented annually by the White House to the best, most innovative program implementing the objectives of this order to give greater visibility to these efforts so that they can be incorporated government-wide.

Sec. 802. Internal Agency Awards Programs. Each agency shall develop an internal agency-wide awards program, as appropriate, to reward its most innovative environmental programs. Winners of agency-wide awards will be eligible for the White House award program.

PART 9-REVOCATION, LIMITATION AND IMPLEMENTATION

Sec. 901. Executive Order No. 12780, dated October 31, 1991, is hereby revoked.

Sec. 902. This order is intended only to improve the internal management of the executive branch and is not intended to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any other person.

Sec. 903. The policies expressed in this order, including the requirements and elements for effective agency affirmative procurement programs, shall be implemented and incorporated in the Federal Acquisition Regulation (FAR) within 180 days after the effective date of this order. The implementation language shall consist of providing specific direction and guidance on agency programs for preference, promotion, estimation, certification, reviewing and monitoring.

Sec. 904. This order shall be effective immediately.

<signature of President>

THE WHITE HOUSE,

October 20, 1993.