

**Guidelines for a Hospital Recycling Program  
with  
Cost/Revenue Analyses**

**Prepared for the Ohio Hospital Association (OHA)**

**BY**

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# **Guidelines for a Hospital Recycling Program**

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# Guidelines for a Hospital Recycling Program

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# **Guidelines for a Hospital Recycling Program With Cost/Revenue Analyses of a Hospital Recycling Program**

**Prepared for the Ohio Hospital Association (OHA)**

**By Carl T. Jones**

## **Introduction**

Ever increasing environmental issues pose a threat to our environment. Some of these issues pose a substantial threat to our national resources. With the significant increase of disposable products, it is necessary to do whatever we can to preserve our national resources. It is estimated that the 6,000 hospitals throughout the United States generate more than 500,000 tons of 'regulated medical waste' on a yearly basis. One of the ways we, as individuals and hospital organizations, can contribute to the preservation of our national resources is to get involved in a recycling program. New environmental regulations such as Ohio House Bill 592 mandates how to manage our solid wastes, dictates landfill restrictions and emphasizes the need for a comprehensive recycling program.

The purpose of this hospital recycling program is to assist Ohio hospitals in, at least, the following ways: 1) To provide a generic program as a guideline in developing individual programs; 2) To provide a basic plan that includes several alternatives and identifies specific areas where recycling opportunities are most feasible; 3) To provide a cost/revenue analysis of a hospital recycling program in order to demonstrate the need and the value of a recycling program, and 4) To allow the Ohio Hospital Association (OHA) a leadership role and therefore, a catalyst, in bringing about basic recycling programs that could save each hospital between \$5,000-\$10,000 associated with program development.

Additionally, it is believed that the economic impact of this effort will result in an estimated savings to individual hospital in the neighborhood of \$20,000 per year for a 350-bed hospital. These *savings could range as high as \$50,000 per year for hospitals with 500-1,000 beds.* It is estimated that the total savings to all Ohio hospitals through recycling would be between \$3,000,000-\$4,000,000 annually.

This type of effort on behalf of Ohio hospitals will demonstrate to the general public as well as legislators, that additional efforts are being taken to protect and preserve the health and safety of the citizenry as well as our natural resources.

Some of the information contained in the section 'Guidelines for a Hospital Recycling Program', including figures 1,2,3, and 4, is taken from an article by Mr. Robert C. Fenwick, Vice President of Marketing for Stericycle, Rolling Meadows, Illinois.

In his article titled, *How to Start a Hospital-wide Recycling Program*, Fenwick points out that the economic savings and cost return to healthcare facilities, as well as other organizations, can be very beneficial. He estimates that hospital trash contains 45% paper which, of course, can all be recycled. He further states that other items such as aluminum cans, glass, batteries and even grease can be recycled.

## Guidelines for a Hospital Recycling Program

The following steps provide a summary of the issues to be considered and the tasks to be performed in order to develop and maintain a successful recycling program.

- 1) Secure top management's commitment
- 2) Create a recycling task force. It is important to include all levels of personnel from the departments of the facility that generate large volumes of waste including, but not limited to: A) Environmental Services/housekeeping; B) Central Services/Central Supply; C) Nursing; D) Physical Plant; E) Dietary Services; F) Laundry/Linen Services ; G) Hospital Administration; H) Operating Room (OR); I) Safety Department. Note: It is important that employees be a part of the program because they contribute greatly to the overall success.
- 3) Perform a waste stream audit. It is important that an audit be performed in order that the waste generated for disposal from the facility be identified as target recyclable materials. According to Fenwick's research, hospital waste consists of the following compositions: Paper and paper products = 45%; plastics = 15%; food = 10%; metals = 10%; glass = 7%; wood = 3%; other = 10%. Obviously, paper materials represent the majority of all hospital waste, making it the most feasible item for recycling (see figure 1 below).

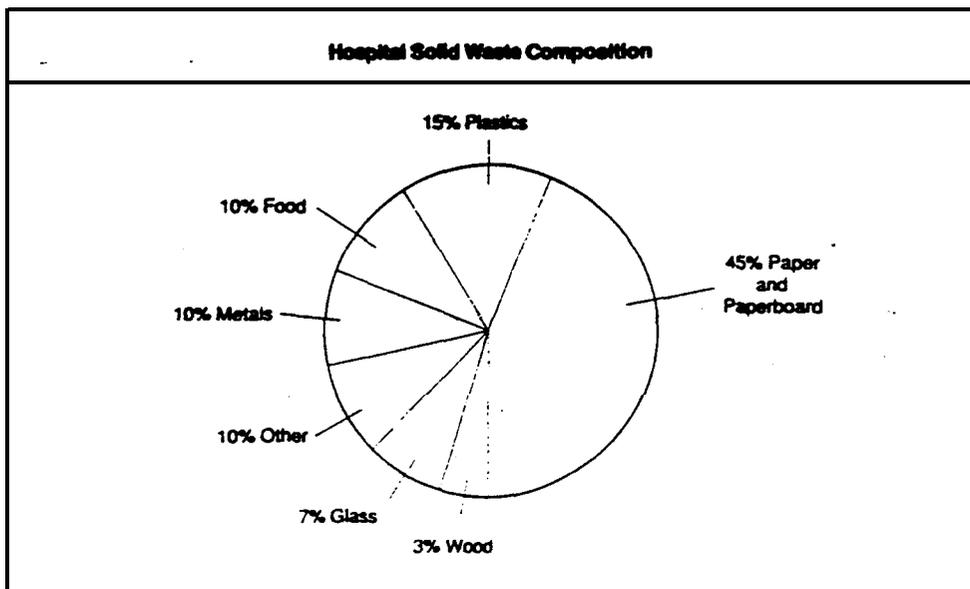


Figure 1. Paper constitutes the vast majority of a hospital's solid waste—presenting a perfect opportunity for recycling

In order to determine cost savings, the volume of each material has to be calculated. There are several methods of doing this.

● Take a visual survey. This involves making a visual ‘guesstimate’ of the percentage of the material, the weight, and the frequency with which it is discarded. For example, corrugated cardboard volume could be determined by visually estimating that 30% of the solid waste is made up of boxes. By estimating that each box weighs a pound and that the frequency of generation is daily, a hospital that generates three tons (6,000 pounds) of solid waste per day would produce 1,800 pounds of cardboard (.30x6,000), or 1,800 boxes (.30x6,000 div 1).

-Perform a survey of physical weight. This requires physically separating the material and weighing the collection at some periodic frequency. For example, if 600 pounds of cardboard is collected per day and the average box weighs three pounds, 200 boxes are collected per day (600 div. 3).

Do a materials management survey. Coordinated through the purchasing department, this is a survey of purchased goods invoices. For example, during one week, 1,225 cases of product were purchased. This equals 175 boxes per day (1,225 div. 7).

- 4) Shop for vendors. It is recommended that once the volume and identification of recyclable materials has been determined, the next process would be to begin searching for vendors to purchase the recyclable waste. It is important to note that as many vendors as possible should be contacted in order that the hospital can seek out the best price for the materials generated. Figure 2 below shows a list of items that can be recycled.

<b>Hospital Waste Recycling Opportunities</b>		
<ul style="list-style-type: none"><li>• White office paper</li><li>• X-ray film and solutions</li><li>• Packing material</li><li>• Newspapers and magazines</li><li>• Plastics</li><li>• Sharps</li></ul>	<ul style="list-style-type: none"><li>• Grease</li><li>• Corrugated cardboard</li><li>• Skids</li><li>• Directories</li><li>• Computer paper</li></ul>	<ul style="list-style-type: none"><li>• Aluminum cans</li><li>• Other metal cans</li><li>• Scrap metal</li><li>• Batteries</li><li>• Glass</li></ul>

**Figure 2. A number of items found in hospital waste are significant candidates for recycling.**

- 5) Design the material flow pattern. One of the most important issues relating to material flow is the important arrangement that must be established for segregation of the waste at the point of generation. (see figure 4). Some questions that must be answered include: A)

Who will collect the materials and will it be collected continuously or periodically? B) Who will conduct staff training? C) Who will oversee implementation? D) Who will make sure collection containers are available in a variety of sizes and areas, in the right colors and decor to compliment the hospital's appearance? It is important to make sure that the containers don't look like plain garbage cans. This would encourage their use for plain garbage. It is recommended that different colors be used for different types of wastes.

**Sample Recycling Implementation Budget for a 350-Bed Hospital**

<b>Expenses<sup>2</sup></b>	150 deskside containers		
	65 computer station containers		
	70 copy station containers		
	8 40-gallon mobile collection containers		
	4 tilt-truck collection containers		
<b>Total containers</b>			<b>\$3,445.00</b>
<b>Marketing</b>			<b>2,000.00</b>
<b>Total Expenses</b>			<b>5,445.00</b>
<b>Income<sup>3</sup></b>	Computer paper	45,000 lbs/year	1,350.00
	White ledger paper	90,000 lbs/year	2,025.00
	Corrugated cardboard	125,000 lbs/year	0.00
	Wood pallets	1,000 pallets/year	1,000.00
	Aluminum cans	70,000 cans/year	1,280.00
		3,200 lbs/year	18,800.00
	Landfill avoidance	313,200 lbs/year	18,800.00
<b>Gross Income</b>			<b>24,455.00</b>
<b>Net Income (for first year)</b>			<b>19,019.00</b>

**Figure 3. Even in its first year, a hospital can realize significant income from a recycling program.**

Throughout the initial planning process, it is important to include representation from the Safety Department. Fire and other safety axles could restrict how containers are designed and where they are placed in patient care areas throughout the facility. While fire rated containers exist, they can cost up to 10 times as much as regular recycling containers.

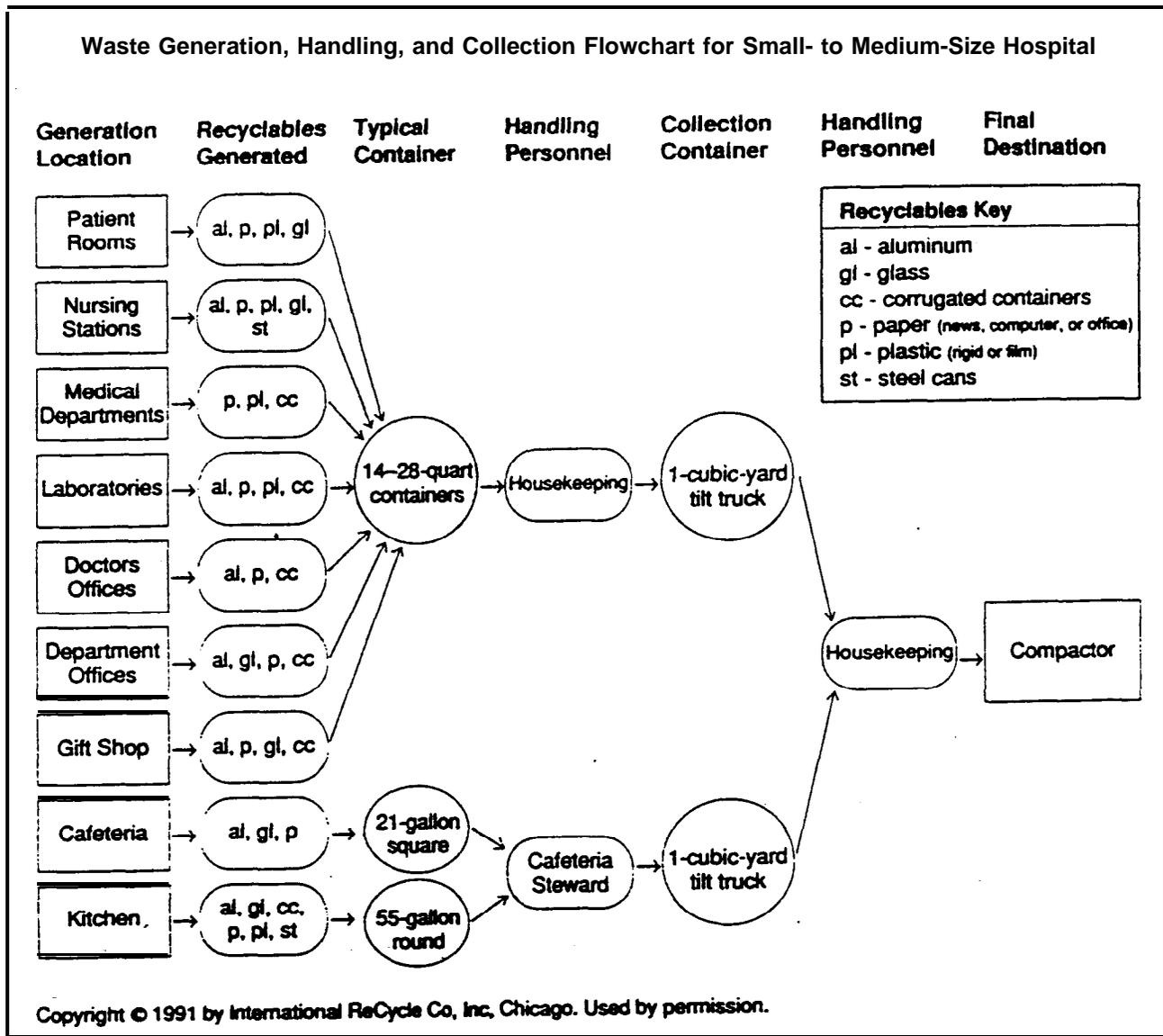


Figure 4. Typically, certain departments generate certain types of recyclable materials.

- 6) **Design a marketing program.** The recycling program must include a positive marketing approach that will not only get the attention of all employees but, will establish the need for the program. This need must include two important points: 1) *Recycling can help preserve resources as well as protect the environment* and 2) *Recycling can be financially rewarding to the hospital.*
- 7) **General education of all employees throughout the hospital.**

The recycling task force should prepare a written program to be distributed and utilized by department heads and one that can be included in all in-service schedules and programs. This education must include not only "Why" a recycling program, but the important

**components of the program, such as:** *What is being recycled"; Where the containers will be located"; Which container is to be used for each item", and "How to exchange full containers for empty containers".*

**A part of the overall education throughout the hospital and an item of significant importance is the environmental issues relating to sanitation. It is necessary to point out some of the possible negative aspects of recycling such as:** *A) Keeping the areas clean; B) Making sure that containers are cleaned on a regular schedule, especially if the same containers are used over and over; C) Taking precautions to see that soft drink cans are emptied before placing in containers; D) Eliminating insects, rodents and odors, and E) Making a number of individuals responsible to assure that the flow pattern of materials is appropriate.*

- 8) **Continuous monitoring of the program.** It is important to maintain continuous monitoring of the program on a day-today basis. Both volume and quality monitoring helps greatly in vendor and pricing support. Once again, it is important that all containers and equipment be kept as clean as possible not only as it relates to a health issue, but to protect the image of the program and the hospital.
- 9) **Communicate the results.** It is the responsibility of the designated task force to help communicate to all employees, at all levels, as well as the community, the success of the recycling program. This could be accomplished through a newsletter or community newspaper press releases. Items could include specific items on environmental issues such as: *"How many pounds of waste was recycled", "How many pounds of waste was diverted from the landfill" and "How natural resources were maintained: Example: A recycling program in San Francisco California has documented that their recycling program saves 17 trees for each ton of paper recycled. A Chicago hospital calculated that it would save over 10,000 trees a year as a result of its recycling program.*

## **Employee Involvement and Ownership**

**A hospital recycling program not only takes a strong administrative commitment, but commitment and ownership on the part of the employees as well. It is essential that interested employees be a part of the recycling task force that determines what solid wastes will be recycled. Employees must be involved in the search for the vendor who will purchase the recyclable wastes. There must be a working relationship. Employees must be involved in designing and implementing the material flow patterns involved with recycling. They will be the ones performing the tasks. Employees should design the marketing plan for the program as well as the employee education process that must accompany the program. Employees should be responsible for the monitoring of the program. They must be able to detect program weakness and strengths and change whatever is necessary to diminish obstacles and capitalize on successes. They must be able to see the results of their recycling activities. Incentive programs can be developed to reward employees for their efforts.**

## Cost/Revenue Analyses of a Hospital Recycling Program

### An Explanation

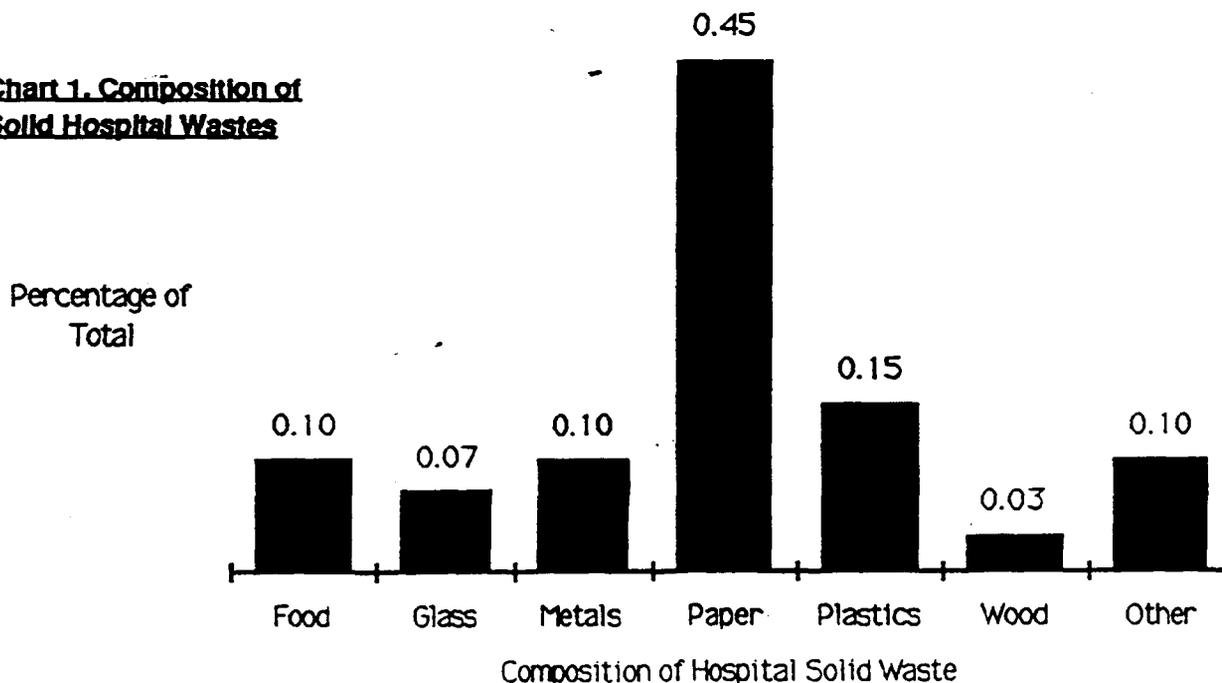
Hospital organizations can take a proactive stance in preserving our national resources by instituting a recycling program.

For consistency sake, this cost/revenue analysis of a 350-bed hospital recycling program uses the initial figures found in the article *How to Start a Hospital-Wide Recycling Program* referred to earlier. There are two exceptions. In Figure 3 (page 4), Fenwick fails to give a price per pound for recycled corrugated cardboard. Cincinnati recyclers are paying \$25.00/ton or .0125 per pound. This figure is used in this report. He also fails to give a pounds per year figure for recycled wood pallets. In his example, the recycled poundage for the paper products and aluminum cans totals 263,200. This is 50,000 pounds short of the 313,200 pounds of landfill avoidance. Given this, the pound figure for wood pallets that is used in this analysis is 50,000 pounds. When these figures are added to Fenwick's Figure 3, gross income-from recycling increases by \$1,562.50 as illustrated in Table 1.

### Recyclable Solid Hospital Wastes

Hospital solid waste is composed of food, glass, metals, paper, plastics and other miscellaneous materials such as film, packing materials, sharps, grease, batteries, etc. Food composes 10 o/o of the total, but it is not recyclable. Glass and plastic combine for 22% of the total waste. They are recyclable, however, they currently have no recyclable monetary return. Items classified as "other" are area specific Therefore, hospital-wide recycling programs should concentrate on metal; paper, categorized as computer paper, white ledger paper and corrugated cardboard, and wood for the best return on their recycling activities.

**Chart 1. Composition of Solid Hospital Wastes**



Collectively, these materials equal 58% of the solid waste total. Recycling just these materials could result in landfill avoidance savings of up to .06/pound, according to Fenwick.

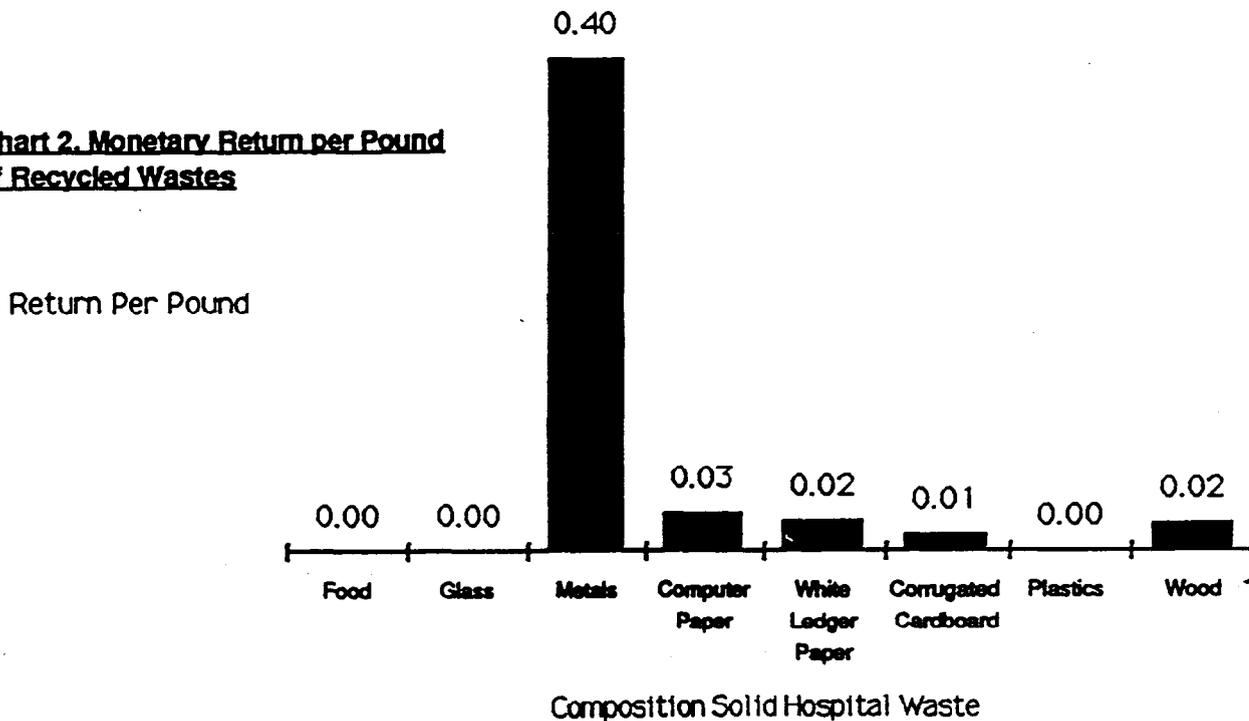
Fenwick (Figure 3) estimated an annual recyclable figure of 313,200 pounds for a 350-bed hospital. This poundage was composed of:

Computer Paper	45,000 pounds
White Ledger Paper	90,000 pounds
Corrugated Cardboard	125,000 pounds
Wood Pallets	50,000 pounds
Aluminum Cans	3,200 pounds
<b>Total</b>	<b>313,200 pounds</b>

The total recycled poundage of the above wastes equals the pounds of landfill avoidance.

The following chart depicts the recycling return per pound (Fenwick, Figure 3) for the above materials.

**Chart 2. Monetary Return per Pound of Recycled Wastes**



Metals (aluminum cans) have the highest return at .40/pound; followed by computer paper at .03/pound; white ledger paper at .0225/pound; wood at .02/pound, and corrugated paper at .0125/pound. An important term to remember is **post-consumer waste**. This is discarded home or office paper that has been printed on and would be burned or buried if not recycled.

### Income Generated Through a Hospital Recycling Program

Income generated through recycling activities focusing on profitable items such as wood, post-consumer waste, corrugated cardboard and metals totaled \$7,217.50. The greatest return for recycling activities appears to be in the savings realized in landfill avoidance costs. By recycling 313,200 pounds of trash this 350-bed hospital saved \$18,799.99. It is necessary to point out that \$26,017 was saved by recycling only 58% of the solid waste total.

Hospital Solid Waste Composition	Estimated Percentage of Waste Composition	Estimated Cyclable Pounds From 350-Bed Hospital	Estimated Recyclable Return Per Pound	Estimate Income For Recycling
Food	0.10	0	0.00	\$0.00
Glass	0.07	0	0.00	\$0.00
Metals	0.10	3,200	0.40	\$1,280.00
Computer Paper	0.08	45,000	0.03	\$1,350.00
White Ledger Paper	0.14	90,000	0.02	\$2,025.00
Corrugated Cardboard	0.23	125,000	0.01	\$1,562.50
Plastics	0.15	0	0.00	\$0.00
Wood	0.03	50,000	0.02	\$1,000.00
Other	0.10	0	0.00	\$0.00
<b>Total</b>	<b>1.00</b>	<b>313,200</b>	<b>0.02</b>	<b>\$7,217.50</b>
Landfill Avoidance	313,200	0.06		\$18,799.99
<b>Total</b>				<b>\$26,017.49</b>

Table 1. Income Generated By A 350-Bed Hospital Recycling Program

Extracting from Fenwick's analysis, this 350-bed hospital generates 540,000 pounds of solid waste annually. Using .06/pound (return per pound landfill avoidance), trash removal costs total \$32,400 annually. By recycling only 58% of the total solid waste items and only items that yielded a real monetary return, this 350-bed hospital netted a 58% savings in waste disposal.

### Five Year Projection—Trash Removal Costs

The following table projects trash removal costs over a five year period. Calculations begin with the figures mentioned above. Rumpke, Inc. (of Cincinnati) says a facility's trash disposal traditionally increases approximately five (5) per cent annually. Disposal rates increase between 5%-10% yearly. A seven (7) per cent increase was used for this illustration.

	Pounds of Solid Waste	Cost Per Pound For Disposal	Disposal Cost
	(5% Annual Increase)	(7% Annual Increase)	
First Year	540,000	0.06	\$32,400.00
Second Year	567,000	0.0642	\$36,401.40
Third Year	595,350	0.068694	\$40,896.97
Fourth Year	625,118	0.07350258	\$45,947.75
Fifth Year	656,373	0.078647761	\$51,622.30

Table 2. Five Year Projection of Pounds of Waste and Resulting Cost for Disposal

Successful recycling activities can have a dramatic effect on yearly disposal costs as illustrated below. The cash outlay for trash disposal could be offset by landfill avoidance savings by more than 50%.

	Pounds of Solid Waste	Cost Per Pound For Disposal	Disposal Cost	Landfill Avoidance Poundage	Landfill Avoidance Savings	Savings From Landfill Avoidance	Net Disposal Costs	Percentage Of Savings
	(5% Annual Increase)	(7% Annual Increase)		(3% Annual Increase)				
First Year	540,000	0.0600255	\$32,400.00	313,200	0.0600255	\$18,799.99	\$13,600.01	0.58
Second Year	567,000	0.064227285	\$36,401.40	322,596	0.064227285	\$20,719.47	\$15,681.93	0.57
Third Year	595,350	0.068723195	\$40,896.97	332,274	0.068723195	\$22,834.92	\$18,062.05	0.56
Fourth Year	625,118	0.073533819	\$45,947.75	342,242	0.073533819	\$25,166.37	\$20,781.38	0.55
Fifth Year	656,373	0.078681186	\$51,622.30	352,509	0.078681186	\$27,735.85	\$23,886.44	0.54

Table 3. Five Year Projection of Waste Disposal Costs and Landfill Avoidance Savings

### Five Year Projection—Return On Recycling Activities

Income from recycling activities can increase or decrease according to the supply of and demand for the materials. Ecolo Fibers Papers and Metal Recycling of Cincinnati termed the market as "volatile" and "unpredictable." When asked about increases or decreases in rate of return, the comment was "you just don't know." Because of this information and on the advice of Ecolo Fibers, rate of return on recyclable items will remain the same in the following chart, "Five Year Income Projection from a Recycling Program." (See Table 4 on Page 11)

As a recycling program continues, it becomes more effective and as a result, more materials are collected. Also recent surveys indicate people today are supportive of recycling efforts and are more willing to support and participate in them. Conclusions from a Spring, 1991, survey done by the Roper organization (a national polling group) found that "given the choice between protecting the environment and being personally inconvenienced, many Americans say they

**Table 4. Five Year Income Projection From A Recycling Program (350-Bed Hospital)**

(Figures on this chart were rounded to the nearest decimal.)

Recyclable Items	1st Year		2nd Year			3rd Year			4th Year		5th Year				
	Estimated Yearly Poundage	Price Per Pound	Estimated Yearly Income	Estimated Yearly Poundage	Price Per Pound	Estimated Yearly Income	Estimated Yearly Poundage	Price Per Pound	Estimated Yearly Income	Estimated Yearly Poundage	Price Per Pound	Estimated Yearly Income	Estimated Yearly Poundage	Price Per Pound	Estimated Yearly Income
Computer Paper	45,000	0.03	\$1,350.00	46,350	0.03	\$1,390.50	47,741	0.03	\$1,432.22	49,173	0.03	\$1,475.18	50,648	0.03	\$1,519.44
White Ledger Paper	90,000	0.0225	\$2,025.00	92,700	0.0225	\$2,085.75	95,481	0.0225	\$2,148.32	98,345	0.0225	\$2,212.77	101,296	0.0225	\$2,279.16
Corrugated Cardboard	125,000	0.0125	\$1,562.50	128,750	0.0125	\$1,609.38	132,613	0.0125	\$1,657.66	136,591	0.0125	\$1,707.39	140,689	0.0125	\$1,758.61
Wood Pallets	50,000	0.02	\$1,000.00	51,500	0.02	\$1,030.00	53,045	0.02	\$1,060.90	54,636	0.02	\$1,092.73	56,275	0.02	\$1,125.51
Aluminum Cans	3,200	0.4	\$1,280.00	3,298	0.4	\$1,318.40	3,395	0.4	\$1,357.95	3,497	0.4	\$1,398.69	3,602	0.4	\$1,440.65
<b>Total</b>	<b>313,200</b>		<b>\$7,217.50</b>	<b>322,596</b>		<b>\$7,434.03</b>	<b>332,274</b>		<b>\$7,657.05</b>	<b>342,242</b>		<b>\$7,886.76</b>	<b>352,509</b>		<b>\$8,123.36</b>

would pay a price." When given a choice between recycling used consumer plastic products or burning them for energy, 57% opted for recycling. A three (3) per cent increase in recycled poundage is used in this report. This will average an additional 9,828 pounds a year which will increase returns by \$226 annually. The average return per pound of recycled material is \$.023.

The monetary return of recycling activities is a combined total of landfill avoidance savings and recycling income. As mentioned earlier in this report, the cost of trash disposal increases on the average seven (7) per cent annually. This increase is identical to the increase of landfill avoidance savings. The recycling rate of return is being held constant. Therefore, any revenue increases are due to an increasingly efficient, effective and dynamic recycling program fully supported by the employees.

	Landfill Avoidance Savings	Recycling Income	Return Of Recycling Activities
1st Year	\$18,799.99	\$7,217.50	\$26,017.49
2nd Year	\$20,719.47	\$7,434.03	\$28,153.50
3rd Year	\$22,834.92	\$7,657.05	\$30,491.97
4th Year	\$25,166.37	\$7,886.76	\$33,053.13
5th Year	\$27,735.85	\$8,123.36	\$35,859.21

Table 5. Five Year Projection of Returns for Recycling Activities

**Recycling Expenses**

Expenses will be incurred to implement a recycling program. Fenwick (Figure 3) estimates \$5,445—\$3,445 for equipment and \$2,000 for marketing. All manpower is voluntary. These costs will be incurred at the program's institution. Further expenses should be minimal at an estimated \$1,000/annually.

Given the above, it appears possible to reduce the cost of trash disposal by recycling "profitable" solid waste materials by an average of 71% annually.

	Cost Of Trash Disposal	Recycling Program Costs	Landfill Avoidance Savings	Recycling Income	Cost Of Trash Disposal With Recycling Activities	Percentage Of Savings	
1st Year	\$32,400.00	\$5,445.00	\$18,799.99	\$7,217.50	\$11,827.51	0.687474964	69.
2nd Year	\$36,401.40	\$1,000.00	\$20,719.47	\$7,434.03	\$ 9,247.90	0.752739202	75
3rd Year	\$40,896.97	\$1,000.00	\$22,834.92	\$7,657.05	\$11,405.00	0.727784611	73
4th Year	\$45,947.75	\$1,000.00	\$25,166.37	\$7,886.76	\$13,894.62	0.704040769	70
5th Year	\$51,622.30	\$1,000.00	\$27,735.85	\$8,123.36	\$16,763.09	0.681445129	68

Table 6. Five Year Impact of Recycling Activities on Waste Disposal Costs

## **Conclusions**

A detailed analysis of the costs associated with and the revenue generated from a hospital recycling program emphasizes the following:

1. Recycling activities should concentrate on waste materials that generate the best return for the time involved.
2. Recycling only about half of solid waste materials can generate substantial savings in trash disposal costs.
3. The greatest return of any recycling activity seems to be in the landfill avoidance savings.
4. Trash disposal costs will continue to increase as existing landfills reach capacity. According to the American Paper Institute (API) paper and waste paper are the largest contributors to operating landfills and the number of operating landfills has dropped by more than 60 percent in the last decade.
5. The rate of return for recycled materials fluctuates based on supply of and demand for the specified material.
6. Any increase in recycling revenue comes from an increase in recycling activities as the program becomes more effective and gains greater support.
7. Implementation costs are incurred at the program's onset. Further expenses are minimal.
  - a. Recycling manpower must be voluntary. Employee participation in and employee ownership of the program is an integral part of the program's success.

## **Summary**

Recycling programs can contribute to the preservation of our national resources. And the American public **MUST** start taking recycling efforts seriously. The following facts were presented in the Fall, 1991 issue of *Environments*, a publication of the Imaging Environmental Services of the DuPont Company.

**'Americans trash enough aluminum to rebuild our entire U.S. commercial airline fleet every three months.'**

**'If U.S. workers used 5% less of the 21 million tons of paper consumed each year, we'd save 17 million trees.'**

**‘Enough iron and steel is discarded annually to supply all the nation’s auto makers continuously.’**

**‘Americans throw away 2.5 million plastic bottles every hour-that’s almost 700 per second.’**

**From the September, 1991 issue (Vol. 6, No. 9) of *Perspectives*, the monthly newsletter of the In-Plant Management Association, "It has been estimated that the average American office worker chucks a pound and a half of paper every day. As a nation, businesses and individuals throw away enough office and writing paper every year to build a 12-foot wall between Los Angeles and New York.”**

**As can be determined by the preceding information on a hospital recycling program, the rewards to the participating hospital organization are many. The preservation of our environment, economic savings, goodwill within the hospital and the community, more than justify the need for the recycling program. It is hoped that this hospital recycling program will be helpful to individual hospital organizations in outlining the issues involved and the tasks to be performed, thereby assisting the organizations in the development and maintenance of a successful hospital-wide recycling program.**

**Once again, the sole purpose of this hospital recycling program is to assist Ohio hospitals by:**

**Providing a generic program as a guideline in developing individual recycling programs:**

**Providing a basic plan that includes several alternatives and identifies specific areas where recycling opportunities are most feasible:**

**Providing a cost/revenue analysis of a recycling program and a five year projection/ comparison of trash disposal costs, recycling revenues and recycling expenses,**

**And lastly, allowing the Ohio Hospital Association (OHA) a leadership role and therefore a catalyst in bringing about basic recycling programs that could save hospitals substantial dollars in trash disposal costs.**

**Any recycling efforts on behalf of Ohio hospitals will demonstrate to the general public as well as legislators, that additional efforts are being taken to protect and preserve the health and safety of the citizenry as well as our natural resources.**

## Listing of Ohio Recycling Companies

The following is a listing of recycling companies in Ohio as listed in the 1991 edition of the Harris Ohio Industrial Directory. This list is offered as a starting point for any hospital interested in developing a recycling program. It is not all inclusive. For more recycling vendors specific to your area or for a specific waste item, consult the Yellow Pages under 'Recycling Centers.'

### Recycling: Metal

<b>Company</b>	<b>City</b>	<b>Phone</b>
A&B Iron & Metal Co., Inc.	Dayton	513-228-8935
A&B Iron & Metal Co., Inc.	Dayton	513-228-1561
Acme Scrap Iron & Metal	Ashtabula	216-998-2820
Annaco Inc.	Akron	216-376-1400
Associated Paper Stock	North Lima	216-549-5311
Buckeye Metal Co.	Cleveland	216-351-8494
Cherrington Scrap Metal Inc.	Oak Hill	614-682-7575
Container Recovery Corp	Marion	614-383-4987
First Street Recycling	Dayton	513-223-7231
Fostoria Iron & Metal Co.	Fostoria	419-435-7792
Franklin Iron & Metal Co.	Dayton	513-253-8184
Gilbert Plating & Bumper Exch.	Columbus	614-224-7186
Gletzers Aluminum Alloys Corp.	Columbus	614-443-7774
Hirschberg, David Co.	Lockland	513-821-0514
Industrial Recycling Svc	N. Industry	216-456-7275
Kitchens Metals & Recycling	Lancaster	614-687-6111
M&M Metals Inc.	Cincinnati	513-221-4411
Masser, Harry Co., Inc.	Columbus	614-471-3195
National Waste Paper Co.	Lorain	216-244-1806
Norwalk Waste Mtrls Co.	Norwalk	419-668-3341
Ohio Valley Recycling	Martins Ferry	614-633-0813
Polk Scrap Iron & Metal	Zanesville	614-452-4174
Recycling Exchange	Oakland Park	614-471-5956
Rock Creek Aluminum Inc.	Rock Creek	216-563-3487
STE Recycling Center	Ottawa	419-523-4135
Shepaco Paper Co.	Hamilton	513-863-3474
Sherman, Frank Co.	Youngstown	216-744-8601
Sims Bros Inc.	Bucyrus	419-562-3225
Sims Bros Inc.	Marion	614-387-9041
St. Marys Iron & Steel	St. Marys	419-394-3351
State Paper & Metal Co., Inc.	Toledo	419-243-5567
Trinitech Intl.. Inc.	Twinsburg	216-425-0710

**Recycling: Metal (con't)**

<b>Company</b>	<b>City</b>	<b>Phone</b>
Unico Alloys Inc.	Columbus	614-299-0545
Vegas Metals Aluminum Recycle	Cleves	513-353-1199
Wooster Iron & Metal Co.	Wooster	216-264-8956

**Recycling: Paper**

Associated Paper Stock	North Lima	216-549-5311
Benton Entrprs Inc.	Toledo	419-255-3852
Cleveland Recyclery Inc.	Cleveland	216-391-1524
Converting Technologies	Columbus	614-445-8181
Fostoria Iron & Metal Co.	Fostoria	419-435-7792
Medina Paper Recycling Inc.	Medina	216-723-4334
National Waste Paper Co.	Lorain	216-244-1806
Norwalk Waste Mtrls. Co.	Norwalk	419-668-3341
Ohio Pulp Mills Inc.	Cincinnati	513-631-7400
Ohio Valley Recycling	Martins Ferry	614-633-0813
Recycling Exchange	Oakland Park	614-471-5956
Shepaco Paper Co.	Hamilton	513-863-3474
Sims Bros Inc.	Bucyrus	419-562-3225
Sims Bros. Inc.	Marion	614-387-9041
State Paper & Metal Co., Inc.	Toledo	419-243-5567
Willoughby Iron & Waste Mtrl.	Willoughby	216-946-8990
Wolfe, Robert F Co., Inc.	Fremont	419-332-7381

**Recycling: Plastic**

B O'B Inc.	Toledo	419-246-1224
Capco Recycling Inc.	Columbiana	216-482-4686
Ohio Valley Recycling	Martins Ferry	614-633-0813
Turtle Plastics Co.	Cleveland	216-791-2100
United Resource Recovery Inc.	Kenton	419-673-1465

**Recycling Centers and Services**

A&B Iron & Metal Co., Inc.	Dayton	513-228-8935
A&B Iron & Metal Co., Inc.	Dayton	513-228-1561
American Ultra Specialties Inc.	Boston Heights	216-656-5000
Annaco Inc.	Akron	216-376-1400

**Recycling Centers and Services (con't)**

<b>Company</b>	<b>City</b>	<b>Phone</b>
Associated Paper Stock	North Lima	216-549-5311
Bedford Recycling Center	Bedford	216-439-8044
By-Products Management of Ohio	Cleveland	216-486-9100
CM Services	Troy	513-335-1642
Cambridge Mills Products Inc.	Malvern	216-863-1121
Chemical Solvents Inc.	Cleveland	216-741-9310
Chemtron Corp	Avon	216-937-6348
City Scrap & Salvage Co., Inc.	Akron	216-753-5051
Cohen, Daniel Entrprs.	Hamilton	513-896-4547
Container Corp of America	Cincinnati	513-681-8200
Converting Technologies	Columbus	614-445-8181
Cross-Roads Asphalt Recycling	Strongsville	216-238-7400
First Street Recycling	Dayton	513-223-7231
Gene's Recycling Inc.	Attica	419-426-6452
Inorganic Recycling Inc.	Worthington	614-848-9777
Miami Valley Plastics	New Paris	513-437-6633
National Waste Paper Co.	Lorain	216-244-1806
Norwalk Waste Mtrls Co.	Norwalk	419-668-3341
Ohio Valley Recycling	Martins Ferry	614-633-0813
PC Workshop Inc	Paulding	419-399-4805
Recycling Exchange	Oakland Park	614-471-5956
SAW Inc.	Cleveland	216-861-0250
Safety-Kleen Corp.	Hebron	614-929-3532
Specialty Recycling Svcs., Inc.	Cleveland	216-883-7611
Specialty Recycling Svcs., Inc.	Cleveland	216-883-7673
Universal Materials Inc.	Mogadora	216-628-2692

**References:**

- 1) *How to Start a Hospital-wide Recycling Program*, Robert C. Fenwick
- 2) *Hospital Solid Waste Composition* (Market Research Survey). Stericycle: Rolling Meadows, IL, 1990
- 3) *Customer Profiles* (Market Research). Stericycle: Rolling Meadows, IL, 1990
- 4) "The Markets" (East-Central Market). Waste Age's Recycling Times 3(1), 1991
- 5) *Plant, Technology and Safety Management Series, Medical Waste Management, Recycling and New Technologies*, No. 2, 1991 series, the Joint Commission on Accreditation of Healthcare Organizations
- 6) *Americans Willing To Make Environmental Trade-Offs*, Environments, Imaging Environmental Services, a part of DuPont Imaging Systems, Fall, 1991.
- 7) *The Great Wall of Paper*, Perspectives, a monthly newsletter of the In-Plant Management Association, September, 1991.
- 8) 1991 Harris Ohio Industrial Directory. The Harris Publishing Company, Twinsburg, Ohio. 1991, pp. 1309-1310.