

OHIO HOSPITAL ASSOCIATION

Waste Assessment Preparation Questionnaire

Health Care Facility Pollution Prevention

Developed by: CGH Environmental Strategies, Inc.



Hospital Name: _____

WASTE ASSESSMENT PREPARATION QUESTIONNAIRE

Questionnaire Tool - Ohio Hospital Association Pollution Prevention Project

Directions: Please complete the following questions to the best of your ability. For questions about waste volumes, it is often useful to get assistance from your waste vendor. For questions about waste volumes unique to specific departments (such as radiology or dietary), contact the person responsible for waste disposal in that area. It may take several hours or less to complete the form, depending on how things are set up at your facility. Please contact Susan Zabo 614.738.2186 or at susanz@ohanet.org for any additional questions or if require assistance with completing your questionnaire.

This tool is designed to gather information from your about your facility, but also to provide basic information and education about different wastes typically found in hospitals. The information and education components increased the length of the form. Please don't be put off by the length of the document. We believe you will find much of the information helpful.

Contact Name: _____

Department: _____

Name of Facility: _____

Address: _____

Phone: _____ Fax: _____

Email _____

_____ # of Beds _____ # of employees (full and part time)

_____ # of surgeries/yr. (inpatient and outpatient)

Other: (please provide other information that may be relevant to waste policies. E.g. hospital is part of a health care system; Teaching hospital; Major Research Activities; number of satellites or other auxiliary facilities (e.g. MOB)



Hospital Name: _____

Participant Worksheet

Use this page to jot down any questions that arise during your survey process or topics that you would like assistance with.



Hospital Name: _____

A successful outcome for our facility will be described by the following measures:

Our current strengths include:

Areas where we need to improve include:

Challenges that might thwart our efforts include:



Hospital Name: _____

Additional Information About Your Facility

1. Contract Services. Describe any departments within your facility (such as Housekeeping, Facility Management, Grounds keeping, Pest Control or Food Services) that are staffed by contracted services such as ServiceMaster, Marriott, Morrison, Crothall or other companies.

2. Is your facility Unionized? If so, describe the union situation (e.g. Nursing, Housekeeping, Engineering, etc.)

3. Does your facility use Traveling Nurses or other temporary agency staff? If so, how often and what percentage of staff?

4. Is your facility used for teaching purposes by area nursing, medical or other allied health schools? If so, please describe.

5. Does your facility have an on-site laundry facility?



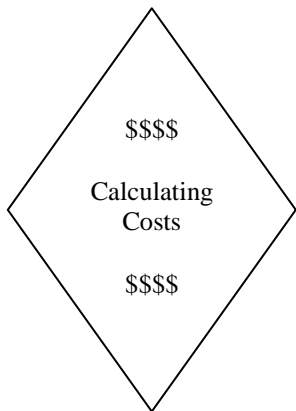
Hospital Name: _____



Figuring Out Monthly Solid Waste Volume

This information can usually be figured out from receipts from your waste vendor. Receipts may be "tare slips" or another form of receipt that your waste vendor uses in their record keeping to determine charges. Most facilities are charged a comprehensive 'fee' each month that consists of the following components:

Container Rental: fees for renting the compactor or dumpster you collect solid waste or refuse. This fee is usually the same cost month to month.



Hauling Fee: the fee for coming to your facility, collecting the waste container, hauling it to a landfill or transfer station or other disposal site, and returning the container to your facility. This fee is usually the same cost per haul, but can vary over the course of a month depending on the number of 'pick-ups' or hauls from your site.

Tipping fee or Dump fee: the fee charged based on the weight of the contents in the container. This fee will vary with every shipment. The amount of waste created for disposal varies and is related to patient census, number of procedures done, purchasing habits, number of employees and presence or absence of successful recycling programs.



If having difficulty figuring out how many tons of waste your facility generates, ask your waste vendor to weigh the compactor or waste dumpster when it is full while en route to having it dumped. You can use that information for estimating. For example, a 35-yard compactor was weighed and revealed a content weight of 7.5 tons of waste material. Determine on average how frequently the container is hauled each month and multiply by 7.5 tons to estimate a monthly weight.

To describe your solid waste program, describe what happens to solid waste as it leaves your facility.

Ex: Solid waste is collected in a 35-yard compactor 5 days per week. Container rental fees are \$325/month; hauling costs are \$120 per haul. Waste is delivered to the Golden Mountain landfill in Acme County, UT.



Hospital Name: _____

Solid Waste Worksheet

Contact person in charge of solid waste: _____

Department, Phone #/pager #

Monthly volume _____

Please describe the volume in tons. This can usually be ascertained from tare slips or receipts from your waste vendor. If unable to determine tonnage, estimate waste volume in 'yards' based on the size of your waste compactor or Dumpster.

Basic Program Set Up for Solid Waste

Solid Waste Collection Container size(s): _____ (how many yards?)

Container rental fee: _____/mo. Frequency of hauls or pulls: _____/wk

Cost per haul: _____

What happens to the waste?

landfilled or incinerated at _____ (specify location)

Total Monthly Cost for Solid Waste Formula

Container rental fee + hauling fees for month + tipping fees for month = \$ _____



Hospital Name: _____

Describe your waste program and sketch out location of solid waste compactor in relation to your facility below:



Hospital Name: _____

Biohazard Waste

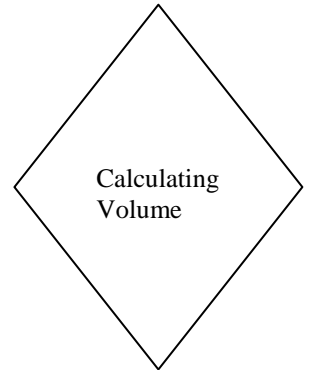
What is Biohazard Waste?

Terms such as "regulated medical waste," "medical waste," "biomedical waste," "infectious waste" "red bag" and "biohazard wastes" are often used to interchangeably to describe wastes generated during the diagnosis and treatment of patients. Technically each term has a separate meaning and refers to a segment of the medical waste stream. Items usually referred to as biohazard or biomedical waste include: blood and blood products, sharps, cultures and stocks, pathological wastes.

How much Biohazard Waste does your facility generate?

The amount of biohazard waste generated is related to many things including:

- the number of occupied beds
- the acuity of patients (how sick they are and the types of treatment they require)
- the number of surgical and diagnostic procedures performed
- current waste segregation practices
- current purchasing practices (how many products are reusable, how many are disposable)
- infection control policies that determine items required for disposal as red bag or sharps container waste
- current method for packaging waste for disposal (reusable containers, cardboard containers, sharps containers, type of bags used)

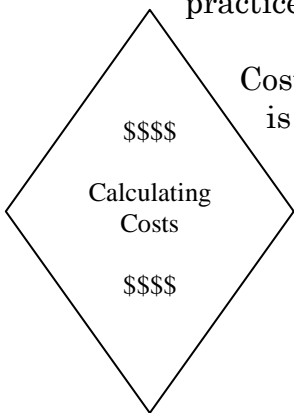


Most facilities experience a fluctuation in biohazard waste volumes each month based on the factors listed above.

Determining the amount of waste currently generated (on average) is an important first step. It serves as the starting point against which to measure the effectiveness of interventions done to improve waste management or purchasing practices. Many facilities have realized 20-50% reductions in biohazard wastes by improving waste segregation practices, purchasing practices and waste packaging practices.

Cost varies based on the terms of the contract with your waste vendor. It is usually linked in some waste to the volume of waste generated.

Examine the monthly invoices from your vendor. See if they note the actual amount of waste (in pounds) collected from your site each





Hospital Name: _____

month. Other costs that may be listed include fuel surcharges or supplies. Costs are usually based on a per box, per pound, or per trailer fee, depending on the vendor.

Biohazard Waste Worksheet

Monthly volume _____ Monthly cost _____
(please describe the volume in tons. This can usually be ascertained from waste manifests or other documents provided by your medical waste vendor.)

If waste is treated on-site, either in an incinerator or an autoclave, please estimate the amount of waste treated. _____ (pounds per month)

Please describe your biohazard waste program. Ex: How is waste collected from patient care areas? (carts? bags? boxes?)

How frequently is waste collected from your facility by a waste vendor for disposal?
(Answer if your facility's waste is sent off site for treatment and disposal)

Monthly? Weekly? bi-monthly? Several times/wk? Other _____

If treated on-site, describe the process and method for collection, treatment, and disposal of residual treated waste.

What is the final destination for biomedical treated waste?

****If autoclaved? Is waste then landfilled? yes no unsure

After autoclaving, is residual incinerated? yes no unsure of final disposition

****If incinerated? Incinerator is on-site incinerator is off-site
Final disposition of ash from incinerator is: _____



Hospital Name: _____

Note: In nearly all cases, even when wastes are 'autoclaved' or treated by microwave or chemical disinfection, there is a portion of the biohazard waste stream that is incinerated. This usually consists of pathological wastes and chemotherapeutic wastes. Please describe how this aspect of waste management takes place at your facility.

Are Red bags Cadmium - Free? yes no not sure
Are Sharps containers Cadmium-Free? yes no not sure

Hazardous Wastes

Hospitals generate hazardous wastes. Many hazardous chemicals are used in the process of supporting routine patient care. These items range from hazardous pharmaceuticals to hazardous chemicals in the laboratory to hazardous chemicals used in facility maintenance such as degreasers and paint thinners. The following sets of questions are designed to gather information about your hospitals hazardous waste program. This is different from biohazard waste. The 'risks' associated with this type of waste are more "chemical risks" than the "biological risks" typically associated with the biohazard waste stream described in the previous section.

To learn more about the regulations governing hazardous wastes that are applicable to ALL hospitals in the United States, visit the web site:

<http://www.epa.gov/waste/hazard/recycling/regulations.htm>

There are a series of independent learning modules that are useful to help understand your hospitals roles and responsibilities under the Resource Conservation and Recovery Act (RCRA). Topics include Waste Generators, Enforcement, Storage, Containers, Transporters, and Reporting/Record keeping

Another very helpful resource is the US Environmental Protection agency's Waste Wise Program. Businesses, local governments, and non-profit organizations of all sizes and from all industry sectors can join WasteWise. WasteWise partners range from small local governments and nonprofit organizations to large, multinational corporations. Benefits of membership can include:

Reduced purchasing and waste disposal costs;

Toll-free helpline for technical assistance;

Annual Climate Profile describing greenhouse gas reduction;



Hospital Name: _____

Public recognition in WasteWise publications, case studies, and meetings;
Networking in member and regional forums;
Opportunity to receive WasteWise Awards that recognize outstanding achievements; and
Outreach and educational materials.

<http://www.epa.gov/epawaste/partnerships/wastewise/about.htm>

Hazardous Wastes Worksheet

Does your facility have an EPA Identification number? yes no unsure

EPA Identification Number: _____

What is your facility's hazardous waste generator status?
 large quantity generator (LQG) SQG small quantity generator
 don't know

Hazardous Waste Program Coordinator: _____
Name, Contact information

Emergency response coordinator: _____
Name, Contact information

Annual budget for Hazardous Waste Program \$ _____
(list most recent year)

Actual expenses for Hazardous Waste Program & Disposal \$ _____
(list most recent year)

List the Quantity of hazardous waste disposed (in pounds or gallons)
_____ (This can be difficult to specify, since different types of wastes may be lab packed, bulk packed, or otherwise contained. Describe to the best of your ability, the types and amounts of hazardous wastes discarded.) List the disposition of those wastes. Attach a separate sheet if necessary.



Hospital Name: _____

Hazardous chemicals and hazardous wastes commonly found in hospitals

Laboratory:

solvents, formaldehyde, alcohols, picric acid, and various other chemicals

Pharmacy: RCRA listed hazardous pharmaceuticals

P listed waste Name	Hazardous waste number	U listed waste Name	Hazardous waste number
Epinephrine	P042	Chlorambucil	U035
Nicotine	P075	Chloroform	U044
Nitroglycerin	P081	Cyclophosphamide	U058
Physostigmine	P204	Daunomycin	U059
Physostigmine salicylate	P188	Dichlorodifluoromethane	U075
Sodium Azide	P105	Diethylstilbesterol	U089
Strychnine	P108	Formaldehyde	U122
Warfarin 0.3%	P001	Hexachlorophene	U132
		Lindane	U129
		Melphalan	U150
		Mercury	U151
		Mitomycin C	U010
		Paraldehyde	U182
		Phenacetin	U187
		Phenol	U188
		Pyridine	U196
		Reserpine	U200
		Resorcinol	U201
		Saccharin	U202
		Selenium sulfide	U205
		Streptozotocin	U206
		Trichloromonofluoromethane	U121
		Uracil mustard	U237
		Warfarin <0.3%	U248



Hospital Name: _____

Maintenance shops:

solvents, paint thinners, compressed gas cylinders, pesticides, boiler chemicals, water treatment chemicals, cutting oils

Central Sterile Reprocessing:

Ethylene Oxide, mercury, and glutaraldehyde

Radiology: Lead, silver, mercury



Hospital Name: _____

A Strategy to Reduce Hazardous Waste: Recycling

Many facilities have opted to implement recycling programs for wastes that would otherwise be hazardous wastes.

Examples of these are outlined below. Please note programs your facility has in place.

- solvent recovery and recycling for materials such as xylene, toluene

- formalin recovery for used formalin, formaldehyde

- alcohol recovery for various alcohols

- silver recovery for waste silver from radiology (film, and fixer/developer)

- Fluorescent lamp recovery



Hospital Name: _____

If your facility is a Large Quantity Generator , describe the following:
Please note who is responsible for each item below.

LT90 program Person Responsible: _____

Biennial report to EPA Person Responsible: _____

Hazardous Waste Management Training and Spill Readiness Program
 Person Responsible: _____

Please complete this chart for easy reference

AREA	DEPARTMENT CONTACT	HAZARDOUS WASTES GENERATED
Laboratory	Name: Phone: Pager	Solvents, formaldehyde, picric acid, acids, alcohols
Pharmacy	Name: Phone: Pager	Hazardous pharmaceuticals, alcohols, epinephrine, warfarin
Radiology	Name: Phone: Pager	Lead aprons, silver from x-ray film, silver from fixer/developer solutions
Facilities: Boiler, Maintenance	Name: Phone: Pager	Cutting oils, freon, solvents, compressed gases,
Print Shop	Name: Phone: Pager	Waste oils, solvents
Oncology	Name: Phone: Pager	Chemotherapy wastes
Dialysis	Name: Phone: Pager	Formaldehyde
Endoscopy	Name: Phone: Pager	Mercury filled dilators
Housekeeping: Chemicals	Name: Phone:	



Hospital Name: _____

	Pager	
Central Sterile Reprocessing	Name: Phone: Pager	Ethylene Oxide

Other Wastes

The following wastes are referred to as Special Wastes, and in some states fall under the Universal Waste program, which often means, that if the following items are collected for recycling, they are not considered hazardous wastes.

Please describe what programs, if any, your facility has in place to manage these waste streams.

Fluorescent Light tubes, including U-bulbs from View boxes and other fluorescent light tubes. If tubes collected for recycling, please describe amount recovered per year, and cost to recycle or dispose of per year.

Used batteries. (Note: Batteries are present throughout hospitals in beepers, flashlights, pumps, glucometers, pulse oximeters, defibrillators, tape players, hearing aids, palm pilots, cell phones, and numerous other devices. Batteries come in diverse chemistries and geometries (shapes). Describe your facility's used battery program, if one is in place. Note the quantity of batteries recovered and their final disposition.

Used oil. Note any programs to collect used oil from your organizations vehicle fleet (security vehicles, ambulances, executive fleet or material management fleet.) Also note used oil management program from facilities to capture oil from equipment such as snow removal equipment, or other equipment.

kitchen grease. Note any programs in place to capture used grease from fryolators in dietary. (grease rendering programs). Note the size of the tank or container at your facility and the frequency of collection. Note any costs associated with this program.



Hospital Name: _____

Other programs - Please describe

Mercury

Does your facility have a program in place to phase out or minimize use of mercury containing products and devices such as sphygmomanometers (blood pressure measuring devices), thermometers, esophageal dilators, weighted feeding tubes, laboratory chemicals (thimerosal is a mercury containing preservative)? If so, please describe:

Other Wastes

Waste Material	Person Responsible Contact Information	Disposition of Material
Florescent light tubes		
Used batteries		
Used oils		
Freon		
Kitchen Grease		
Mercury		
Used Computers		
Leaf and Yard Wastes		
Light Ballasts		
Durable goods, Furniture		



Hospital Name: _____

MERCURY PROGRAM(S):

Please describe.

Reuse

There are many opportunities in healthcare to reduce waste volume and toxicity through the reuse of materials. Historically, many products used by hospitals were reusable, including such commonplace items as dishware, gowns, surgical drapes, suture removal items, instruments, pillowcases and water pitchers.

In the last thirty years, with the advent of affordable plastics, increasing labor costs and increasing concern around infection control issues, many facilities have shifted to single-use disposable products. Disposable products are used in nearly every department within a hospital and range from disposable urine collection cups to dishware and cutlery to disposable 'non-woven' fabric items such as gowns and drapes.

Lifecycle Analysis (LCA) studies have been conducted to answer the question, 'what is preferable, single use disposables or reusable products?' The results vary based on study design. From a solid waste perspective, reusing products creates less waste. For example consider the single use disposable dishware for one employee for one day at work, factoring in breakfast, coffee break, and lunch. The dishware would include at least three plates, three or four cups (hot and cold), two bowls, three forks, three spoons, and two knives and several disposable napkins. All the dishware and cutlery along with any uneaten foodstuffs become solid waste. If reusable dishware and cutlery were used, the only material that would become solid waste is the uneaten foodstuffs and the paper napkin.

Examples of reusable products your facility might use are listed on the following page.



Hospital Name: _____

Please check off any formally instituted reuse programs at your facility.
Please provide additional information on the details of each item you choose.
Attach a separate page if necessary.

- | | |
|---|--|
| <input type="checkbox"/> Dishware | <input type="checkbox"/> Surgical gowns |
| <input type="checkbox"/> Linens | <input type="checkbox"/> Surgical drapes |
| <input type="checkbox"/> Pillows | <input type="checkbox"/> Pulse oximeters |
| <input type="checkbox"/> Cutlery | <input type="checkbox"/> Headcovers |
| <input type="checkbox"/> Glassware | <input type="checkbox"/> Surgical basins |
| <input type="checkbox"/> Baking pans | <input type="checkbox"/> Plastic Face Shields |
| <input type="checkbox"/> Patient trays | <input type="checkbox"/> Suture removal sets |
| <input type="checkbox"/> Napkins | <input type="checkbox"/> Trochars |
| <input type="checkbox"/> Patient bath basins | <input type="checkbox"/> Surgical towels |
| <input type="checkbox"/> Patient emesis basins | <input type="checkbox"/> Vaginal speculums |
| <input type="checkbox"/> Patient bedside water pitchers | <input type="checkbox"/> Ambu bags |
| <input type="checkbox"/> Patient drinking cups | <input type="checkbox"/> Ventilator tubing |
| <input type="checkbox"/> Patient towels | <input type="checkbox"/> Sharps containers |
| <input type="checkbox"/> Patient washcloths | <input type="checkbox"/> Medical waste packaging |
| <input type="checkbox"/> Underpads (chux) | <input type="checkbox"/> Pallets/skids |
| <input type="checkbox"/> Mattress overlays | <input type="checkbox"/> Inter-office mailers |
| <input type="checkbox"/> Patient Exam gowns | <input type="checkbox"/> Toner Cartridges |
| | <input type="checkbox"/> Furniture |



Hospital Name: _____

Recycling

Please describe the recycling programs in place at your facility. Please note the amount of each material recycled each month, and the cost of recycling (if available). Contact your recycling vendor for assistance, if necessary, in estimating amounts of material recovered for recycling. Even if you don't have exact numbers, a knowledge of the containers used to collect recyclables and knowledge of the frequency of pick-ups can be useful to help estimate amount recovered.

Corrugated cardboard is often a major bulk material from healthcare wastes.

Cardboard and paper can represent up to 45% of a hospital's solid waste stream. Aggressive efforts to recover as much of this material as possible can dramatically reduce the volume of solid waste destined for landfills and incinerators.

Paper Paper can represent an enormous amount of a hospital waste stream.

Paper comes in many different grades (see list . Please check off any paper types you are currently recycling, and note volumes beside.

Steel /Metals Hospitals generate steel cans in food service and in kitchenettes from patient care areas. Aluminum cans are generated from beverages such as soda and fruit juices. Scrap metal is generated in facilities and can represent large quantities of waste, especially during renovations. Venting, old equipment (IV poles, gurneys, and wheelchairs) and other items become scrap metal.

Glass Glass items are generated primarily from food service and pharmacy. Other areas that can also generate glass wastes include laboratory, patient care areas, vending areas and the nursery. Glass comes in two basic types, Soda lime glass (similar to pickle jars) & Borosilicate glass (medical glass found in IV bottles). Other types of glass include colored glass (green, brown, and blue) & labware glass (Pyrex). Glass from vases and china generally are not recyclable. Contact your recycler to determine how they market recovered glass. Glass that is sold as 'fill' can often be a mix of colors and types of glass. Glass that is collected for recycling into new glass, is required to be segregated by type & color, as it is crushed into cullet (small chunks) to be made into new glass.

Plastics Plastics represent anywhere from 15-33% of hospital waste based on the findings from several studies. Plastics are the most challenging material to recycle since there are so many different types. Plastics are bulky, yet lightweight and have incredible "memory," making them resistant to compaction. Recyclers are uninclined to accept plastics from hospitals due to market instability and concerns about contamination with body fluids. Some hospitals are able to implement successful recycling programs with careful segregation.



Hospital Name: _____

Recycling Worksheet

Recycling: Place a check mark beside materials your facility recycles. List out monthly amounts recycled if known.

FIBERS

Corrugated cardboard Amount/mo. _____

boxboard - this material is similar to corrugated cardboard, except that it is a single layer thick. It can be white, brown or gray. It's like cereal box.

Amount/mo. _____

List of types of paper for recycling and amount per month

White paper, office ledger (WL) _____
(CP) _____

Colored paper

computer bar paper (CPO) _____
(OW) _____

office waste paper

magazines (OMG - old magazines)- _____
newsprint) _____

newspapers (ONP-old

phone books _____

textbooks _____

junk mail _____

holiday gift wrap _____

medical packaging (coated papers) _____

METALS list amount per month

steel cans _____ aluminum cans _____ scrap metals
(assorted) _____

GLASS list amount per month

clear glass (soda lime) _____ clear glass (medical or
Borosilicate) _____

green glass (usually from foodservice wines or vinegars) _____

brown glass (usually from foodservice, lab or pharmacy) _____



Hospital Name: _____

PLASTICS list amount per month

#1 PET _____ #2 HDPE _____ #3 PVC _____

#4 LDPE _____ #5 PP _____ #6 PS _____

#7 Other Note: See appendix to learn more about plastics

OTHER

durable goods

leaf and yard waste

wood wastes

construction and demolition waste



Hospital Name: _____

**GETTING THE BIG PICTURE! COMPILING INFORMATION
TO SCOPE OUT YOUR FACILITY'S OVERALL WASTE
PROGRAMS**

Checklist	Where does it go?	Who's responsible ?	Vendor's Name/ Address	Amount per year - volume or weight	Cost per year if known
Solid Waste Trash					
Biohazard Waste					
Hazardous Wastes					
Recyclable Wastes					
-paper					
-cardboard					
-metals					
-glass					
-plastic					
-kitchen grease					
Other wastes					
-fluorescent bulbs					
-batteries					
-waste oil					
-silver solutions					
-silver films					
-lead radiology					
-solvents lab					
-alcohol					
-formalin					
-toner cartridge recycling					How many?



Hospital Name: _____

Tyvek suit recycling					
Instrument recycling					



Hospital Name: _____

Appendices

Glossary of Terms

Conversion Factors for Recyclable Materials

RECYCLING PAPER: Confidential Documents Management

Be aware that paper wastes that leave your facility may contain confidential information. Such wastes are usually best handled through document destruction. The majority of healthcare paper wastes are CONFIDENTIAL documents. Everything from careplans, to lab slips, to requisitions for tests, to menus. Everything with a patient name, medical record number, social security number, address, phone, lab result, diagnosis, or other personal information is considered confidential. Psychiatric patients and patients with HIV have special protections under federal law. Also, employee records, salary statements, and other documents from human resources are also confidential. Hospitals that have affiliations with Universities, and that receive federal funding also fall under the Buckley Amendment, which has specifications around third party disclosure of confidential information. All patients have protections under the Patient information and Privacy Act. Hospitals need to treat nearly all their paper wastes (except newspapers and magazines and work orders) as confidential documents for liability reasons. Many recyclers are able to provide this service by offering secure collection programs (lock boxes) and delivery of materials directly to a mill for destruction. As part of this service they provide certificates of destruction. If your recycler is not able to provide this level of security, the next step is to find another route for recycling your paper wastes. Some facilities opt to procure an industrial shredder and do their own shredding on site. This is best done in a non-patient care setting. Note that vendors can provide an array of services from shredding onsite (at your dock) to providing lock boxes, offering paper collection service, shredding and recycling. The cost for these services range from .09 - .18 cents per pound. A 500-600 bed facility might spend \$45,000/year with a vendor. It is a small price to pay considering that one piece of paper in the wrong place at the wrong time could trigger a multi-million dollar lawsuit.



Hospital Name: _____

Web site for Senator Patrick Leahy's Comments on the Medical Privacy Act

<http://leahy.senate.gov/issues/medprivacy/index.html>

Web site for Federal Register listing out Rules for Medical Privacy Act
(Go to Health and Human Services Section)

http://www.access.gpo.gov/su_docs/fedreg/a001228c.html



Hospital Name: _____

Recycling Plastics: Information Sheet I

Plastic products are increasingly present in healthcare settings. 25% of all healthcare products are made from vinyl chloride. Plastic has many attributes that have earned it a place in healthcare settings. In recent years, issues and concerns related to the chemistry of certain types of plastics have been raised. At the time of this publication, few hospitals have developed plastic recycling programs. Plastics make up between 15-33% of the overall waste stream coming out of hospitals.

This information sheet is designed to provide background information to the reader, and to capture specific information from those facilities that have implemented plastic recycling programs.

Labeling of Plastics

The SPI coding on many bottles and containers consists of a triangle composed of chasing arrows with a number 1-7 designated in the center. The number indicates the main chemistry of the plastic item.

Plastic Type	Abbreviation	Chemical Name	Use
#1	PET, PETG, PETE	Polyethylene Terphalate	Plastic used in soda bottles. Can come in clear, green, or other colors. Often found in medical packaging.
#2	HDPE	High Density Polyethylene	Plastic used in milk jugs, laundry detergent containers, many yogurt containers, etc. Comes in white, clear, colors. Can have a 'narrow neck' top or a 'wide mouth top.' Might be injection molded or blow molded. All these features are important from the recyclers perspective. Hospitals may have thousands of this type of plastic container per month -- especially from areas such as dialysis, food service, laboratory and pharmacy. Tyvek, bunny suits
#3	PVC	Polyvinyl Chloride	This plastic is commonly found in IV bags (Baxter, Abbott), IV tubing, Blood bags, naso-gastric tubes, Foley bags, patient ID bracelets, suction tubing, dialysis tubing, oxygen tubing, ambu bags, venodyne



Hospital Name: _____

			sleeves, x-ray protective sleeves, shower curtains, piping, & some packaging. It can be a rigid form, as in rigid medical packaging, or a flexible form, as in IV bags & urine bags.
#4	LDPE	Low Density Polyethylene	This material is used to make trash can liners and bags. Also LLDPE, a similar material is used for stretch wrap
#5	PP	Polypropylene	Often used to make in NSS & H2O irrigation bottles
#6	PS	Polystyrene	Used for making trays, packaging components
#7	Mixed	Mixed	Used for making trays, packaging components

Recycling Plastics Information Sheet II

PLASTICS

□ #1 PET, PETG, PETE Polyethylene Terphalate

Plastic used in soda bottles. Can come in clear, green, or other colors. Often found in medical packaging.

□ #2 HDPE High Density polyethylene

Plastic used in milk jugs, laundry detergent containers, many yogurt containers, etc.. Can come in white, clear, colors. Can have a 'narrow neck' top or a 'wide mouth top.' Might be injection molded or blow molded. All these features are important from the recyclers perspective. Hospitals may have thousands of this type of plastic container per month -- especially from areas such as dialysis, food service, laboratory and pharmacy.

□ #2 HDPE TYVEK - mailers, 'bunny suits'

the material used for many mailers and disposable coverall suits is called Tyvek. It is the same plastic as a milk jug. Dupont offers a recycling & recovery program for Tyvek. Call 1-800-44 TYVEK for more information.



Hospital Name: _____

#3 PVC Polyvinyl Chloride

Nearly 25% of all health care products are made from PVC. This plastic is commonly found in IV bags (Baxter, Abbott), IV tubing, Blood bags, nasogastric tubes, Foley bags, patient ID bracelets, suction tubing, dialysis tubing, oxygen tubing, ambu bags, venodyne sleeves, x-ray protective sleeves, shower curtains, piping, and some packaging. It can be in the rigid form, as in rigid medical packaging, or in a flexible form, as in IV bags and urine bags. PVC can be nearly 50% chlorine by weight. This type of plastic has been associated with dioxin formation, both in its manufacture and in its disposal if incinerated. Some hospitals in the country have been able to launch successful PVC plastic recovery and recycling program. Recyclers have particular concern about this material, since PVC containers, mixed in with HDPE or PET can 'contaminate' a plastic waste stream.

#4 LDPE Low Density Polyethylene

This is the type of plastic sometimes found in lids to butter tubs. It is also used to make trash can liners and other plastic sheeting. Another type of plastic, similar to LDPE is LLDPE or Low linear density polyethylene. This is the material used to make Stretch wrap that is often used to wrap pallets of goods.

#5 PP Polypropylene

This type of plastic is commonly used for solutions. Many hospitals generate tens of thousands of containers per year of 'normal saline' for irrigation and 'sterile water' for irrigation. These plastic containers usually come in 250 ml, 500 ml, 1000 ml, and 1500-ml sizes. Other types of PP may be used for disposable patient bedpans, basins, soap dishes, pitchers, and cups. PP is often used for yogurt, cottage cheese, sour cream and other food service items.

#6 PS Polystyrene

Polystyrene comes in a variety of forms. It is often used in medical packaging, as a thermoform tray or component of a kit. It can also be present in a rigid form, similar to the type plastic in a VHS tape. It can also be present as a 'foam' type plastic, which recyclers refer to as EPS - or expanded polystyrene foam. Many computers and other technologies are packaged in PS foam. It can also come in the form of Packaging peanuts.



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#7 Mixed Plastic

A number of products come with the #7 label on them, indicating that the primary resin is 'other' than those listed above. This material is particularly difficult to recycle since it usually consists of several types of material, including nylons and other materials.



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Conversion Factors for Recyclable Materials

<u>Material</u>	<u>Volume</u>	<u>Weight (lbs.)</u>	<u>Weight (tons)</u>
Newsprint, loose	1 cu. yd.	600	0.3000
Office paper	1 cu. yd.	400	0.2000
Corrugated, loose	1 cu. yd.	285	0.1425
Corrugated, baled	1 cu. yd.	507	0.2535
Glass, whole bottles	1 cu. yd.	660	0.3300
Glass, broken	1 cu. yd.	1,125	0.5625
Glass, crushed mech.	1 cu. yd.	2,060	1.0300
Glass, uncrushed	55 gal. Drum	300	0.1250
Aluminum cans	1 cu. yd.	74	0.0370
Aluminum cans, crushed	1 cu. yd.	250	0.1250
Ferrous cans, whole	1 cu. yd.	150	0.0750
Ferrous cans, crushed	1 cu. yd.	850	0.4250
PETE soda bottles, whole	1 cu. yd.	30	0.0150
HDPE, milk bottles, wh.	1 cu. yd.	25	0.0125
PETE & HDPE mixed	1 cu. yd.	30	0.0150
PS	1 cu. yd.	10	0.0050
Leaves, uncompacted	1 cu. yd.	400	0.2000
Leaves, compacted	1 cu. yd.	1,000	0.5000
Grass clippings, uncompacted	1 cu. yd.	740	0.3700
Wood Chips	1 cu. yd.	500	0.2500
Wood waste	1 cu. yd.	286	0.1430
Used motor oil	1 gallon	7	0.0035
Tire, passenger car	one	20	0.0100
Tire, truck	one	90	0.0450
Auto Battery	one	33	0.0165
Concrete, brick & block	1 cu. yd.	4,000	2.000
Asphalt (milled, ripped)	1 sq. yd.	115	0.0575
Food waste, solid/liq. Fats	55 gal drum	413	0.2063
Solid Waste compacted	1 cu. yd.	667	
Solid Waste uncompacted	1 cu. yd.	150	



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Glossary of Terms

Aluminum: A silvery-white metal, commonly used in beverage cans and other food-service trays and containers. Unlike steel, which is also used in food service, aluminum is non-magnetic.

Baler: A machine which compacts waste materials to reduce volume, usually into rectangular bales.

Broker: A businessperson who is an agent or intermediary for buying or selling recyclable materials.

Co-mingled Materials: A mix of several recyclables collected in one container.

Corrugated Containers: Also known as cardboard boxes. Often called OCC (old corrugated cardboard) by the paper business.

Ferrous metals: metals which are composed of iron.

Food Waste: Animal or vegetable wastes resulting from food preparation.

Glass: A vitreous material that is impermeable, transparent and odorless. Clear bottle glass is made by melting almost pure silica sand in furnaces at 2700 degrees F, with burnt lime or limestone, soda ash

and cullet. Colored glass is usually made by adding small amounts of metals, salts or oxides.

Hauler: A solid waste/trash collection firm.

HDPE: High-density polyethylene, a plastic resin used to make plastic milk jugs, detergent containers and base cups for plastic soda bottles.

High-grade Waste Paper: The most valuable waste paper in the marketplace. Often collected in offices as computer paper and stationery.

Landfill: A designated area in which solid waste material is disposed of in such a way that it does not create hazards to public health or safety.

Mandated Recycling: Programs which by law require certain recycling practices or results.

Market: An end processor of a recyclable materials or manufacturer that uses recyclable materials.

Material Recovery Facility: Also known as a MRF (pronounced 'murf'). A MRF is a facility in which mixed recyclables are separated from each other and processed to the specification of the



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markets for each material. They are sometimes referred to as intermediate processing centers, or IPC's

Mixed Paper: Waste paper of various kinds and quality usually collected from stores, offices, schools and hospitals

Municipal Solid Waste: (MSW) The combined resident solid waste generated in an area.

Paper: A lightweight, thin flexible material used for printing, writing, wrapping and sanitary purposes.

PET: Polyethylene terephthalate, a plastic resin used to make containers, such as plastic bottles.

Plastics: A man-made material made from hydrocarbons and known for its lightweight and durability.

Polystyrene: A lightweight plastic material often used by food service. Polystyrene foam products include trays, plates, bowls, cups and hinged containers. Rigid polystyrene is used to make such items as eating utensils and lids.

Post-consumer Waste: Products that have been through the consumer cycle. (I.e. used newspapers, bags, cans and cups).

Recyclables: Waste materials that can be recycled.

Recycling: A resource recovery method that collects and treats a waste product for use as a raw material in the manufacture of the same or other useful products.

Recycling Documentation: Tonnage figures for recyclables provided by a vendor or market in the form of waste slips, a letter on recycling market letterhead, or a fully completed County approved reporting form.

Reuse: The use of a product more than once in its same form for the same purpose: i.e. a bottle is reused when it is returned to the bottling company for refilling.

Solid Waste: Any garbage, refuse, trash or material that is discarded and is intended for disposal.

Source Reduction: Any activity that prevents or decrease the amount of solid waste generated.

Source Separation: The separation and collection of individual recyclable materials that can then be recycled. Separation can be done manually or by mechanical means.

Steel: A hard, durable and malleable alloy material made from iron and carbon. In food-service



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use, steel is found as beverage and food cans and lids and can be distinguished from aluminum by its magnetic properties.

Tin Can: A steel can with tin coating.

Tipping Fee: The cost per cubic yard or per ton of disposing of garbage at a solid waste facility.

Vendor: A recycling collection firm.

Waste Audit: An inventory of the amount and type of waste that is produced by a specific location.

Waste Reduction: That which minimizes the need for disposal by either reducing the amount of waste generated or diverting materials from the waste stream, thus preserving their value as materials resources.

Waste Stream: A general term used to denote the waste material output of an area, location or facility.

White Paper: A category of high-grade, non-colored paper that can be recycled. Often found in offices and classrooms as stationery, copier paper, etc.