

GAO

Report to Congressional Committees

December 1989

WASTEPAPER RECYCLING

Programs of Civil Agencies Waned During the 1980s



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General Government Division

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The Honorable Jim Sasser
Chairman, Subcommittee on General
Services, Federalism, and the
District of Columbia
Committee on Governmental Affairs
United States Senate

The Honorable Edward R. Roybal
Chairman, Subcommittee on Treasury, Postal
Service, and General Government
Committee on Appropriations
House of Representatives

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This report responds to the Subcommittees' October 8, 1987, request that we examine various aspects of wastepaper recycling activities of federal agencies. In particular, the report addresses (1) the extent to which agencies have carried out responsibilities mandated by the Resource Conservation and Recovery Act of 1976 to establish wastepaper recycling programs, (2) the causes for shortcomings in carrying out these responsibilities, and (3) obstacles that stand in the way of expanded federal wastepaper recycling efforts. The report also contains recommendations to the Environmental Protection Agency and the General Services Administration.

As arranged, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies to interested committees and subcommittees, the agencies we reviewed, and other interested parties. We will also make copies available to others upon request.

The major contributors to this report are listed in appendix V. If we can be of further assistance, please call me on 275-8676.

L. Nye Stevens

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Director, Government Business
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Executive Summary

Purpose

The federal government spends millions of dollars a year on paper, uses it once or twice, and then spends millions of dollars getting rid of it. The Resource Recovery Act of 1970 mandated that, except for certain situations, federal agencies are to (1) separate their wastepaper so that it can be sold for recycling and (2) procure recycled paper.

This report, prepared at the request of a House and a Senate subcommittee, describes recycling in some detail, assesses whether federal civilian agencies are recycling paper as required, addresses the obstacles to expanded recycling by federal civilian agencies, and describes several recycling programs.

Background

Congress, concerned about rapid growth in the amount of material we discard (particularly that discarded in landfills), decided that federal action was needed to reduce the volume of waste. Consequently, it passed several solid and hazardous waste disposal laws.

Wastepaper disposal received attention in several of these laws. The Resource Recovery Act of 1970 was designed to encourage agencies to recycle their paper. Building on this, the Resource Conservation and Recovery Act of 1976 was designed to create demand for paper that contains recycled materials and thereby positively affect our landfills, our supply of trees, and our waste disposal costs.

Under the legislation, the Administrator of the Environmental Protection Agency (EPA) was required to publish guidelines for wastepaper recovery as well as for the procurement of paper products containing recovered wastepaper. The Office of Federal Procurement Policy in the Office of Management and Budget was to report to Congress on the progress agencies were making in procuring these products. Federal agencies were required to participate in wastepaper recovery programs, except where there was no market for the paper or the costs of a source separation program (setting aside high-grade wastepaper at the last point of use) would be unreasonably high. In the majority of cases, the General Services Administration (GSA) had responsibility for preparing the market studies and administering the wastepaper sales contracts. GSA was also responsible for overall program coordination in the buildings it owned or operated.

Results in Brief

GAO found that most federal civilian agencies do not have wastepaper recovery programs as envisioned by legislation, nor have they made the

required analyses that would justify the absence of such programs. Where wastepaper is being sold, the government is not getting what it should for the paper because of poor contract administration. The inability of agencies to retain the proceeds from the sale of wastepaper, and a general perception that wastepaper recycling is not cost effective, are strong deterrents to increased recycling. In addition, the government has not been stimulating the demand for recyclable wastepaper through its own buying practices because of delays in issuing paper procurement guidelines.

GAO Analysis

Programs Have Waned

GAO obtained data from all GSA regions and found that, in general, wastepaper is being trashed rather than sold for recycling purposes. While a recycling program was initiated many years ago, its effectiveness was diminished by budgetary cuts, lack of aggressive management by GSA and EPA, and, to some extent, employee apathy. EPA's resources were drawn to its hazardous waste program, which was the major focus of solid waste legislation. (See pp. 17 to 21.)

Demand for Recycled Wastepaper Has Not Been Created

The government is not making a concerted effort to buy recycled paper. Furthermore, it took 8 years for EPA to issue guidelines for the procurement of paper with a recycled component. The guidelines were put into place after a lawsuit was filed to force their issuance. They became effective in June 1988 and agencies had until June 1989 to implement them. (See pp. 21 to 24.)

The Office of Federal Procurement Policy was to report to Congress, at least biennially, on the progress agencies were making in implementing the guidelines. Since 1981, that office has submitted two reports to Congress. (See pp. 28 to 29.)

Numerous Obstacles and Disincentives for Recycling

GAO identified numerous obstacles that have tended to frustrate federal agencies' efforts to establish, maintain, and expand wastepaper recycling programs. These include

- the widespread perception that paper recycling programs are not cost effective, coupled with a lack of conclusive evidence to the contrary;

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- employee apathy and difficulties in getting employees and contract custodial workers to make the effort to keep paper separate from less desirable paper and contaminants; and
 - the lack of adequate storage space in many federal buildings to hold accumulated wastepaper until delivery to the dealer.

GAO also identified disincentives agencies encounter. These include the lack of management attention given the recycling program by EPA and GSA. EPA issued implementing guidelines but has not actively monitored agency compliance. Further, the guidelines assign key responsibilities to GSA; GSA, however, has shown little inclination to carry them out.

Another disincentive agencies face is the cost to start or continue waste-paper recovery programs. Costs to establish and maintain a recycling program can be substantial. Most civilian agencies must spend appropriated funds to start and operate these programs, but they cannot recoup the sales proceeds. These proceeds must be deposited to the treasury's miscellaneous receipts account. (See pp. 31 to 37.)

Recommendations

GAO recommends that the Administrator of the Environmental Protection Agency take the following actions:

- Assist agencies in determining whether separation of wastepaper is a viable action for their operations. This should include (1) identifying those agencies located in areas of the country having the greatest potential for successful programs and (2) providing better guidance to help these agencies determine the amount of high-grade wastepaper they can produce, the existence of a market for the paper, the state and local requirements for paper separation that exist, and the costs of alternative trash disposal.
- Define the term "unreasonably high cost," balancing the additional cost to the government against disposal fees and the environmental benefits of recycling the paper, such as conservation of landfill space and natural resources.
- Assist the Office of Federal Procurement Policy in preparing the biennial report to Congress on the progress agencies are making in implementing the guidelines for the procurement of recycled paper.

GAO recommends that the Administrator of the General Services Administration

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- take steps to strengthen controls over the process of awarding and administering wastepaper sales contracts to optimize proceeds and thereby encourage agencies to increase participation in wastepaper recycling.

Matter for Congressional Consideration

Congress could contribute to an increase in federal recycling by alleviating the cost burden of these programs. An appropriate step Congress could take would be to ensure that agencies involved in recycling efforts are able to receive the income from the sale of their wastepaper for future use in their recycling programs.

Agency Comments

A draft of this report was provided to EPA and GSA for comment. Both agencies generally agreed with the report. EPA's comments are included as appendix III. GSA's comments are included as appendix IV. A summary of both agencies' comments and our evaluation are included on pages 42 through 44.

Contents

Executive Summary		2
Chapter 1		8
Introduction	An Alternative to Trash Disposal	8
	Background on Paper	9
	Existing Legislation and Regulations	13
	Objectives, Scope, and Methodology	14
Chapter 2		17
Governmentwide	Responsibility for Recovery Program	17
Programs to	GSA's Program	23
Encourage Recycling	RCRA and the Department of Commerce	27
Are Moribund	RCRA and OFPP	28
	Other Agencies	29
Chapter 3		31
Obstacles to Expanded	Perception of Cost Ineffectiveness	31
Federal Paper	Attitudinal Obstacles	31
Recycling Efforts	Economic Obstacles	32
	Physical Obstacles	34
	Management Obstacles	35
Chapter 4		38
Observations,	Observations	38
Conclusions, and	Conclusions	41
Recommendations	Recommendations	41
	Matter for Congressional Consideration	42
	Agency Comments and Our Evaluation	42
Appendixes		
	Appendix I: Survey of Active Recycling Programs	46
	Appendix II: Key Locations Visited or Contacted During the Review	54
	Appendix III: Comments From the Environmental Protection Agency	57
	Appendix IV: Comments From the General Services Administration	62
	Appendix V: Major Contributors to This Report	65
Related GAO Products		66

Abbreviations

DOE	Department of Energy
DVA	Department of Veterans Affairs
EPA	Environmental Protection Agency
GPO	Government Printing Office
GSA	General Services Administration
IRS	Internal Revenue Service
OFPP	Office of Federal Procurement Policy
ORM	Office of Recycled Materials
PEPCO	Potomac Electric Power Company
RCRA	Resource Conservation and Recovery Act of 1976
SSA	Social Security Administration

Introduction

Community landfills are reaching capacity and suitable new sites are not available. The roaming trash and ash barges of the last 2 years have dramatized this point. According to the Environmental Protection Agency (EPA), one-third of the Nation's landfills will be full by 1991. In addition, the use of incinerators as alternatives to landfills has encountered widespread opposition. Health and environment concerns play a central role in public opposition to landfills, incinerators, and recycling centers. Moreover waste disposal costs have soared in some locales to more than \$100 per ton because of long-distance hauling costs and high landfill and incinerator fees.

The extent to which executive agencies promote programs to recycle the wastepaper they generate is the focus of this report. We prepared it at the request of the House Appropriations Committee's Subcommittee on Treasury, Postal Service, and General Government and the Senate Governmental Affairs Committee's Subcommittee on General Services, Federalism, and the District of Columbia. The committees recognize that the volume of solid, nonhazardous waste is rapidly outstripping the Nation's ability to dispose of it.

An Alternative to Trash Disposal

Recycling has made little headway in this country over the years despite some attractive features. It can reduce the burden on limited landfill capacity; it conserves energy and material resources; it is less polluting than incineration. And it can be economically attractive under favorable conditions—especially when the costs of incineration or landfilling are considered. Unfortunately the mere collection of recyclable materials does not ensure that they will be recycled. In 1989, EPA reported that recycling has been successful only when participation in separating and collecting materials was high and market prices for the materials were favorable.

Wastepaper is abundant and highly recyclable, but only modest amounts are being recovered for recycling. Even so, recovery rates have increased more than 90 percent since 1970. Typically, recyclable wastepaper products can comprise as much as 85 percent of the trash generated by office buildings. The paper industry reports that for 1987, more than 24 million tons, or 29 percent of the paper consumed, was collected for recycling. Of the total tonnage recovered that year, domestic recycling mills used more than 19 million tons, or about a quarter of the paper fiber used in the domestic paper industry. The balance of over 4 million tons was exported, setting record levels for wastepaper exports.

Recovery rates for the different types of wastepaper vary. The largest volume of wastepaper recycled is newspaper and corrugated containers. In 1987, over 40 percent of the corrugated containers used—nearly 9 million tons—were recycled. The recovery rate for old newspapers was over 30 percent, with more than 4 million tons collected. Printing and writing papers had a recovery rate of less than 10 percent. Pulp substitutes, which are the cuttings and clippings generated during the paper product manufacturing process, are recovered at rates exceeding 95 percent.

Background on Paper

The term “recycling” encompasses both the recovery of recyclable materials from the waste stream and their conversion into consumer products. The types and quantities of wastepaper recovered and the availability of and demand for recycled paper products depend on the interaction of many factors. Recycling mill capacity and technology, the market for wastepaper, the quality of wastepaper collected and legislation affecting recycling are all integral to the success of paper recycling efforts.

Wastepaper Classifications

Two broad categories of wastepaper include

- waste generated by households, businesses, institutions, and government offices which is any paper or paperboard product that has been discarded by the user and
- scrap created in paper-converting operations, such as cuttings and clippings from envelope and corrugated box plans and printing operations.

Common grades of recyclable wastepaper are the bulk grades and high grades. Bulk grades are used in quantity in recycled paper, paperboard, and construction products, and fall into three classes: old newspapers, corrugated containers, and mixed paper. This last includes the lowest quality paper stock and consists of unsorted white and colored papers from office buildings and other commercial sources. High grades contain high-quality fiber and account for about 20 percent of all wastepaper used by the recycling industry. High grades consist of (1) pulp substitutes, which are print-free clippings and trim from converting operations and (2) de-inking, which is usually bleached scrap from printing operations and high-quality office paper, such as white ledger and computer printouts, designated to be processed at a de-inking mill.

Wastepaper is used to manufacture newsprint, tissue products, paperboard, and printing and writing papers. Paper products can be manufactured from either virgin or recovered materials or combinations of the two. Recycled paper fibers however tend to be shorter and hence weaker, than virgin fibers because of the recycling process. Approximately 25 percent of domestic newsprint is produced from recycled newspapers. Between 30 and 40 percent of the fiber in boxes and tissue products consists of wastepaper. Some packaging contains 100-percent recycled fiber and tissue products for institutional use typically contain a high degree of wastepaper. Less than 10 percent of all printing and writing paper contains recovered fiber. Other products made with recycled wastepaper include construction and insulation materials, molded containers, and cushioning material for packaging.

Recycled Paper Production

To produce recycled paper, wastepaper is mixed with water and beaten to separate the fibers and form a slurry. Chemicals are added only in de-inking mills, where recycled pulp is washed with chemicals to remove inks from the paper fibers. The pulp slurry is then cleaned to remove contaminants such as metals (paper clips and staples) and other unwanted materials. Recycled pulp may be combined with varying amounts of wood pulp to manufacture new paper.

The process to form the pulp into paper is similar to that for virgin wood pulp: the fibers are fed first onto machines that remove the water and then into form sheets that are pressed and dried. In general, mills cannot use virgin and recovered fibers interchangeably because the processing equipment for wastepaper differs from that used to process wood fibers. Most recycling mills are equipped to process recyclable paper only; mills using virgin fibers are typically not equipped to repulp wastepaper, although they may obtain recycled pulp from de-inking mills that produce and market it.

Of the approximately 600 paper and paperboard mills in the United States, about 200 rely exclusively on wastepaper as their raw material; the remainder may use between 10 and 30 percent wastepaper in their manufacturing process. At least seven recycled newsprint mills are capable of de-inking newsprint. Some produce 100-percent recycled newsprint and others combine recycled and virgin pulp.

In 1988, paper recycling mills were operating at full capacity. According to the American Paper Institute's Annual Capacity Survey, consumption of wastepaper at capacity levels of production will exceed 20 million

tons in 1989. Consumption of old corrugated containers will account for the largest increase in usage.

Volatile Nature of Wastepaper Markets

Wastepaper is a commodity subject to demand and price fluctuations. Markets for all grades are cyclical and follow general economic swings. Demand for recycled paper products drives the demand for wastepaper. During periods of economic recession, when demand for recycled products decreases, demand for wastepaper also declines. In this situation available supplies of wastepaper exceed demand. As the economy rebounds and demand for recycled paper products increases, demand for wastepaper typically increases faster than available supplies.

In general, although high-grade wastepaper will continue to sell, bulk grades will quickly feel the effect of a market turndown. Prices for bulk grades are lower to begin with, and if the market becomes glutted or demand decreases, dealers may not be able to maintain a sufficient spread between their costs to purchase and process these grades and the ultimate selling price to mills. Recently the supply of old newspapers increased because of new recycling programs in several states. Because of the increase in supply and a slackening in export demand, the value dropped. Instead of being paid by the brokers, the municipalities had to pay the brokers to take the old newspapers. Wastepaper prices also vary by region, as markets are influenced by transportation costs, export demand, and local mill requirements.

The paper products industry structure may also contribute to wastepaper market fluctuations. Some mills supplement the use of virgin fiber pulp with recycled feedstocks but discontinue their use when demand for paper products is soft.

Supply Network

An interdependent network of wastepaper generators, suppliers, brokers, and producers balance supplies against demand, both domestic and foreign. Households, businesses, and institutions are the major generators or recyclable wastepaper. Suppliers include municipalities operating collection programs, individuals who collect recyclable paper either to supplement their income or for charity, and waste haulers who may find it profitable to recover recyclable wastepaper from trash. About 2,000 wastepaper dealers and brokers purchase and prepare collected wastepaper for sale to mills. Recycled paper mills and end-product manufacturers complete the wastepaper market network.

Exporting Wastepaper

Exports are responsible for a significant source of growth in domestic wastepaper recovery. In 1987, exports of U.S. wastepaper set record levels, increasing 18 percent over 1986 and three times the level of a decade ago. Major importers of U.S. wastepaper are Japan, the Philippines, Thailand, Canada, Italy, Spain, and Venezuela; the largest are Taiwan, South Korea, and Mexico. Favorable freight rates and shipping service to U.S. ports make hauling worthwhile, and the high quality of the wastepaper makes it attractive to foreign buyers.

Effects of Mandatory Recycling

Increased mandatory recycling is likely to create excess wastepaper, because it ignores the rule of a balanced market—that is, mandatory recycling will create new supplies of wastepaper without creating new demand for recycled end products. The incentives behind state and local mandatory recycling particularly, in the northeast, are the rapidly diminishing landfill capacity and the high disposal costs that, on average, have nearly doubled from 1986 to 1987. However, as more states and municipalities adopt mandatory recycling, current wastepaper collection systems, which can adapt to changes in demand without long-term negative consequences to recyclers, will be disrupted. Present industry capacity cannot absorb the quantities of wastepaper that increased mandatory recycling might generate, as happened recently with old newspapers. Scrap paper dealers are especially concerned that supply gluts will drive down prices, and edge them out of the market. Also, both dealers and mills fear a decline in the quality of wastepaper as collections increase.

Contaminants and Improper Preparation

The quality of wastepaper is vital to realizing its maximum recyclable value. Keeping the paper free of contaminants (food and other solid wastes) and properly sorted are crucial to wastepaper quality. Contaminants, including nonrecyclable paper, can substantially lower the value of the recyclable wastepaper because they create sorting problems for dealers who may downgrade the wastepaper or even reject the load. Contaminants can damage paper processing equipment and adversely affect production efficiency and product quality.

High-grade office paper that is not separated from lower grades of paper (such as cardboard, magazines, and colored papers) is classified as mixed paper, the lowest-priced grade of recyclable paper. Because of its low value and generally high contamination rate, dealers are reluctant to incur sorting and separation costs for mixed paper. Instead, they prefer presorted paper of higher quality and value.

Corrugated containers recovered for recycling may also require special preparation. Compactors or balers facilitate corrugated container handling and storage; using them can increase recycling program revenues.

Recycling in Federal Agencies

The federal government purchases about 2 percent of all paper consumed domestically. This equates to about 1.7 million tons of paper purchased in 1987. An EPA study estimated that almost 85 percent of waste generated by general office buildings consists of recyclable grades of paper.¹ If agencies recovered all recyclable federal wastepaper, they would save more than 5 million cubic yards of landfill space annually. Manufacturing this amount of paper from recycled wastepaper would save 3 million barrels of crude oil and 26 million trees each year. Given this potential for resource conservation, Congress has enacted legislation to promote recycling in federal agencies.

Existing Legislation and Regulations

In 1965, Congress enacted the Solid Waste Disposal Act, which established resource recovery goals as a priority for U.S. environmental and energy conservation programs. The act was initially amended by the Resource Recovery Act of 1970 and was completely revised by the Resource Conservation and Recovery Act of 1976 (RCRA). RCRA's comprehensive legislation imposed numerous requirements. Many of these were related to regulating hazardous wastes, but others were designed to promote recycling on nonhazardous wastes including paper.

Procurement Guidelines

To help create demand for wastepaper, RCRA requires agencies to purchase items that contain the highest percentage of recovered materials practicable given their availability, price, and performance. Agencies must also maintain a satisfactory level of competition.

RCRA further requires that EPA prepare guidelines for federal agencies to follow in procuring goods made from recycled materials. RCRA first required that a final guideline for procuring paper products was to be issued by May 1981, but a subsequent amendment extended the time to May 1985. Initial guidelines were issued on October 6, 1987, and these were superseded by revised guidelines effective in June 1988. Agencies had until June 1989 to implement the revised guidelines.

¹Office Paper Recovery: An Implementation Manual, U.S. Environmental Protection Agency, Washington, D.C.: 1977.

The Office of Federal Procurement Policy (OFPP) in the Office of Management and Budget is responsible for coordinating the procurement policy provisions of the act with other federal procurement policies. RCRA also requires OFPP to submit reports to Congress every 2 years detailing the program progress and the actions taken by federal agencies to maximize the use of recovered materials.

Department of Commerce Duties

Subtitle E of RCRA assigned the Department of Commerce several resource recovery duties; these include

- developing accurate specifications for recovered materials,
- stimulating market development for these materials,
- promoting proven resource recovery technology, and
- creating a forum to exchange technical and economic data relating to resource recovery facilities.

Objectives, Scope, and Methodology

As agreed with the requesting subcommittees, our objectives were to

- determine the extent to which federal agencies have carried out responsibilities mandated by RCRA to encourage recovery of wastepaper and establish wastepaper recycling programs,
- determine the causes of any shortcomings in carrying out these responsibilities, and
- describe any obstacles in the way of expanded federal paper recycling efforts.

In addition, we agreed to describe the recycling process in some detail and to examine several active wastepaper recovery programs both in and out of government which may have successful features that could be adopted by others.

Our review was done from January 1988 through January 1989 and focused on the recovery of high-grade wastepaper—such as white ledger, copier, and computer paper—generated in a typical office setting. To a lesser extent, we studied the recovery of corrugated containers and other types of wastepaper.

We interviewed officials and reviewed files at EPA, the General Services Administration (GSA), OFPP, the Department of Energy (DOE), the Department of Veterans Affairs (DVA), and the Department of Commerce's International Trade Administration and National Institute of Standards

and Technology. We met with the staff of the congressional Joint Committee on Printing and the Government Printing Office (GPO). We examined EPA's public docket files of comments received in developing a paper procurement guideline and interviewed representatives of selected trade associations, environmental organizations, the Library of Congress, and paper supply companies. We also interviewed procurement officials of GSA's Federal Supply Service in Region 2, New York, who are responsible for writing paper product specifications.

We visited 5 of GSA's 11 regional offices (New York, Chicago, Kansas City, San Francisco, and National Capital) to obtain copies of wastepaper sales contracts and information on amounts and types of wastepaper being collected. We gathered information on recycling activities within the geographic areas of the other six GSA regions through letters of inquiry and telephone contacts. We observed and evaluated GSA wastepaper contract controls of 32 federally owned or leased buildings across the country. In selecting these buildings, we considered GSA records showing sales of wastepaper, our own staff availability, and our desire to minimize travel costs. We cannot project the results of our work to all government buildings.

To identify the obstacles to expanding wastepaper recycling efforts, we interviewed officials of wastepaper and trash hauling companies, a paper broker, and recycling experts, in addition to obtaining the views of federal officials regarding the incentives and disincentives of wastepaper recycling. We supplemented these interviews with analyses of published literature. We observed paper recycling operations in the public and private sectors and interviewed recycling program officials in California, Illinois, Maryland, New York, and Washington, D.C. The programs reviewed were located in federal agencies, a private hospital, state agencies, and private industry. Appendix I summarizes these programs. Private and state programs were recommended to us by national experts in the field. Key locations of our audit work are listed in appendix II.

We examined some wastepaper recovery activities of GPO and the military, but these activities were not comparable to federal civilian operations. GPO is primarily recovering the waste from its printing operations; such industrial waste is typically sold for recycling and never enters the waste stream. The recycling programs of military bases are comparable to community recycling programs because they have a substantial residential component. In addition, military programs can be financed by nonappropriated funds, an option not available to civilian agencies.

We also looked at federal progress in stimulating recycling through the development of procurement guidelines for paper products that can be produced with recovered materials. We did not study the pros and cons of using federal procurement policy to encourage recycling—a complex issue that was the subject of a 1980 GAO report.²

Our review was done in accordance with generally accepted government auditing standards.

EPA and GSA provided written comments on a draft of this report. These are included as appendixes III and IV, respectively, and are evaluated on pages 42 through 44.

²Federal Industrial Targets and Procurement Guidelines Programs Are Not Encouraging Recycling and Have Contract Problems (EMD-81-7, Dec. 5, 1980),

Governmentwide Programs to Encourage Recycling Are Moribund

The Resource Conservation and Recovery Act of 1976 reinforced earlier commitments to resource recovery. In the area of nonhazardous waste disposal and recycling, it assigned new leadership responsibilities to EPA and, to a lesser extent, OFPP and the Department of Commerce. An ambitious and widespread program to separate and recover recyclable paper from wastes generated at federal facilities, called "Use It Again, Sam," was launched in 1976 under the leadership of EPA and GSA. According to EPA, by March 1978, source-separation programs had begun in 90 federal facilities housing some 115,000 employees. EPA's goal at that time was to have 500,000 federal workers recycling paper by 1980.

In the 1980's however, attention to federal recycling requirements waned. Agencies with leadership responsibilities shifted attention to other priorities and office paper recovery came to be practiced at only a few scattered locations, based solely on local initiative. EPA did, however, reassert some degree of federal leadership in 1988 when it created a Municipal Solid Waste Task Force to address the Nation's burgeoning trash disposal problems. The report of the task force contains steps that should be taken by federal agencies to increase recycling and the procurement of recycled goods, including paper.

Responsibility for Recovery Program

Although wastepaper recovery was practiced in some federal agencies before 1976, it has been mandatory, under certain conditions, since EPA issued Source Separation for Materials Recovery Guidelines in April 1976. The guidelines established a recovery program that requires federal facilities with more than 100 office workers to separate high-grade paper from other wastes at its source so that it can be collected and sold for recycling. They also require corrugated container (cardboard box) recovery programs at federal facilities generating 10 or more tons of such waste monthly. While GSA and other federal agencies shared responsibility with EPA in implementing the guidelines, RCRA and Executive Order 11752 assigned to EPA the overall program responsibilities of providing technical guidance and monitoring agency adherence through reviews of annual reports from participating agencies.

The guidelines recognize two situations when wastepaper recovery would not be required: (1) when market demand is so low that an agency is unable to sell its wastepaper or (2) when costs are so unreasonably high that source separation is economically impractical. EPA did not further define "unreasonably high costs."

When promulgating the guidelines for source separation in the Federal Register, EPA discussed the comments it had received on the draft guidelines. Two commenters pointed out that agencies would use the excuse of budget restrictions to justify not implementing the guidelines and requested that EPA specifically define the term “unreasonably high cost.” Other commenters asked EPA to specify that programs were to be implemented only if they were self-supporting.

EPA pointed out that, under the law, heads of federal agencies were responsible for determining which facilities under their jurisdiction should comply with the guidelines, taking into consideration the two situations where wastepaper recycling would not be required. EPA added that it believed that the practices required by the guidelines would be less costly in the long term than existing solid waste management practices. EPA went on to say that part of the legislative history of the Solid Waste Disposal Act is a 1970 Senate Committee on Public Works report that says:

“Federal agencies which generate volumes of waste have a correlative responsibility to request appropriations from Congress necessary to properly manage such waste as part of their normal operating expenses. The public will not tolerate the excuse that budget restrictions prevent compliance with waste management standards and guidelines.”

In response to the requirements of the Resource Recovery Act of 1970 and Executive Order 11752, EPA and GSA launched the governmentwide “Use It Again, Sam” high-grade office paper recycling program in 1976. The program received a boost in 1977 when President Carter, in his first environmental message to Congress, instructed the Administrator of General Services and the heads of other federal agencies to institute wastepaper recycling programs by the end of the year.

To assist agencies in implementing economically advantageous programs, the EPA Office of Solid Waste issued a comprehensive manual on office paper recovery in 1977. The manual described how to establish a reliable source-separation system. It provided a sample cost-analysis format for agency use in determining the economic feasibility of a high-grade paper recovery program. The manual listed several criteria that must be met. One criterion is that to establish an economically attractive program, the recycled materials must have a market value sufficient to cover the cost of recovery and must be in demand by industry. Again, the manual did not provide criteria for defining “unreasonably high costs.”

The manual also stressed the important organizational actions that make a program succeed. For example, office workers must develop the habit of depositing used high-grade office paper in desk-top or centralized containers. Custodial employees must make sure that separated paper is kept that way until delivery to a sales contractor. Management must ensure that adequate resources are provided for collection equipment, safe storage space, and promotional materials. Lastly, a program coordinator should be designated to act as a liaison among the many employees affected by such a program. These duties are particularly important in buildings with several tenants, where the combined efforts of many agencies may be needed to ensure a successful program.

Recycling Requirement Not Enforced

EPA's attention to recycling diminished rapidly in the next decade. The Materials Recovery Guidelines are found at Title 40 Part 246 of the Code of Federal Regulations, but the requirements are not being enforced. For example, the requirement that agencies submit reports that support their decisions not to separate recyclable wastepaper is not being enforced; moreover, representatives of EPA's Office of Solid Waste said they could not recall when it ever was. The requirement that agencies provide annual status reports on recycling activities was dropped in August 1982 because—according to a statement EPA placed in the Federal Register—such information was available from other sources. When asked, EPA officials said they did not gather recycling information on a routine basis.

Section 2001(b) of RCRA established an interagency committee to coordinate the resource recovery activities of all federal agencies. The committee stopped meeting in early 1981. In addition, the Director of EPA's Office of Solid Waste informed us that EPA does not routinely collect information on the nonhazardous waste activities of federal agencies and has not otherwise carried out its responsibilities to monitor agency compliance with the Solid Waste Disposal Act, as amended, because of an increased emphasis on hazardous waste issues.

Issuance of the 1977 implementation manual, which has not been updated, appears to be the extent of EPA's technical guidance to federal agencies. A planned publication on implementing a corrugated container recovery program apparently was never issued.

Focus on Hazardous Waste

EPA's priorities during the 1980s were clearly directed to hazardous waste, spurred by the Superfund legislation and other mandates. EPA's

budget submissions for fiscal years 1983 to 1989 show that no funds were specifically requested for nonhazardous waste programs although Congress did provide such funds. According to EPA's Director of the Office of Solid Waste, the decline in resources and personnel devoted to nonhazardous waste issues during the 1980s reflected the agency's increased emphasis on hazardous wastes in response to the RCRA reauthorizations of 1980 and 1984. At congressional oversight hearings on RCRA in 1987, EPA provided a statement that no funding had been available for resource recovery or recycling since the middle of fiscal year 1981. Thus, at the start of our review in early 1988, no one at EPA was assigned to wastepaper recovery matters.

In previous reports on EPA's hazardous waste programs under RCRA, we have commented on the limited resources available to carry out mandated responsibilities. For instance, in a December 1986 report, we said that hazardous waste efforts have been hampered by low or shifting priorities, inadequate funding, and changing approaches or strategies.¹

Renewed Interest in Recycling

Recently, there have been indications that the situation may be changing. As noted, EPA created a Municipal Solid Waste Task Force in February 1988 and directed it to fashion a strategy for improving the Nations's management of municipal solid waste. That strategy was outlined in a February 1989 report entitled "The Solid Waste Dilemma: An Agenda for Action." The agenda advocates that all levels of government should consider the merits of mandatory separation and collection of recyclables, adding that an interagency working group will be convened in August 1989 to deal with the issue.

In commenting on this report, EPA provided further information. To implement the activities listed in the "Agenda for Action," EPA created a 45-person Municipal Solid Waste Program in the Office of Solid Waste and the regional offices. Current EPA projects directed at federal wastepaper recycling include the following:

- an update of EPA's implementation manual of office paper recovery and an outreach program for federal recycling, which includes development of training, training materials, and a video for federal employees, and
- EPA-supported pilot projects in selected federal office buildings.

¹Hazardous Waste: EPA Has Made Limited Progress in Determining the Wastes to Be Regulated (GAO/RCED-87-27, Dec. 23, 1986).

In early 1988, EPA also named a working group to improve and increase recycling efforts within EPA's own facilities. Our observations on the wastepaper recovery efforts at EPA's Waterside Mall headquarters building in Washington, D.C., are in appendix I.

Procurement Guidelines

In enacting RCRA, Congress recognized the need to stimulate the demand for wastepaper, since recycling would increase the supply. To increase this demand, Congress decided that the federal government should make a concerted effort to procure products—such as paper—that contained the highest practicable percentage of recovered materials; this requirement was included in RCRA.

RCRA was amended in 1980 to require EPA to prepare final guidelines for at least three items—including paper—by May 1981 and for two additional items by September 1982. A later amendment extended these dates, with the statutory deadline for paper set at May 8, 1985. None of the deadlines contained an enforcement provision; thus, it was not until October 1987 that EPA issued a final guideline for federal procurement of paper and paper products containing wastepaper recovered or diverted from the waste stream. At the same time, EPA proposed to amend the guideline and announced it was still working on three overdue guidelines.

The Environmental Defense Fund and three other organizations sued EPA over the delays in issuing mandated guidelines. The suit was settled in April 1988 when a judge ordered EPA, under a consent decree, to promulgate procurement guidelines by specific dates for four items, including an amended guideline for paper. EPA subsequently revised the paper procurement guideline, effective June 22, 1988. The amended guideline recommends minimum recycled content standards for many grades of paper. Federal agencies had until June 1989 to implement requirements, such as developing an affirmative procurement program and obtaining certification from paper suppliers on the percentage of postconsumer fiber paper in the products they supply.

With respect to affirmative procurement programs, EPA determined that both price preference and set-aside programs—two types used by some cities and states for procuring recycled products—were inconsistent with federal procurement law. A price preference system allows a procuring agency to pay a premium, if necessary, for products meeting its recycled fiber requirements. The states of California and New York, for example, set the premiums at 5 and 10 percent, respectively. A set-aside

program, such as the State of Maryland's, reserves a certain percentage of total paper product purchases for recycled paper.

The affirmative procurement program agencies adopt must contain four elements: (1) a recovered materials preference program; (2) a promotion program; (3) procedures for estimation, certification and verification; and (4) procedures for annual review and monitoring of program effectiveness. For agencies to meet the first requirement, EPA recommended using the minimum recovered materials content standards for many grades of paper and paper products since it believed such standards are not in violation of general federal procurement law.

The paper procurement guideline is controversial, and its impact will not be clear for some time. The civil agencies most likely to be affected—GSA and GPO—have serious reservations about certain requirements, as does the Joint Committee on Printing. Both GSA and GPO attempted to initiate similar programs more than a decade ago but abandoned them because competition for awards was reduced or product costs increased. Nevertheless, procurement officials of GSA's Federal Supply Service in New York plan partial compliance with the guideline. According to GSA, they amended 47 paper product specifications to incorporate EPA's recommended minimum content standards, in addition to approximately 90 more documents to include minimum content standards. GSA also said that it plans to pursue future procurements using these amended descriptions as a preference procurement program by virtue of the fact that all products covered by the specifications must contain recovered materials.

Although GSA plans to require vendors to certify the percentage of post-consumer-recovered materials in the products, it does not plan to establish procedures to verify the certifications as required by the EPA guideline. Objective testing methods to verify percentages of recycled material content do not yet exist, and the EPA guideline suggestion of using mill records for this purpose may not be practical, according to GSA officials. A representative of the Joint Committee on Printing voiced similar concern about the ability of agencies to verify recycled content.

In a 1980 report, we concluded that federal procurement policy appeared to have limited promise for stimulating resource recovery.² We added that specifications requiring a minimum percentage of recovered

²Federal Industrial Targets and Procurement Guidelines Programs Are Not Encouraging Recycling and Have Contract Problems (EMD-81-7, Dec. 5, 1980).

materials would probably reduce competition and would conflict with the federal "buy commercial" policy. Federal procurement policy requires agencies to rely on commercially available products whenever the products satisfy the government's needs.

Apart from the competition issue, the Library of Congress, the National Humanities Alliance and other organizations concerned with preserving potentially historical documents believe the use of recycled paper may lead to more rapid deterioration of books and other publications. They argue that recycled paper is more likely to be acidic because of manufacturing processes and thus prone to rapid deterioration. Also, the paper may not meet durability standards because recycled fibers tend to be shorter and weaker than virgin fibers. EPA, as well as a spokesman for a leading manufacturer of printing paper containing recycled fibers disagree. EPA said its research indicates that the paper used for archive purposes has very little to do with its recycled content. The manufacturer spokesman cited the quality books, including a popular encyclopedia, printed on the paper his company has made. At the same time, he conceded that some wastepaper is suitable for use only in making tissue paper or lower-quality writing paper.

In commenting on our report, EPA told us of recent steps taken to promote its guidelines through the creation of a procurement hotline and database and outreach efforts to purchasing officials and vendors. It said it plans to commit additional resources to these efforts in fiscal year 1990 and will sponsor an interdepartmental meeting on recycling this fall. The purpose of this meeting will be to share recycling information and discuss the impact of the "D.C. Solid Management and Multi-Material Recycling Act of 1989." EPA also said that GPO has made purchases of recycled paper pursuant to the guidelines from vendors at competitive prices. It also noted that, because the purpose of the guidelines is to create demand for markets that need to grow, there will be a lag time between guideline implementation and the marketplace response.

GSA's Program

EPA has given GSA specific responsibility for overall coordination and implementation of the federal wastepaper program in buildings it manages. During the 1970s, GSA was committed to implementing a nationwide source-separation program and cooperated with EPA in launching the "Use It Again, Sam" program. Among other things, training programs were established and responsibilities for implementing the recycling program were delineated for GSA offices and tenant agencies in

the buildings it controlled. GSA adopted the slogan "War on Waste" to encourage recycling efforts and reduce the amount of waste going to landfills. Regions were reminded that wastepaper recovery was not discretionary, compliance was mandatory, and "lack of funds" was not an acceptable excuse for noncompliance. Programs were developed to provide guidance and various other services to participating agencies. For example, paper sorters were employed to service about 70 federal sites in the National Capital Region to ensure that the government received the highest possible return on its sales of wastepaper. Also, to expand recycling efforts in the buildings it controlled, GSA developed a special provision that must be in contracts for trash disposal services. The provision says that the government desires to transport all solid wastes collected to a processing facility for the purpose of remanufacturing or recycling.

Programs Faltered

During the early 1980s, a series of events occurred that affected recycling programs and diminished GSA's commitment and enthusiasm. These included a depressed wastepaper market; reorganizations and reductions-in-force in some agencies; GSA's own budget constraints, which forced the elimination of its paper sorting services in the National Capital Region in November 1986; the poor quality of wastepaper and problems with contractor performance; and agencies' lack of interest in, and incentive for, participating. Consequently, the program was deemphasized over the years; GSA was not actively promoting it when we began our review in 1988.

Documentary evidence to support the action GSA took and its decisions to deemphasize wastepaper recovery are sketchy. The agency's institutional knowledge and documentation of its past history of the recycling program is severely limited because staff have left the agency and old records have been destroyed.

As of December 1988, the Boston, New York, Atlanta, Fort Worth, Denver, and Seattle regions reported no wastepaper recovery programs in place during 1988 except at two locations where an indeterminable amount of paper was given away. A few recovery programs were still active in GSA's Philadelphia, Chicago, San Francisco, and National Capital regions. Overall, the five regions reporting any activity were administering 23 contracts involving 120 federal facilities that annually generated an estimated 22,100 tons of salable wastepaper valued at about \$400,000. These programs survived because of local initiatives and other individual efforts such as those of EPA, DOE, and the Architect

of the Capitol. Congressional House and Senate office buildings managed by the Architect of the Capitol account for about 26 percent of the estimated quantity collected. Some agencies may have recovery programs but are not selling the wastepaper through GSA as the EPA guideline requires. Indeed, EPA officials told us that EPA regions and laboratories are negotiating their own sales contracts.

Where wastepaper recovery programs have been implemented, GSA headquarters has not provided regions with the needed guidance on how to manage the program and award sales contracts to ensure program effectiveness. Most of the paper sold is graded as low-value mixed paper instead of high-value office paper. Where information on actual collections was available, it showed that about 90 percent of the wastepaper sold for recycling was graded as mixed paper. There are two possible reasons for this—the material was not source-separated and/or the material was not properly graded. This issue is discussed further in the next chapter. One result, for example, is that the National Capital Region's sale of 13,975 tons in fiscal year 1987 returned only \$150,613, or \$10.78 a ton. But GSA contract prices that year for high-grade white ledger and computer printout paper ranged from \$30 to \$60 a ton. In contrast, since EPA revitalized its own source-separation program, about 95 percent of the paper sold is high grade.

GSA Contracting Problems

GSA's processes for awarding and administering wastepaper sales contracts were flawed. Internal control weaknesses affected all five regions with active programs and the GSA Finance Division in Kansas City. Examples of these control weaknesses follow.

- GSA regions have little or no assurance that wastepaper delivered to their contractors is properly graded and weighed. Contrary to contract terms, several contractors weigh the wastepaper on their own scales. Some material may not be weighted: for example a Chicago region contracting officer and a contractor have verbally agreed on an average weight for each container removed. Moreover, in many cases, GSA lacks copies of the wastepaper delivery orders to verify amounts reported by contractors. When copies are available, they are often not validated with a government representative's signature attesting to materials picked up and released.

This trust in the integrity of the contractors may be misplaced. For example, in the National Capitol Region, neither agency building management officials nor the contractor were able to explain why 5 trays of

low-grade mixed paper weighed an average of 652 pounds while 10 of the same-size trays of high-grade white ledger paper weighed an average of 294 pounds according to a wastepaper delivery order from the contractor.

- Contracting weaknesses do not result in assurance that wastepaper buyers are responsible contractors. GSA contracting officers in one region were not making financial assessments on some prospective contractors to determine whether they have sufficient resources to perform the contract. In some cases where financial assessments were made, they were outdated and did not represent the contractors' current financial position. In addition, the Chicago and San Francisco regions were not compelling the contractors to obtain bid deposits or performance bonds worth 20 percent of the contract price as required. In at least two instances, the San Francisco region accepted and retained for more than a year a contractor's personal check in lieu of a performance bond. The checks were never deposited. We also noted an instance where the region awarded a wastepaper sales contract to the low, rather than the high, bidder because of a mathematical error. The mistake could cost the government about \$13,000 in lost revenue, the difference between bid prices for the estimated quantities of recycled paper.
- Delayed billing on wastepaper sales contracts has been a long-standing problem. Regions are taking from 2 months to more than a year before they submit their billing summaries to the GSA Finance Division in Kansas City. The Philadelphia region has been chronically late in submissions. This lateness is a major reason why seven former contractors were indebted to GSA for more than \$1.4 million in August 1988. At least two of the companies went bankrupt, owing the government a combined \$758,000 for the wastepaper they obtained during the contract period.
- The invitations for bids being issued by regions often contain inaccurate and outdated information on the wastepaper available for sale. Regions are not complying with provisions of the standard contract, which require that the estimated tonnage of the wastepaper offered be based on the best information available to the government at the time of issuing the invitation for bids. For example, in the Chicago region, a fiscal year 1988 invitation for bid showed the estimated annual weight for tab cards from five buildings as 13 tons. During fiscal year 1987, however, only 1,120 pounds of tab cards were collected from those buildings and sold.

- Billing errors and omissions go undetected under GSA's current management practice. Contractors are not always billed for material they picked up, and when they are the billed amount may or may not be correct. For example, a Chicago region contractor had not been billed for pick-ups made almost a year earlier. After we brought this oversight to the attention of the GSA Kansas City Finance Division, it billed the contractor, who promptly paid the full amount of \$3,398. On a San Francisco contract, we identified underbillings of \$5,788 in fiscal year 1988. Some 41 tons of white ledger paper were improperly billed as low-grade mixed paper, while 376 tons of white ledger were graded correctly but were billed below the contracted rate. Regional officials promised to bill the contractor for the cumulative underbillings.

In addition to the above conditions, GSA's regional offices are not taking advantage of opportunities to recover wastepaper that was shredded to comply with Privacy Act provisions. Even though agencies that shred their paper incur no additional cost whether the paper is recycled or dumped at landfills, the shredded paper was sometimes not sold for recycling. Some agencies that are shredding their own paper are giving it away; others have no knowledge of its disposition.

RCRA and the Department of Commerce

RCRA says that the Secretary of Commerce—acting through the National Bureau of Standards (now called the National Institute for Standards and Technology) and in conjunction with national standards-setting organizations in resource recovery—shall, after public hearings, publish guidelines for developing specifications to classify materials that could be recovered from solid waste. In November 1976, Commerce established the Office of Recycled Materials (ORM) to fulfill its RCRA mandates. Three years later, it added a Technical Advisory Center to examine markets for recycled materials and develop a database describing resource recovery systems.

Before its demise in 1982, ORM produced over 100 publications describing the work of its Recycled Materials Program. Among other accomplishments, this program identified material properties of solid waste constituents to consider when classifying recovered materials, examined the potential for producing fuels derived from refuse, developed a resource recovery planning model, published a directory of recycled product manufacturers, and produced a survey of wastepaper markets in the southeast and a study of recycled product procurement in seven states.

According to ORM's final report, much of the federal role in resource conservation and recovery was to be phased out by the end of fiscal year 1982. ORM was disbanded at that time but noted in its final report that it had fulfilled nearly all of its responsibilities under RCRA. Commerce has not received further funding, either from direct appropriations or from other agencies through cost reimbursement, to continue its work on recovered material issues set forth in RCRA.

RCRA and OFPP

The Office of Federal Procurement Policy (OFPP) has not carried out all of its mandated RCRA responsibilities. According to section 6002, OFPP was to (1) coordinate the RCRA procurement policy with other federal procurement policy to maximize the use of recovered resources and (2) report annually to Congress on the actions taken and the progress made by federal agencies. Beginning in 1984, OFPP was to report every 2 years, rather than each year, and to include a review of specifications and revision requirements of subsection d. Since 1981, OFPP has submitted only two reports to Congress. The reports, moreover, instead of being evaluative, were basically summaries of what agencies reported to OFPP about their compliance with RCRA procurement provisions. Examples of agency reports were attached to the summaries.

RCRA requires OFPP to monitor compliance with EPA guidance to determine whether agencies have developed affirmative procurement programs for recycled paper products or any other products for which EPA prepares procurement guidelines. However, an OFPP official said that because of staffing constraints, the agency does not plan to meet this requirement. Instead, the officials believe that agency reports to OFPP serve as an enforcement mechanism because they are subject to public scrutiny. We do not believe that this meets the RCRA requirement that OFPP report to Congress on agency compliance with EPA procurement guidelines. Further, OFPP officials do not consider the EPA guidelines for procurements to be binding even though section 6002 of RCRA makes it clear that agencies shall comply.

Although OFPP reviewed and approved the legality of EPA's paper procurement guidelines, it has yet to resolve the apparent conflict with the federal "buy commercial" policy. In that regard, an OFPP official simply reiterated the concern that the use of minimum content standards may not generate sufficient competition for government contracts.

Other Agencies

Our work suggests that many federal agencies may not be aware of the requirement to maintain high-grade office paper recovery programs. The programs of civilian agencies disposing of their recyclable wastepaper through GSA contracts appeared to fall short of EPA's guidelines as the high percentage of low-value mixed wastepaper being sold would indicate. GSA offices were generally not aware of civilian agency recycling programs operating independently of GSA. Two such programs at agencies which manage their own complexes of federal facilities, one at the Department of Veterans Affairs (DVA) and one at the DOE were also not emphasizing the recovery of high-grade wastepaper.

DVA

DVA headquarters officials responsible for trash and property disposal said they thought that EPA and GSA had terminated the "Use It Again, Sam" recycling program. They were unaware of the extent of paper recycling within DVA's complex of medical centers, data processing centers, supply depots, and office buildings. In response to our inquiries in June 1988, DVA surveyed its facilities and found some instances of recycling, such as at its Data Processing Center in Hines, Illinois; at a Forms and Publications Depot in Alexandria, Virginia; and at a few other sites. The Hines and Alexandria programs began several years ago as a result of local management initiatives.

As of January 1989, DVA central officials had not acted to expand wastepaper recovery activities or to bring the agency into compliance with EPA's materials recovery guidelines. With respect to implementing programs within the DVA's complex of more than 170 medical centers, the Director of the Office of Acquisition and Material Management said that paper recycling did not appear to be cost effective at medical centers because of the following problems:

- Space was usually not available for storing, sorting, and processing scrap paper products.
- Wastepaper collection presented serious fire and contamination hazards, which are critical in a hospital setting.
- Privacy Act constraints required special handling in the disposition of patient records, including burning or shredding.
- Diverting staff from medical care to recycling efforts is a critical concern.

DOE

DOE property management regulations before 1984 clearly indicated that field offices were responsible for conducting wastepaper recovery programs as required by EPA guidelines. Each field activity was supposed to report annually to DOE headquarters on the tons of wastepaper recovered and revenue received. When the regulations were revised in 1984, reference to wastepaper recycling was deleted. DOE officials said that dropping from the Code of Federal Regulations the requirement to report annually to EPA indicated to them a lack of any further interest in or commitment to recycling. Accordingly, DOE had no information on the extent of wastepaper recycling by its many field activities. If any of them were recycling paper, they were not selling it through GSA sales contracts.

In contrast, DOE compiles yearly data on the amount of precious metals salvaged from scrap materials. At DOE headquarters, almost 5 tons of high-grade wastepaper and almost 20 tons of lower-graded paper per month are sold for recycling. A separation program was in place when DOE acquired management of the building from GSA in 1986, and DOE elected to continue the program.

Obstacles to Expanded Federal Paper Recycling Efforts

Our review disclosed numerous obstacles that tended to frustrate federal agency efforts to establish, maintain, and expand wastepaper recycling programs. The obstacles cover a host of attitudinal, economic, physical, and management issues, some more serious than others. While some obstacles can be easily overcome, others are more difficult either because they require the cooperation and coordination of several parties or because they are not controllable.

Perception of Cost Ineffectiveness

When we asked why federal recycling programs had waned, federal officials most commonly responded that such programs were not cost effective. The perception that paper recycling programs are net money losers is widespread and places proponents of such programs in a defensive position. Since cost ineffectiveness (here an inability to sell wastepaper at an economic price given the costs of collection and separation) is one of the two legitimate reasons for not implementing the otherwise mandatory source-separation guidelines, this perception is a powerful deterrent to broader adherence to the requirements.

We have used the word "perception," because conclusive evidence on the cost effectiveness of paper recycling has not been collected. GSA officials, for example, referred to studies done several years ago but provided only two of these. One study was made in 1982 and was based on selling the lowest grade of paper. Moreover, an October 1982 GSA Public Buildings Service memorandum that accompanied the study said that a recovery program should be considered cost effective if revenues exceed costs by 10 percent or more. Few programs could meet such a standard, especially those generating high percentages of low-grade wastepaper. A more recent study concluded that recycling was unfeasible at one location because of high labor costs associated with collecting and removing wastepaper. The report, however, was not clear as to what category of employee these costs were attributable—employees or contractor personnel specifically hired to separate the wastepaper. Thus, GSA stopped promoting the programs in the buildings it managed, primarily on the assumption that programs were not cost effective.

Attitudinal Obstacles

For recycling to be successful, employees must develop the habit of separating recyclable paper from other trash. Both office workers and custodial staff must then make the effort to keep the paper separate from less desirable paper and other items (contaminants) that hinder recycling. Contaminants range from the obvious, like food waste and

beverage containers, to the less-obvious, like gummed labels on envelopes, magazines, carbon paper, and paper clips.

Moreover, the recycling habit is one that advocates stress must be constantly reinforced. Employee apathy or resistance and lack of management commitment are constant dangers. A representative of the Architect of the Capitol said it was not possible to get employees to separate high-grade wastepaper from less desirable grades and to remove contaminants from paper being discarded. GSA responses to our inquiries also cited employee behavior patterns that resist expending the effort to separate recyclable paper, and even worse, that sometimes result in the deliberate contamination of materials that have been separated.

Many consumers still consider recycled paper products to be inferior functionally and aesthetically to virgin fiber paper products. This not only adversely affects demand for recycled products but also works against sustained management commitment to, and employee participation in, wastepaper recovery programs.

On a related topic, an American Paper Institute official said he thought that the government bought large amounts of computer paper made from cheap groundwood. The perception that the government buys inferior paper products may, in some cases, have resulted in dealers not bidding for government wastepaper.

Economic Obstacles

Whether or not recycling is cost effective, many agencies lack financial incentives to start or continue wastepaper recovery programs. GSA and some agencies' representatives told us that they were reluctant to develop recycling programs because they must spend appropriated funds to implement and operate the program, but they cannot recover gross sales proceeds, which must be deposited to the Treasury's miscellaneous receipts account. We cited this same disincentive in our 1981 report on civilian agency silver recovery programs.¹

However, lack of direct incentive is not an obstacle for defense agencies and some civil agencies, including DVA. Federal law stipulates that recycling sales proceeds at military installations be credited to operation and maintenance funds in amounts sufficient to cover costs of collection and processing, including the cost of any equipment purchased. Any

¹Civil Agencies Should Save Millions by Recovering Silver From Photographic Wastes (PLRD-81-48, July 31, 1981).

excess funds can be deposited to nonappropriated morale and welfare accounts. The DVA has the authority to deposit wastepaper sales receipts into a revolving supply fund, as it does for the sale of precious metals; it has not used this authority, however.

Nonfederal recycling programs are confronted with some of the same obstacles. For instance, a public university official said the university's program has not progressed, primarily because the school does not receive the proceeds from the sale of the paper.

The other economic reason for recycling is to reduce trash disposal costs. These costs are soaring dramatically in many areas of the Nation because trash must be hauled greater distances to be dumped and land-fill fees have risen. In 1988, the National Solid Wastes Management Association reported that the national average trash disposal cost had risen 73.5 percent since 1982. However, federal agencies may not realize trash disposal savings immediately or be able to track them. In leased space, disposal savings may not be passed on to tenants because the rent includes waste disposal, regardless of the amount.

Market Factors

As discussed in chapter 1, wastepaper markets are volatile, especially for low grades of paper, which are more apt to reflect general economic conditions. The market also varies by area. Recycling is more favorable in areas near recycling mills or near ports where export markets bolster demand. Thus, wastepaper recovery programs at some federal office buildings and facilities may not be practical either because no market exists or the quantities generated are insufficient to interest a dealer.

According to the Institute of Scrap Recycling Industries, a marked increase in wastepaper recovery by the government may tend to reduce prices for all grades of wastepaper unless offset by a corresponding increase in demand for recycled products. Increased supplies and lower prices will not of themselves necessarily stimulate demand.

It should be noted that RCRA anticipated this obstacle and includes procurement provisions designed to increase the demand for recycled paper as we noted in chapter 2. The guidelines were delayed many years and went into effect in June 1988.

Program Costs

To implement a recycling program, agencies may incur increased costs for labor, equipment, and storage space. The reasonableness of these

costs in relation to wastepaper sales proceeds and trash disposal cost avoidance is at the crux of the decision as to whether to recycle.

The costs to establish and maintain a recycling program could be substantial. Capital costs include the purchase of equipment such as desktop holders and other receptacles to collect and store paper until pick-up. Balers, which are desirable for corrugated container recovery, are quite expensive. Additional space may be needed to house baling machines and scales and to store wastepaper until pick-up. Costs must be incurred initially to publicize the program and to instruct office and custodial employees on their respective program roles. Recurring maintenance and administrative cost increases may result from the need to handle wastepaper separately from the trash and to monitor the activities of the wastepaper contractor to ensure proper payment for paper sold.

Budget Constraints

Money has not been available so that EPA and GSA could carry out their "Use It Again, Sam" program responsibilities. EPA abandoned all its non-hazardous waste responsibilities during the 1980s as part of a high-level policy decision to spend agency resources on hazardous waste management issues.

Personnel restrictions have hindered GSA's recycling role. For example, for many years GSA employed as many as six sorters in the Washington, D.C., area to collect as much high-grade wastepaper as possible from federal buildings. GSA curtailed this service in 1983 and eliminated it in 1986 because of reduced employment ceilings. Also, GSA headquarters and regional officials said that attention to wastepaper programs slackened because they involved relatively low dollar amounts and because of the press of other duties.

Physical Obstacles

Many federal buildings do not have adequate storage space to hold accumulated wastepaper until delivery to a dealer. The EPA guideline says that storage areas and containers should be protected from the elements and be secure enough to minimize inadvertent contamination and to meet local fire regulations. A sprinkler-equipped storage area is especially critical at a facility like a DVA medical center. However, agencies—including GSA—often did not spend money to provide adequate storage space. In 1982, and again in 1988, GSA cited the lack of storage space as the reason why its own central office building was not participating in an office paper recovery program. Moreover, it cited the fear of vermin

infestation if existing space were used for storage. Public Buildings Service officials added that providing space for fitness centers and day care programs has higher priority than space to store wastepaper.

Some facilities with recovery programs also have unresolved storage problems. For example, we noted several bulk containers of wastepaper stored in an open area in a Chicago federal building that was clearly marked as a nonstorage area. Where high-grade office paper is separated and collected, it runs a high risk of theft. A GSA regional administrator reported that collection boxes were also routinely stolen. Scavengers and others aware of the strong market for computer paper and other types of office paper may pilfer such material unless it is properly secured. The president of a Washington, D.C., wastepaper firm said that he suspects federal agencies are the source of some paper that dealers buy from individuals.

Management Obstacles

The management obstacles identified all involve key requirements of EPA's 1976 materials recovery guidelines and the accompanying instructions. The requirements are outdated, lack an enforcement mechanism, and assign key responsibilities to GSA, which has shown little inclination or capability to carry them out.

Outdated Requirements

Since 1976, several changes have affected the management of federal office space. For example, GSA's reliance on contractors to perform custodial functions has increased considerably. The government has less control over contractor employees and thus less assurance that different grades of wastepaper are kept separate and free of contaminants to maximize sales proceeds. Custodians mistakenly mixing different grades of paper or contaminating wastepaper with trash has been a recurring problem in recent years.

Program responsibility has been diffused. Within GSA, sales contract responsibility is assigned to the Federal Supply Service, but decisions on whether to start or terminate a program have been assigned to the Public Buildings Service. The program has been further diffused because GSA has been delegating building management authority to tenant agencies. The delegation program has expanded from a few single-tenant agency buildings to more than 2,500 of the 6,800 owned and leased buildings GSA operates and maintains. However, the respective roles of GSA and the delegated agencies in resource recovery have apparently not

been clearly defined. Some agencies are now negotiating their own wastepaper sales contracts, while others continue to use GSA services.

Other aspects of the requirements may need to be reexamined. For example, advances in computer technology have affected the paper products of those processes. Tab cards are almost obsolete, but they were a high-grade office wastepaper in 1976. Many computer printers now use high-speed laser printing. Such used computer paper has less value than the impact-printed paper that was relatively more common several years ago.

Enforcement Mechanism Lacking

Despite the fact that the material recovery guidelines are mandatory, federal agencies can ignore their responsibilities because of the lack of any enforcement mechanism. Thus, EPA and GSA were able to avoid their leadership responsibilities during most of the 1980s. Other agencies managing large facilities subject to the guidelines, such as the DVA and DOE, were also not promoting wastepaper recovery. At the time of our review, neither agency knew to what extent its field activities were engaged in recycling. DVA building management officials interviewed were not aware of the guidelines' requirements and could not explain why a recovery program was not in place at the DVA's Washington, D.C., central office building. In August 1988, the DVA informed us that a central office program was viable, but as of January 1989, it had not yet decided whether to implement a program.

Buildings with several federal tenants pose an obstacle to increased recycling; coordination and cooperation among agencies is crucial to generating sufficient quantities of high-grade paper. Agreement also must be reached on the types and locations of collection bins, program publicity, and employee education. No mechanism exists to ensure this process takes place. Although GSA has program coordination responsibilities for the buildings it manages, it has viewed that role as simply encouraging agencies to cooperate in implementing recycling programs. We observed that where programs were active, GSA did not intervene if some agencies were not participating or employees were not keeping different grades of paper separate.

GSA Management

GSA has given little attention to its responsibilities for awarding and administering wastepaper sales contracts, and the breadth of its future role is uncertain. Thus far, however, it appears that most civil agencies have relied on GSA to sell their recyclable wastepaper. As described in

chapter 2, GSA's contracting process had internal control deficiencies that ranged from awards to firms with inadequate financing to an almost total reliance on contractors to properly weigh and grade the paper they haul away.

We saw little evidence of attempts to correct the problems. For instance, GSA's Philadelphia region has, for several years, been late in sending the delivery information the GSA Kansas City Finance Division needed to bill the contractors for paper picked up there. At the time of our visit to Kansas City in August 1988, Philadelphia was still about a year behind in submitting required documents. In GSA's San Francisco region, the Social Security Administration (SSA) became frustrated after finding out in 1987 that the owner of the contractor company—rather than a weightmaster—was certifying the wastepaper weight for SSA's Salinas Data Operations Center. SSA subsequently awarded its own contract to another wastepaper contractor.

Contractors lost interest in the programs: some became insolvent and some, as in the New York Region, realized the government did not have enough high-grade paper to make pick-ups worthwhile. In the early 1980s, the National Aeronautics and Space Administration warned GSA that employees were losing faith in the program because paper was not being collected regularly. Collection boxes were overflowing and insects were observed in some of them.

About 94 percent of the 25,769 tons of wastepaper recovered and sold under sales contracts with the GSA National Capital Region during fiscal years 1987 and 1988 was classified as mixed (low-grade) paper. We do not know whether this resulted from poor source-separation by agency employees, collection problems, improper grading, or a combination of these and other factors. In any event, wastepaper programs as currently operated do not ensure that the government gets the maximum return on the paper sold for recycling.

Observations, Conclusions, and Recommendations

Observations

Dearth of Model Programs

Although wastepaper recovery has been a trash disposal option for decades, we had difficulty identifying active recycling programs for our study. An exception was New York City, where numerous office waste-paper programs were started during the 1980s. Several officials, both in and out of government, who should be in a position to know, were just not aware of many active programs. For example, an official of Waste Management Corporation, an industry leader in trash disposal and recycling, was not aware of any office paper recovery program that had been active for more than a year.

Our experience in attempting to find model programs should not be surprising. An EPA-sponsored study indicated that a little over 1 million of the 6.1 million tons of high-grade office wastepaper were recovered in 1986. The amount would be much lower were it not for the efforts of scavengers and trash haulers. A vice-president of the American Paper Institute said that scavengers account for a substantial portion of the collection, separation, and sale of recyclable wastepaper. In contrast to office paper, the EPA study reported that about 3.8 million of the 12.6 million tons of newspaper waste and about 8 million of the 19.4 million tons of corrugated container waste was recovered for recycling in 1986.

The federal government has had very limited success in instituting paper recycling programs. Some agencies had active programs in the late seventies and early eighties, but the programs faltered in 1981 and 1982 when the price for wastepaper dropped, particularly for low-grade wastepaper that the government was discarding. Generally, the programs did not resume when the market rose again, except where individuals were responding to environmental goals.

We should point out that recycling is not a simple process. There are many difficulties encountered in the paper recycling pipeline as a result of the impact of human factors, mechanical problems, and market influences. If a product results from the collection and processing of wastepaper—which is not always the case—it may not be universally accepted for aesthetic reasons and may not suit all applications previously satisfied by products made from virgin material. In addition, it may not be cheaper to buy.

One of the major obstacles to increased recycling in the federal government is the lack of incentive for agencies to properly separate their paper for the highest return because they cannot recoup their costs for the operation. For most agencies, all proceeds from the sale of wastepaper must be returned to the Treasury. Virtually all agencies we contacted cited this difficulty as a strong deterrent to collecting and selling wastepaper.

GSA's contracting processes for the sale of wastepaper are poorly carried out even when agencies make the effort to collect wastepaper and prepare it for sale. There is no assurance that the federal government is obtaining the correct return for the paper sold. While the value of these transactions is small compared to others GSA manages, its handling in most instances we observed was inept.

Another obstacle to increased recycling is the opinion that recycling is not cost effective and, therefore, is not worth doing. We found this opinion to be based on perception, not analysis. There are two reasons that EPA cited in its guidelines that would justify why an agency did not have to comply with the mandatory guidelines at specific locations. The first was no market for wastepaper and the second was "unreasonably high costs" of source separation.

Cost data that could be used to determine whether recycling programs could be cost effective have not been accumulated over time. EPA dropped the requirement for annual status reports in 1982. Most of the active recycling programs we reviewed, regardless of who was running them, did not accumulate cost data. Nonetheless, agency managers told us they had not established or resumed recycling programs because they were under the impression that such programs were not cost effective.

EPA chose not to define "unreasonably high costs" in its Source Separation for Materials Recovery Guidelines, asserting that implementing the guidelines would be less costly for agencies than their present waste management practices. Agencies that were reluctant to implement recycling programs had the option not to do so, particularly after the annual status report requirement was dropped. Efforts by EPA to create demand for recycled paper through the recycled paper procurement guideline have yet to be successful. The guideline, finally released in response to a lawsuit, went into effect June 1988, many years later than originally required by law; time will be needed to determine its success.

Bulk Recovery Programs

Certain facilities, such as data processing centers, publication depots, and records centers, create substantial bulk quantities of wastepaper and thus are conducive to recycling. The cost of recovering these materials would be little or no more than if the paper was being thrown away. The trash disposal costs avoided should offset any additional administrative costs, which should make recovery programs cost effective. We noted, as discussed in appendix I, some indications of government installations engaged in bulk recovery programs, but if GSA records are an indication, the programs are not widespread.

The California experience with shredded wastepaper suggests that federal agencies are missing an opportunity. Agencies such as the DVA were shredding records, or contracting for shredding services, but then throwing the paper away without considering its marketability. The DVA indicated a reluctance to sell wastepaper that had been shredded to satisfy Privacy Act restrictions.

Source Separation Is Important

None of the programs recovered all the wastepaper generated nor did they consistently separate out the high-grade paper. Such programs are less likely to survive economic downturns when demand for mixed grades of wastepaper may disappear. If the paper cannot be sold, it has to be disposed of as trash. Separating the paper produces the best income, as the high grade provides a much better return than the low grade. The cost of the labor to separate and collect the paper must be considered in a paper separation program. Sales proceeds may not warrant this extra effort.

Cost effectiveness is certainly a desirable attribute for a wastepaper recovery program, but it should not be the sole criterion for whether a recycling program is undertaken or continued. At some locations there may not be a choice because federal installations may be required by mandatory state or local programs to participate in recycling.

Lessons Learned

The most active wastepaper recovery programs we surveyed had the commitment of top-level management, employees were required to participate, the paper was separated at the source, and the activities were able to retain the revenue from the sale of the paper. Programs with these attributes appeared more likely to generate revenues equal to or greater than cost.

Limited Progress Being Made

Since our review began, EPA has established the Municipal Solid Waste Task Force, which has set forth its "Agenda for Action." One of the members of the task force has been working with GSA to revise its wastepaper contracts to increase the money the federal government receives for the wastepaper it sells. EPA has also stepped up recycling efforts in its own headquarters building. There seems to be a little renewed interest in recycling, but there is much opportunity for improvement. It remains to be seen whether any real progress will be forthcoming.

Conclusions

Federal civilian agencies, in general, are not complying with the requirements of the Resource Recovery Act of 1970, which mandated source separation of wastepaper for recycling. The reasons for noncompliance are not based on factual data and appropriate analyses, as required by the guidelines developed by EPA, which had overall responsibility for implementing the act.

The inability of agencies to recoup the sales proceeds to offset their costs for separating wastepaper is a significant obstacle to increased recycling. Efforts by EPA to create demand for recycled paper through procurement of paper products made from recycled paper are just now being put into place, many years later than mandated by law.

GSA's administration of wastepaper sales contracts does not ensure proper return from the wastepaper being sold for recycling.

Recommendations

We recommend that the Administrator of EPA do the following:

- Assist agencies in determining whether separation of wastepaper is a viable action for their operations. This should include (1) identifying those agencies located in areas of the country having the greatest potential for successful programs and (2) providing better guidance to help these agencies determine the amount of high-grade wastepaper they can produce, the existence of a market for the paper, the state and local requirements for paper separation that exist, and costs of alternative trash disposal.
- Define the term "unreasonably high cost," balancing the additional cost to the government against disposal fees and the environmental benefits of recycling the paper, such as conservation of landfill space and natural resources.

- Work closely with and assist OFPP in preparing the biennial report to Congress on the progress agencies are making in implementing the guideline for the procurement of recycled paper.

We recommend that the Administrator of GSA take steps to strengthen controls over the process of awarding and administering wastepaper sales contracts to optimize proceeds and thereby encourage agencies to increase participation in wastepaper recycling.

Matter for Congressional Consideration

Congress could contribute to an increase in recycling in federal facilities by alleviating the cost burden of these programs. An appropriate step Congress could take would be to ensure that agencies involved in recycling efforts are able to receive the income from the sale of their wastepaper for future use in their recycling programs.

Agency Comments and Our Evaluation

Both EPA and GSA commented on a draft of this report. EPA's comments are included as appendix III to this report, and GSA's comments as appendix IV. A summary of their comments and our evaluation follows.

EPA

EPA said the report was well-researched and generally accurate in discussing wastepaper recycling at government facilities. It said that because the report presents important findings pertaining to other agencies that play significant roles in the federal government's recycling efforts, it should contain recommendations for more active participation by these agencies. EPA also suggested that the report contain a recommendation that the government require a mandatory recycling program with no provisions for exceptions—as is now the case—in instances where there is no market for wastepaper or recycling results in unreasonably high costs.

We agree that for wastepaper recycling to be most successful, all agencies must actively participate, and our report discusses the activities of other agencies such as Commerce and OFPP. We have chosen, however, to limit our recommendations to EPA and GSA because those agencies have the central responsibilities and their actions affect the other agencies. We did not include the question of whether the federal government should require a mandatory recycling program in the scope of our work; thus, our work cannot support an endorsement of EPA's suggestion. We believe, however, that implementation of our recommendations by EPA and GSA, as well as steps by Congress to enable agencies to receive the

income from recycling, will serve as a positive incentive for increased agency participation. This may rule out the need to make the program mandatory.

EPA commented on our discussion of its recycled wastepaper procurement guidelines. It said our report portrays the procurement requirement negatively and, because some agencies are reluctant to comply with the requirement, it prefers that our report does not reinforce this characterization. We do not believe that our report would be complete without addressing the procurement guidelines and the differing views on them.

EPA provided additional comments, including updated information on the status of its procurement and other activities. We have included this information in the text where appropriate.

GSA

GSA agreed with our recommendation that steps should be taken to strengthen controls over the process of awarding and administering wastepaper sales contracts and provided the following views:

- Before steps can be taken to strengthen the contracting process, Congress will need to designate a specific responsible contracting agency; otherwise, program control will remain diffused. GSA cited the example that, where responsibility for management of many buildings has been delegated to the occupant agencies, control of building management funds has been reassigned from a single source to multiple sources.
- If GSA is assigned clearly defined contracting responsibility, additional resources will be needed to facilitate the building management activities for those agencies utilizing the sales contracts and for contracting.

We do not believe that the implementation of our recommendation should be contingent on the two factors cited by GSA. Our view that GSA needs to strengthen its controls over wastepaper sales contracts is based on the internal control weaknesses which are discussed on pages 25 through 27. These included instances where GSA regions (1) delayed billing on wastepaper sales contracts and (2) issued invitations for bids that contained inaccurate or outdated information on the wastepaper available for sale. In our view, these problems can be resolved with basic internal control improvements.

GSA said that consideration should be given to

- regulating federal agencies to be responsible for participating in waste-paper recycling and monetarily rewarding agencies as encouragement for participating and
- supplementing agency appropriations during periods where recycling costs exceed income.

Our report points out that agencies are currently required to participate in wastepaper recycling except in instances where there is no market for wastepaper or recycling results in unreasonably high costs. We also point out, as a matter for congressional consideration, that Congress could take the step to ensure that agencies involved in recycling are able to receive the income from the sale of their wastepaper for future use in their recycling programs. This could alleviate the cost burden of these programs, help offset losses experienced during periods where costs exceed income, and act as a general incentive for agencies to participate.

GSA also provided updated information on its activities to amend paper product specifications to incorporate EPA's recommended minimum content standards. We have included this information in the text.

Survey of Active Recycling Programs

To obtain information on wastepaper recycling practices and the feasibility of expanded recycling by federal civilian agencies, we examined in some detail several active paper recycling programs in the public and private sectors. The programs selected came to our attention by various means. Recycling experts suggested some programs, and federal officials referred us to others. We also selected federal civilian agencies based on GSA records showing the recovery of significant quantities of recyclable paper.

Summaries of the programs surveyed follow. These summaries are based on staff interviews and limited documentation provided by the organizations. We did not critique the programs. Nevertheless, some overall observations did emerge. Certain operations are more conducive to generating large quantities of recyclable wastepaper than others. Wastepaper recycling may generate more revenue than cost under certain conditions, and the positive aspects of some programs may be useful in enhancing programs elsewhere.

Federal Agency Programs

Social Security Administration

The Social Security Administration (SSA) in Baltimore has been recovering bulk quantities of wastepaper from five buildings in its complex for at least 9 years and selling it through GSA contracts, netting over \$225,000 in fiscal year 1988. The main component of the program involves the salvage of obsolete forms and publications and unneeded computer runs. Rather than being dumped in the trash, these papers are collected in huge corrugated containers supplied by the GSA sales contractor at strategic locations throughout the complex. When full, SSA contract employees bring the containers to a central loading dock area for weighing and storage until pick-up. SSA does not attempt to keep different grades of paper separate in the collection containers. Under terms of the fiscal year 1988 contract, all wastepaper collected was classified as mixed, even though the selling price was pegged to a percentage of the white ledger paper prices quoted in an industry trade journal. Delivery tickets show that 1,654 tons of paper were recovered during fiscal year 1988. Because the billing process had not been completed at the time of our visit, we estimated revenues for the year of \$90,141 or \$54.51 a ton.

The SSA building manager coordinates the program. He said that agency costs would be about the same regardless of whether the paper is sold for recycling or dumped at a landfill. Bulk quantities of paper would be handled similarly in either case.

SSA also recovers used corrugated boxes that are sold through the GSA contract. The recovered boxes are baled and weighed before delivery. SSA records for fiscal year 1988 show that 169 tons were recovered, which generated estimated revenues of \$3,463 or \$20.44 a ton.

The SSA building manager said that the programs were implemented to save trash disposal costs. Based on actual rates charged SSA for trash disposal, we estimate that SSA saved \$131,310 in fiscal year 1988 by diverting 1,823 tons of paper and corrugated material from landfills. SSA is able to retain the proceeds from the sale of these materials.

Internal Revenue Service

The Internal Revenue Service (IRS) Central Area Distribution Center in Bloomington, Illinois, launched a bulk wastepaper recovery program in February 1987 to reduce trash disposal costs. As new forms and publications are received, obsolete materials are removed from warehouse shelves, graded, weighed, and placed directly into a wastepaper dealer's trailer parked on-site. When full, the trailer is hauled away and an empty trailer provided. Until December 1988, IRS sales of these several grades of wastepaper were based on prices verbally agreed to with a local wastepaper dealer. The dealer periodically reimbursed IRS for the paper.

IRS records show that, during fiscal year 1988, the government should have received \$80,899 for 2,991 tons of paper or an average of \$27.05 a ton, when the billing process was completed.

The IRS warehouse supervisor said that whether the materials were sent to landfills or sold for recycling, handling and administrative costs would be about the same. Based on actual fiscal year 1988 rates, we estimate that IRS saved \$59,814 or \$20 a ton that year by diverting almost 3,000 tons of recyclable paper from the waste stream. Thus, the annual benefit to the government for this program is over \$140,000.

Environmental Protection Agency

A high-grade office wastepaper program was started at EPA headquarters in November 1975. The first year of operation, EPA reportedly salvaged 143 tons of high-grade office wastepaper and reduced total

wastes going to disposal by 40 percent. In fiscal year 1987, GSA records show that EPA recovered 33 tons of mixed paper and 160 tons of white ledger paper from its Washington D.C., area facilities. Not satisfied with those results, EPA formed a recycling working group in early 1988 to improve recycling of wastepaper and other materials not only within EPA headquarters but throughout the agency.

EPA's Office of Solid Waste and Office of Administrative Services joined forces to revitalize EPA recycling efforts. During 1988, those efforts focused on employee education, publicity, and the purchase and distribution of collection boxes. These boxes were in addition to recycling receptacles already placed near copier machines and other areas generating large amounts of high-grade paper. Also in 1988, the voluntary program was expanded to include 1,400 EPA employees housed in two other Washington, D.C., area buildings. All three EPA sites are leased facilities, so EPA uses a contractor to remove the accumulated paper from the many collection points within these buildings and bring it to a loading dock in the headquarters building for delivery to the GSA contractor.

EPA recycling efforts seem to be paying off. According to GSA National Capital Region records, between March and August 1988, some 143 tons of white ledger and 4 tons of mixed paper were recovered from the EPA facilities, which reportedly house 4,900 employees. This reflects an increase in the recovery rate and a substantial increase in paper quality. A recycling program official said that the program was revived strictly for environmental reasons; consequently, the agency has not tracked program costs.

Department of Energy

The Department of Energy (DOE) Forrestal Building is one of the few federal buildings in the Washington, D.C., area generating sizable amounts of white ledger and computer printout paper, according to GSA's records. Although DOE officials feel the program is not nearly reaching its potential, it uses two custodial contractor employees to sort out high-grade office wastepaper from lower-graded paper. This arrangement was already in place when GSA transferred building management authority to DOE in October 1986. In this manner, DOE has been able to enhance the value of the recovered material to the government. DOE officials have not studied the costs and benefits of the Forrestal program.

Department of Veterans Affairs

The Data Processing Center in Hines, Illinois, has been recovering various grades of wastepaper, including computer paper and corrugated boxes, since at least 1983. Center employees deposit wastepaper in corrugated boxes located throughout the facility's offices. Custodial employees empty the boxes daily into larger receptacles in the loading dock area where paper is stored until delivery to GSA's contractor. Corrugated waste is baled on a machine adjacent to the storage area. During the 18-month period ending March 31, 1988, the Hines center recovered 204 tons of high-grade office wastepaper, 26 tons of corrugated container waste, and 135 tons of mixed-grade wastepaper. This program has not reached its potential because it simply dumps shredded wastepaper that could be recycled.

The DVA's Forms and Publications Depot in Alexandria, Virginia, has been salvaging obsolete forms and publications for more than 10 years. Similar to the IRS and SSA salvage programs, this is not a traditional office paper recycling program. No additional costs are incurred as a result of selling the material through GSA wastepaper contracts rather than throwing it away. Although sales proceeds are not returned to the DVA, the recovered materials are weighed on depot scales. Deliveries are infrequent. Depot records show that between October 1986 and March 1988 201 tons of mixed wastepaper were removed.

State Agency Programs

California

The State of California has operated an office paper recycling program for more than 25 years. The program covers buildings managed by the California Department of General Services and is comprised of two elements: (1) regular unshredded wastepaper is collected and sold under contract to a wastepaper dealer and (2) files and records containing privacy information are sent to a state facility where the material is shredded and baled before sale.

A recycling coordinator in the Department of General Services manages all aspects of the program from contract award to purchase and placement of wastepaper collection bins. The services to individual buildings are done on requests and include placement of promotional material and employee education.

Wastepaper collection points varied from building to building. Card-board desktop holders are used by some employees to collect recyclable office paper. These are periodically emptied into intermediate containers on each floor of the building. Larger receptacles are located near copier machines, computer printers, and other sites generating large amounts of wastepaper. Custodial employees empty these containers as part of their normal maintenance routines. Collected wastepaper is stored in contractor-supplied containers—some of which are locked until pick-up—to minimize the risk of fire and keep the paper from being contaminated. The contractor weighs and grades the paper.

State law requires California agencies to operate wastepaper recycling programs to maintain environmental quality and conserve natural resources. A stated objective of the Department of General Services program is to avoid trash disposal costs. The Department's 1987 annual report estimated that avoided disposal costs were almost \$163,000 based on an average disposal cost per ton figure developed by another state agency.

In fiscal year 1988, the state reported recovering 2,275 tons of unshredded wastepaper (all grades combined) and 2,373 tons of shredded wastepaper. Total revenues were \$97,301 (\$42.77 ton) and \$200,577 (\$84.53), respectively, for the two types of wastepaper. Comparable information on costs was not available.

The recycling coordinator said that her unofficial records showed that, in fiscal year 1987, revenues from the sale of unshredded wastepaper exceeded program expenses by \$35,000.

Illinois

In 1987, the state of Illinois began pilot office paper recovery programs at two locations—(1) a multitenant office building in Chicago and (2) a single agency tenant building in Springfield. We surveyed the pilot program in Chicago which involved 2,970 employees of 68 agencies on 14 floors. The Illinois Department of Central Management Services has overall responsibility for the program. A recycling liaison should be present in each agency to monitor the recycling efforts. Program participation is voluntary, although peer pressure is used to encourage employees to recycle.

Office workers have individual desk side collection boxes for recyclable wastepaper (no grade separation). Large plastic receptacles for collecting computer paper are placed in offices generating such wastepaper.

Three times a week, employees of a sheltered workshop come in and move the paper from work areas to a loading dock area where the paper is separated by grade and compacted (State custodial workers refused these duties unless their union contract was renegotiated). The wastepaper is then stored in a sprinklered area until delivery to the state's wastepaper contractor.

Various supplies and services to implement the program were contractor-supplied. To recoup these costs, the state was paid only a fraction of the contracted prices for the paper through November 1988. At the time of our survey, the program was too new and information too sketchy to draw any conclusions as to the program's cost effectiveness. Nevertheless, state officials were optimistic and claimed that actual avoided disposal costs plus sales proceeds less the cost of the sheltered workshop contract resulted in a small profit to the state. During the first 19 months of the program, the state reported recovering 128 tons of recyclable paper.

New York Department of
Labor

The demonstration program of this agency is relatively new and of modest size. It operates in six-story building in New York's borough of Brooklyn and involves about 160 office employees. The program began in late 1987 at the initiative of a district superintendent who advocates recycling for environmental reasons. The superintendent expects to recover about 5 tons annually of white ledger and computer paper, which sold for \$50 in 1988.

The program was designed with the assistance of the Council on the Environment of New York City. It features desktop collection folders and collection boxes near copiers and computer printers. Paper collected in these intermediate containers is periodically dumped into bulk containers. These containers are kept on each floor because of a lack of storage space. When they are filled every 2 months or so, the wastepaper hauler rides the freight elevator to retrieve them. Posters are displayed near the collection points to remind employees to keep the bins free from contaminants.

Private Sector

Potomac Electric Power Company

The Potomac Electric Power Company (PEPCO) in Washington, D.C., launched a wastepaper recycling program in 1984 for environmental reasons and to make a difference in the community. Disadvantaged persons from the area provide the labor for the program. PEPCO's top management is strongly committed to the program and requires that PEPCO's more than 1,800 office employees participate. The employees are constantly reminded of their duties through posters, decals, and articles in company publications. Additionally, management produced a 5-minute videotape extolling the program's virtues which is shown to employees and made available to other organizations contemplating similar programs. A part-time coordinator administers all aspects of the program.

Employees are asked to separate their high-grade wastepaper and place it either in desktop containers or large mobile collection bins located at strategic points within the office complex. The material is removed daily to the loading dock area where it is weighed, graded, and secured until delivery to a local wastepaper dealer.

In 1988, the dealer paid PEPCO \$120 a ton for computer paper, \$80 a ton for white ledger or bond paper, and \$50 a ton for mixed paper. The company reported that it sold 411 tons of wastepaper for recycling during 1986. During the first 8 months of 1988, associated expenses were \$18,992, excluding a proportion of the program coordinator's salary. In addition, PEPCO avoided an indeterminate amount of trash disposal costs.

State Farm Insurance

State Farm began a recycling program at its headquarters in Bloomington, Illinois, about 10 years ago for environmental and economic reasons. A building management official said that the program was reviewed some years ago and management decided to continue the program. State Farm's program encompasses both office wastepaper and used corrugated containers. Employees once used desktop holders for recyclable paper but now discard paper into large receptacles which are placed in areas of heavy computer and copier paper usage. Large mobile cages are placed in areas like the cafeteria kitchen where significant amounts of corrugated materials are discarded. The sorted paper is removed from the collection points as part of normal maintenance procedures. The office paper is dumped into bulk containers near a loading dock in the building's basement. The corrugated containers are sent to

another area for baling. The paper is then stored in a sprinklered area until pick-up each day.

A building management official said that the company has not been entirely successful in limiting the office component to high-grade wastepaper. We observed colored ledger paper and other lower-graded paper in the loads awaiting pick-up. However, the program has been successful in generating large amounts of recyclable paper. During a 3-month period in 1988, for example, the company recovered 174 tons; this represented 56 percent of the combined trash and wastepaper for the facility (exclusive of a warehouse) during that period. The company's approach appears to be very low-key, yet the recycling habit seems to be widespread.

A local wastepaper dealer has been buying the paper for years under a "handshake" agreement. The dealer weighs and grades the paper and reimburses State Farm accordingly.

Lutheran Medical Center

Begun in mid-1987, this Brooklyn, New York, hospital's program is a relatively new one, involving the recovery of both office wastepaper and used corrugated materials. Hospital administrators were motivated to recycle for environmental and economic reasons. Staff of the Council on the Environment of New York City helped the hospital design a program. This included furnishing collection equipment, supplying posters, and training department heads.

Hospital employees deposit high-grade office paper in desktop folders and collection boxes near copiers and printers. The boxes are emptied as part of the normal maintenance routine. Paper is stored in contractor-supplied bulk containers until pick-up. Shredded wastepaper is also collected, stored, and sold for recycling. At the time of our visit in August 1988, the hospital was receiving \$95 a ton for office wastepaper.

The medical center purchased two used balers for about \$9,000 to implement a corrugated material recovery program. An existing monorail system is used to send discarded corrugated to the dock area for baling and storage. The center was selling used corrugated materials for \$45 a ton.

Key Locations Visited or Contacted During the Review

We did our field work between January 1988 and January 1989. Key locations we visited or contacted were as follows:

General Services Administration

GSA Headquarters, Washington, D.C.
Federal Supply Service, Arlington, Virginia
Public Buildings Service, Washington, D.C.
Office of Acquisition Policy, Washington, D.C.
Regions and Offices
Region 1, Boston
Region 2, New York
Region 3, Philadelphia
Region 4, Atlanta
Region 5, Chicago
Region 6, Kansas City, Missouri
Finance Division, Kansas City, Missouri
Region 7, Fort Worth
Region 8, Denver
Region 9, San Francisco
Public Buildings Service, Sacramento
Region 10, Auburn, Washington
National Capital Region, Washington, D.C.
Office of the Inspector General, Washington, D.C.
Surplus Sales Center, Springfield, Virginia
Public Building Service, Washington, D.C.

Department of Commerce

International Trade Administration, Washington, D.C.
National Institute of Standards and Technology (formerly National Bureau of Standards), Gaithersburg, Maryland

Department of Defense, Alexandria, Virginia

Office of the Deputy Assistant Secretary of Defense for Environment, Alexandria, Virginia
Defense Logistics Agency, Alexandria, Virginia
Office of the Inspector General, Alexandria, Virginia
Department of the Army, Fort Lewis, Washington
Hill Air Force Base, Utah
Naval Weapon Support Center, Crane, Indiana

Department of Energy

Argonne National Laboratory, Argonne, Illinois
Forrestal Building, Washington, D.C.

Appendix II
Key Locations Visited or Contacted During
the Review

Architect of The Capitol, Washington, D.C.
Government Printing Office, Washington, D.C.
Internal Revenue Service, Central Area
Distribution Center, Bloomington, Illinois
Joint Committee on Printing, Washington, D.C.
Library Of Congress, Washington, D.C.

**Office of Management
and Budget,
Washington, D.C.**

Office of Federal Procurement Policy, Washington, D.C.

**Social Security
Administration,
Baltimore**

Veterans

Central Office, Washington, DC
Forms and Publication Depot, Alexandria, Virginia
Data Processing Center, Hines, Illinois

State Agencies

State of California, Department of General
Services, Office of Records Management, Sacramento
State of California, Waste Management Board, Sacramento
State of Illinois Center, Chicago
University of Illinois, Chicago Campus
State of New York, Department of Labor, New York

**Private Sector
Recycling Programs**

The Home Insurance Company, New York
Lutheran Medical Center, New York
Potomac Electric Power Company, Washington, D.C.
State Farm Insurance Companies, Bloomington, Illinois

**Wastepaper
Contractors**

Ex-Cell Fiber Supply Inc., Washington, D.C.
Kline Paper Mill Supplies, Inc., Columbia, Maryland
Mid-America Paper Recycling Company, Chicago

Appendix II
Key Locations Visited or Contacted During
the Review

Midwest Paper Stock, Inc., Bloomington, Illinois
Rapid Recycling Company, New York
Recycling Services, Inc., Chicago
Weyerhaeuser Paper Company, West Sacramento

Others

American Paper Institute, New York
Association of Research Libraries, Washington, D.C.
Association of State and Territorial Solid Waste Management Officials,
Washington, D.C.
Coalition on Resource Recovery and the Environment, Washington, D.C.
Conservatree Paper Company, Washington, D.C.
Council on the Environment of New York City, New York
Environmental Defense Fund, New York
Franklin Associate Ltd., Prairie Village, Kansas
Institute of Scrap Recycling Industries, Inc., Washington, D.C.
National Fiber Supply Company, Chicago
National Humanities Alliance, Washington, D.C.
National Recycling Coalition, New York
Paper Inc., Gaithersburg, Maryland
Waste Management, Inc., Oak Brook, Illinois, and Washington, D.C.

Comments From the Environmental Protection Agency

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 22 1989

OFFICE OF
POLICY, PLANNING AND EVALUATION

Mr. Richard L. Fogel
Assistant Comptroller General
General Government Division
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Fogel:

I am in receipt of your August 7 letter requesting that the staff of the Environmental Protection Agency (EPA) review and comment on a General Accounting Office (GAO) draft report. The report is entitled "Wastepaper Recycling: Programs of Civil Agencies Waned During the 1980s". I provide this response pursuant to Public Law 96-226.

Before addressing the substance of the report, I would like to emphasize the Agency's view that the federal government should take leadership responsibility for recycling and purchasing recycled products nationwide. As one of the nation's largest industries, it is the responsibility of government to set an example to other industries and to overcome obstacles and remove barriers for the recycling and reuse of paper as well as other materials, including the mandatory purchase of recycled paper, if necessary.

Concerning the report, Agency staff found that it is well researched and generally accurate in discussing wastepaper recycling at government facilities. The following comments are divided into two sections. The first concerns the recommendations and the second portion reflects Agency concerns on the thoroughness and accuracy of the report.

Recommendations

The Agency agrees with most of the recommendations addressed to EPA on pages 77 and 78.

Now on p. 41

See p. 42.

In the report, GAO presents important findings pertaining to the Department of Commerce (pages 26 and 52), Joint Committee on Printing (page 41), and Office of Federal Procurement Policy (page 53), yet the report lacks specific recommendations for these important partners in the recycling program. We feel that all parties playing significant roles in the federal government's recycling effort should be cited for more active participation.

See p. 42.

Based on the report's findings and conclusions, the report could support a recommendation for the federal government to require a mandatory recycling program. In this program, marketability of recyclables would play a less important role if participation were mandatory. For example, if a non-leased federal building is able to realize their savings on disposal costs, there is less need to see a return on the sale of the paper. In this case, even if the paper were given away, the project may be cost-effective since it allows the facility to dispose of a portion of its waste stream for free, and would help insulate the recycling program from fluctuations in the market. In leased federal buildings, however, it is more difficult to see a savings on disposal. It is possible, though, to include separation and recycling of trash in lease agreements.

Text of the Report

See comment 1.

The report correctly refers to the EPA Municipal Solid Waste Task Force that released a report in February 1989. In addition, GAO should be aware that EPA has created a 45-person Municipal Solid Waste Program in the Office of Solid Waste (OSW) and the Regional Offices to implement the activities listed in the Agenda for Action. Several of the current OSW projects which are directed at federal wastepaper recycling include:

--an update of EPA's implementation manual of office paper recovery and an outreach program for federal recycling, which includes development of training, and informative materials and a video for federal employees, and

See comment 2.

--EPA-supported pilot projects in selected federal office building. Enclosed are statements of work for these projects.

See p. 43.

The report's discussion of implementation of the Resource Conservation and Recovery Act (RCRA) Paper Procurement Guideline is overly pessimistic. Although the guidelines were delayed as described in the report, GAO should consider the following factors concerning the current status of the Guideline:

See p. 43.

Success of the RCRA Requirements The report portrays the effect of procurement requirements negatively, including the ramification for "full competition" in federal purchasing. Because the guidelines are so new, the Agency does not have a real measurement of their effects which we could provide. Given that some agencies already are reluctant to comply with procurement requirements under RCRA, EPA would prefer that the report not reinforce this characterization. In addition, GAO should note that the entire purpose of the guidelines is to create demand for markets that need to grow; thus, there will be a lag between implementation of the procurement guidelines and the ability of the markets to respond.

See comment 3.

Expanded EPA Promotion EPA has recently increased its promotion of the paper and other procurement guidelines through creation of a procurement hotline and data base, outreach to purchasing officials and vendors, and interaction with federal agencies. EPA intends to commit additional resources to these efforts in Fiscal Year 1990. So that recycling activities at the Agency are coordinated, Charlie Grizzle, Assistant Administrator for Administration and Resources Management, appointed a Special Assistant to coordinate promotion of recycling activities and establish a model recycling program. EPA will sponsor an inter-departmental meeting on recycling this fall. The purpose of the meeting is to share recycling information and to discuss the impact of the "D.C. Solid Management and Multi-Material Recycling Act of 1989".

See comment 3.

Government Printing Office (GPO) The draft report should reflect GPO's success with recent solicitations and awards that comply with the RCRA paper procurement guideline.

See comment 4.

General Services Administration (GSA) GSA has revised specifications for 193 different paper products to include the recommended minimum content standards contained in the procurement guidelines. EPA has written GSA to encourage additional recycling activities, such as affirmative procurement actions and allowing enough lead time so that potential bidders can obtain recycled paper.

See comment 5.

Concerning the use of recycled paper for archive materials, EPA's research indicates that paper used for archive purposes has very little to do with its recycled content. This point was cited during recent EPA Congressional testimony.

Appendix III
Comments From the Environmental
Protection Agency

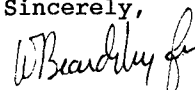
4

See comment 6.

The GAO report should note that Washington, D.C.'s new mandatory recycling law will affect commercial buildings (e.g., government owned and leased buildings) and that these buildings must have a recovery program in place by October 1, 1989. EPA has already met with GSA to discuss the pending District law and ways to encourage federal compliance.

I appreciate the opportunity to respond to the draft report, and hope that these comments are helpful when GAO prepares the final report.

Sincerely,



Terry Davies
Assistant Administrator

Enclosures

The following are GAO's comments on the Environmental Protection Agency's letter dated September 22, 1989.

GAO Comments

1. EPA provided updated information on its recycling efforts, including the creation of a 45-person Municipal Solid Waste Program and other projects. We have added this updated information on page 20 of the report.
2. In providing updated information on current recycling activities, EPA provided statements of work for various projects. In the interest of brevity, we have not included these work statements in this report.
3. EPA provided updated information on its efforts to promote the procurement guidelines. It also said that GPO has had successful solicitations that comply with the guidelines. We have added this information on page 23 of the report.
4. EPA provided updated information on GSA's efforts to revise specifications for paper products. GSA, in its comments, also provided similar information. We have incorporated GSA's material on page 22 of the report.
5. Regarding the use of recycled paper for archive purposes, EPA said that its research indicates that paper used for archive purposes has little to do with its recycled content. We have added EPA's comment on page 23 of the report.
6. EPA said that we should note that Washington, D.C.'s new mandatory recycling law will affect commercial buildings (e.g., government-owned and -leased buildings) and that these buildings must have a recovery program in place by October 1, 1989. We added a reference to the new law to page 23 of the report.

Comments From the General Services Administration

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



Administrator
General Services Administration
Washington, DC 20405



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September 15, 1989

The Honorable
Charles A. Bowsher
Comptroller General
of the United States
General Accounting Office
Washington, DC 20548

Dear Mr. Bowsher:

Thank you for the opportunity to review the August 7, 1989, draft report entitled "Wastepaper Recycling: Programs of Civil Agencies Waned During the 1980's" (B-232827).

I agree with the recommendation addressed to the General Services Administration (GSA) that steps be taken to strengthen controls over the process of awarding and administering wastepaper sales contracts to optimize proceeds and thereby encourage agencies to increase participation in wastepaper recycling. However, before steps can be taken to strengthen the contracting process, the Congress needs to specifically designate a responsible contracting agency. Without such designation, program control will remain diffused. For example, as the report notes, responsibility for management of many buildings has been delegated to the occupant agencies. These delegations have reassigned the control of building management funds from a single source to multiple sources. Also, a centralized contracting office will be able to consolidate wastepaper generations that will result in the maximum return to the Government.

Additionally, in order to make the program attractive so that agencies participate, consideration should be given to regulating Federal agencies housed in GSA-owned or leased buildings to be responsible for participation in the wastepaper recycling program and monetarily rewarded as encouragement for participating. GSA has had little success in persuading agencies to participate in the past and there presently is no incentive for them to do so since monies recovered are returned to the U.S. Treasury by law.

The report also notes that the wastepaper markets are volatile and that mandatory recycling could result in a wastepaper glut such that costs of a recycling wastepaper program could be substantial with periods of little or no return. If the Government is to emphasize wastepaper recycling, it may be necessary to supplement agency appropriations during periods where recycling costs exceed income, thus assuring a continued, enthusiastic commitment to the program.

See p. 43.

See p. 44.

See p. 44.

Appendix IV
Comments From the General
Services Administration

-2-

See comment 1.

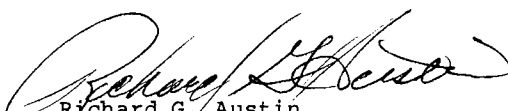
It should be noted that, for the procurement of items utilizing recycled paper, the report notes that GSA plans "to amend 47 paper product specifications to incorporate EPA's recommended minimum content standards." Procurement officials in the FSS New York office amended the 47 paper product specifications in addition to approximately 90 more documents to include minimum content standards. Additionally, plans are to pursue future procurements using these amended descriptions as a preference procurement program by virtue of the fact that all products covered by the specifications must contain recovered material. For your information, in testimony by the Environmental Protection Agency before the Senate Committee on Governmental Affairs on July 18, 1989, concerning degradable plastics and municipal solid waste management, GSA was commended for its efforts in modifying numerous Federal specifications to include paper recycling requirements.

See p. 44.

Because of the role of GSA's Federal Supply Service (FSS) in the disposal of personal property, the majority of agencies currently recycling wastepaper look to FSS for contracting support, and GSA would welcome the assignment of a clearly defined role in this effort. However, if GSA is assigned the clearly defined contracting responsibility, the Public Buildings Service and FSS, respectively, will require additional resources for facilitating the building management activities for those agencies utilizing the sales contracts and for contracting.

Please be assured that GSA will do whatever is possible to contribute to the success of this worthwhile program.

Sincerely,



Richard G. Austin
Acting Administrator

The following are GAO's comments on the General Services Administration's letter dated September 15, 1989.

GAO Comments

1. GSA provided updated information on its efforts to amend paper product specifications to incorporate EPA's recommended minimum content standards. It said that procurement officials in the Federal Supply Service's New York office amended 47 paper product specifications and approximately 90 more documents to include minimum content standards. We have added GSA's updated information on page 22 of the report.

Major Contributors to This Report

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Related GAO Products

Using Solid Waste To Conserve Resources and Create Energy (RED-75-326, Feb. 1975).

Policies and Programs Being Developed to Expand Procurement of Products Containing Recycled Materials (PSAD-76-139, May 18, 1976).

Disposal of Veterans Administration Revolving Fund Property (B-163084, June 27, 1977).

Letter Report on Disposal of Classified Documents (LCD-77-228, Dec. 28, 1977).

Additional Precious Metals Can Be Recovered (LCD-77-228, Dec. 28, 1977).

Letter Report on Using Government Wastepaper to Achieve Economically, Environmentally, and Socially Desirable Goals (LCD-78-112, Apr. 6, 1978).

Conversion of Urban Waste to Energy: Developing and Introducing Alternate Fuels From Municipal Solid Waste (EMD-80-45, May 15, 1980).

Industrial Wastes: An Unexplored Source of Valuable Minerals (EMD-80-45, May 15, 1980).

Federal Industrial Targets and Procurement Guidelines Programs Are Not Encouraging Recycling and Have Contract Problems (EMD-81-7, Dec. 5, 1980).

Feasibility of Government Agencies Using Respliced Computer Tabulating Paper (PLRD-81-43, June 18, 1981).

Civil Agencies Should Save Millions by Recovering Silver From Photographic Wastes (PLRS-81-48, Jul. 31, 1981).

Opportunities for Improved Oil Recycling Still Exist (GAO/PLRD-82-113, Sept. 17, 1982).

National Stockpile: Could Recycled DOD Aluminum Be Used to Meet the Current Aluminum Need? (GAO/RCED-86-23, Nov. 4, 1985).

GSA Procurement: Limited Opportunities to Supply More Common-Use Items to Civil Agencies (GAO/GGD-86-121, Aug. 26, 1986).

Hazardous Waste: New Approach Needed to Manage the Resource Conservation and Recovery Act (GAO/RCED-88-115, Jul. 19, 1988).