



CITY OF LOS ANGELES HOSPITAL BEST MANAGEMENT PRACTICES



*DEPARTMENTAL FOCUS ON WAYS TO
REDUCE, REUSE & RECYCLE*

February 2014

CITY OF LOS ANGELES



SANITATION
DEPARTMENT OF
PUBLIC WORKS

Commissioned by
City of Los Angeles
Bureau of Sanitation

Acknowledgements

The Business Waste Assessment Program is part of the City of Los Angeles, Department of Public Works, Bureau of Sanitation, Solid Resources Citywide Recycling Division's ongoing program in response to the State of California's AB939 mandate to divert 50 percent of its waste stream from the landfills and the City's goal to further increase its diversion to 70 percent by 2015.

This Hospital Best Management Practices guide was commissioned by the Bureau of Sanitation. Tetra Tech, Inc., the team from E. Tseng & Associates, along with EcoTelesis International were responsible for putting this Guide together.

Most of all, thank you to the staff at the Kaiser Permanente Los Angeles, West Los Angeles, Panorama City, Woodland Hills, South Bay, Fontana and Downey Medical Centers for contributing their time, creative energies, and their unwavering commitment to a sustainable future. Kudos to Timothy Eng, P.E., CIE, Project Manager at the Kaiser Permanente Southern California Regional Support Services for coordinating the interviews as well as getting the participation of the Healthcare Plastics Recycling Council.

Table of Contents

Introduction.....	5
All Departments	7
Food and Nutrition.....	13
In-Patient & Out-Patient Pharmacies	17
Laboratories	21
Labor & Delivery	23
Operation Rooms.....	25
Material Management	29
Environmental Services / EVS.....	33
EHS – Environmental Health & Safety / Engineering / Facilities / Landscaping	35
Other:	
ER / ICU / PCU / TCU / Patient Rooms / Nurses’ Stations	37

(this page left blank intentionally)

Healthy Hospital – Healthy Planet

Hospitals and other medical facilities have a much larger impact on the health of our planet than we may think. As hospitals strive for excellence in meeting the healthcare needs of their patients and the community, they collectively produce more trash than any other industry sector in California other than the restaurant industry. In Los Angeles, the medical and health industry disposes approximately 210,000 tons of “regular trash” (also known as municipal solid waste) each year. This is in addition to the clinical or biohazardous wastes (red bag), sharps, radiological waste, hazardous wastes, and other regulated wastes.

Many of the recycling and waste reduction opportunities in a hospital or medical facility are similar to other businesses – they can recycle their office paper and cardboard, donate their old computers, and if they are ahead of the pack, they might even compost their food and green waste. However, there are a number of “best management practices” that are specific to each department, and, as each hospital further specializes in the type of care and procedures that they can provide their patients, they find new opportunities to waste.

Hospitals are finding that environmental sustainability is not only good for their patients, employees, and the community, but it also affects their operating costs. Compared to the health and welfare of the patient, why such an emphasis on diverting the non-hazardous medical waste? Since the non-hazardous medical waste accounts for 75% of the waste generated in a hospital, it plays an important role not only as a reflection of their efficiencies, but also because landfill gases are one of the major contributors to climate change. Climate change, in turn, creates severe weather conditions that are harmful, increases the incidence of respiratory diseases from poor air quality, and promotes infectious diseases transmitted by insects that can travel to new habitats created by climate change.



Refuse - Reduce - Reuse - Recycle

At home, at work, or at play, the strategies remain the same. While this seems simple enough, in a medical facility it isn't quite as simple. Protected Health Information (PHI) under the U.S. Health Insurance Portability and Accountability Act (HIPPA) complicates recycling efforts because patient safety dictates that patient medical records, prescription bottles, and sometimes even water pitchers be labeled and identified... but once items are labeled, it is difficult to remove the labels in order to recycle those same items. Other items such as specimen containers, wash basins and tubing pose health concerns and are subsequently rarely recycled. “Reuse” is often practiced through equipment “reprocessing” activities, but there is controversy and getting past the “ick” factor that the device is not from the OEM (Original Equipment Manufacturer). “Refuse” (saying “no” and finding an alternative) and “Reduce” therefore play a more critical role in developing strategies to reduce waste in the health care industry.

Hospital Best Management Practices

How to use this manual

Medical professionals and staff have a difficult task working in an environment that is heavily regulated, faces rising operating costs, requires diligence to maintain health and safety standards, all while providing excellent care and sensitivity to all their patients. Waste reduction is not the primary concern for most.

However, in response to the growing concern regarding sustainability, many hospital facilities have formed “green teams” and requests for recycling have come from nearly every department. In particular, it is reported that between 30% and 70% of health care waste originates from the operating room and this may explain why there is growing attention to “greening the operating room.”

This manual reflects Best Management Practices (BMPs) seen throughout the healthcare system, most of which are actual practices and others are feasible programs that may be logistically difficult to implement on a facility-wide basis (such as having a mixed recycling collection like many of us have at our curbsides) in every department. Cooperation from Hospital Environmental Services and adherence to hospital policy and EHS (Environmental Health & Safety) guidelines and state & federal regulations are important factors when considering diversion programs. Respect, communication, education, empowerment and kaizen (continual learning and improvement) are also necessary for program success.

Also, it is not intended that departments need to put all the suggested BMPs in place, but to start with those that are the most beneficial and remember that, change is inconvenient until it becomes a habit – and in order to instill new habits, departments will need to entice, educate and encourage... work together and be creative! That’s why they call it “best management practices!”

Green Teams and Facility Management may want to browse through this manual in its entirety, but it has also been designed to be distributed to the appropriate departments as a one- to three-sheet (double sided copied or digitally, of course!) handout for departments to use as a guideline in assessing their current efforts to manage their waste streams more sustainably.

Companies and service providers listed here are listed as examples only and do not constitute an endorsement by the City. The CalRecycle website contains various listings of resources and vendors at: <http://www.calrecycle.ca.gov/HealthCare/>



All Departments - Recycle

These are waste diversion opportunities that should be considered by all departments. Some departments may not generate all these materials, but these are the most commonly found throughout the medical facility. Recycling of some of the material types is more difficult than others due to PHI, contamination, segregation & storage and education & outreach issues. However, these are reasonable diversion activities that hospitals and “green teams” can implement today or in the near future.

Recycle Document Destruction

PHI Document Destruction programs vary and the documents are usually recycled - be sure to verify this with the document destruction company. The hospital should request regular reporting in terms of location, service frequency, fullness and tonnages. If the medical facility is paying by service frequency and not paying by weight, be sure to include non-PHI paper if there is room in the container to increase paper diversion.



Figure 1. Most document destruction companies recycle

Recycle Cardboard

Recycle cardboard and break down boxes so they can easily be taken to the baler or compactor. Determine if your handling practices are the most environmentally sustainable and cost effective. Placing cardboard boxes into a bin without first breaking them down requires more space and frequent trips by the hauler in order to recycle these. Compactors create denser loads, however, baled cardboard can generate even better returns and less traffic due to multiple service calls to collect loads.



Figure 2. Baled cardboard receive better returns

Recycle Toner / Ink Jet Cartridges

Toner and ink jet cartridges are usually collected by one entity such as Materials Management, IT or by the office supply vendor. Smaller ink jet cartridges can also be collected and donated to a school or charity fundraising program. If the departments are handling their toner and ink jet cartridges in different manners, it is usually not a problem as long as they are being recycled. Many refurbishing companies also maximize budgets by supplying cartridges at a discounted price. Be sure that the remanufactured toner cartridge company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees. (Note: “compatible cartridges” are not refurbished cartridges but are copies of the OEM (original equipment manufacturer) with just a few changes in order not to infringe on patent rights. They may also work just fine, but sometimes do not fit as well or are made from low cost parts to keep the price down.)

All Departments – Recycle (continued) / Collection

Recycle E-Waste

Be sure all departments know what to do with e-waste, electronics, cords, appliances, microwaves, devices that recharge or have digital clocks, etc. They can be redistributed, repaired, sold, donated or most can be recycled and contain materials (both valuable and hazardous) that should be kept out of the landfill. Cords can be harvested for copper and cell phones contain copper, silver, gold, platinum, tin, zinc and palladium.

The hospital department in charge of recycling electronics should consider using e-Stewards certified e-waste recyclers who agree to operate in a globally responsible way to prevent the toxic materials in electronics from causing long-term harm to human health and the environment. This is important because many hospitals are committed to maintaining not only a healthy community, but a healthy world community as well.

When purchasing new electronics and appliances, Purchasing should consider programs such as Energy Star, EPEAT (www.epeat.net is a tool which helps to identify high-performance, environmentally preferable products).



Figure 3. E-waste recycling

Recharge & Recycle Batteries

Every department should use rechargeable batteries & have a container for battery recycling. Rechargeable batteries should be used when feasible to reduce the number of batteries in the waste stream. Battery recycling programs target rechargeable batteries and button-cell batteries because of the value of recoverable materials and several reclamation programs for alkaline and zinc-carbon batteries now exist. Many rechargeable batteries are recycled including specialized power

sources for various medical instruments. Batteries are often accepted by Materials Management, Engineering, or by Facilities. EHS then determines whether the ends need to be taped or other special packing instructions in order to be in compliance with Department of Transportation (DOT) regulations. For safety issues, it is important that there is a single, centralized collection system for handling discarded batteries.



Figure 4. Battery recycling

Lastly, if departments want to go the extra mile and segregate unspent batteries for use in less critical situations (perhaps using them for toys, decorative items or other low use battery-operated devices) this will also extend the life of the batteries and keep them (and the heavy metals they contain) out of our landfills.

Recycle CRV / Beverage Container

Beverage containers (CRV= California Redemption Value) are commonly collected by employees, custodial staff, or donated to a local charity such as Boys & Girls Club or the Los Angeles Conservation Corps. This is the most visual example that a “hospital is recycling” and patients and visitors often feel that if there is no “bottle and can recycling” the hospital isn’t doing its part for the environment. Eating areas, common areas, conference rooms and staff break rooms are excellent places for collection



Figure 5. CRV / Beverage Container recycling – notice the trash container located next to the recycling container.

All Departments – Recycle (continued)

Recycle Polypropylene (#5) Blue Wrap

Polypropylene sterilization wrap, commonly known as "Blue Wrap" is not used by all departments and some that do may not be recycling. Regularly assess whether this program can become more effective including practices such as reuse (using the wrap on floors to wipe up fluids or donating to animal shelters) or replacing them with the use of hard cases. Check with recycler to see if the paper indicator tape needs to be removed prior to recycling. (Fortunately, most indicator tapes are now lead-free, however, paper can be a contaminate in the plastic recycling process.)

Recycle Saline/Sterile Water Bottles

Saline & sterile water / irrigation bottles (mostly plastic #2 or #5) are often recycled with the polypropylene Blue Wrap. In some cases (labs, etc.), there are still glass saline bottles being used and these should be safely recycled as well.



Figure 6. Blue Wrap and Saline Bottle recycling

Recycle Mixed Recyclables

Mixed recyclables can be diverted from departments depending upon space, PHI constraints, and hospital commitment. Programs do not have to be facility wide - specialized programs for food and nutrition, coffee carts, materials management and/or the OR are common. Packaging from pre-patient contact is another ideal source: some examples are mixed paper, magazines and newspapers, film plastic & bags, chipboard boxes, plastic containers #1-#7, tin and aluminum cans. Some departments with little to no PHI documents can also have a separate plain office paper recycling program (as seen below).



Figure 7. Mixed Recycling and non-PHI paper recycling

Recycle Rigid Polypropylene (#5) Basins, Pitchers, Trays & Packaging

Rigid opaque and colored plastic containers such as water pitchers and patient care items such as basins and trays are typically made from polypropylene (#5) plastics. Packaging is usually coded with the plastic resin code #5. These may be recycled with other #5 plastics if your recycler accepts them (however, generally not with the blue wrap).

Specialized Collection

Sharps Container Recycling / Reuse

Sharps (lancets, hypodermic needles, syringes, scalpel blades and broken glass items) have been disposed of properly in medical facilities for years. They must be placed in a container that is rigid, leak-proof, puncture resistant, sealed and clearly marked with the bio-hazard symbol. However, disposal of the containers along with the sharps becomes expensive and adds to the waste going to the landfills. There are companies that provide services to collect the hospital sharps containers and the contents are removed robotically. Once emptied, the sharps containers are sterilized and returned for reuse. Another program, sterilizes the entire container and then they actually shred the containers along with the sharps. The materials are then separated and the plastics are used to manufacture new sharps containers.



Figure 8. Sharps Containers Reuse Program (blue) and a Sharps Recycling Container (red)

Combined Sharps / Pharmaceutical Collection

New regulations keeping pharmaceuticals out of the landfill and out of sewer systems has prompted the "Commingled Pharmaceutical & Sharps" containers. The containers observed were clear plastic with a dark blue lid and are intended to be incinerated.

As of September 1, 2008, it has been illegal for sharps generated at home to be disposed in trash or recycling containers. They too, must be placed in a container that is rigid, leak-proof, puncture resistant, sealed and clearly marked with the bio-hazard symbol. Sharps users can take their filled sharps container to appropriate collection sites, which may include doctors' offices, hospitals, health clinics, pharmacies, health departments, community organizations, police and fire stations, and medical waste facilities.

This public "bio-hazard" collection box is located in the hospital's pharmacy waiting area. Having a designated collection bin helps in mitigating rogue medical wastes which are often disposed while at the hospital facility.



Figure 9. Public Biohazard collection bin



All Departments

Source Reduction

Although recycling is the first thing that comes to mind when thinking of "waste diversion," from an environmental sustainability standpoint, it is actually possible to be "recycling too much." Generating a lot of materials for recycling is an indication that the operations are not efficient. Storage and handling of materials, even recyclables, creates other issues in the healthcare facility.

Source Reduction activities are those practices that can reduce waste, even before they occur -- right at the "source". Many of the source reduction activities listed in this guide are specific to the various departments, however, here are examples that every department can likely benefit. Additional opportunities will be listed according to their departments.

Eliminate unnecessary printing of reports and other paper generating activities.

Continually monitor departments regarding their needs regarding printing of inventory lists, lab results, patient instruction, etc. -- particularly in the area of unnecessary reports or unwanted pages that are automatically printed. Consider options to email patients their reports and other information.

Use online or other electronic formats that eliminate the need for paper forms, requests and other communication.

Use an Electronic Data Interchange (EDI) system for Purchase Orders, Invoices, etc. Be sure to request settings that eliminate unwanted pages.

Replace polypropylene "blue wrap" with reusable "hard cases."

Sterilization containers, known as hard cases, can be used repeatedly, prevent delays due to tears in blue wrap, and also protect instruments better.



Figure 10. Blue Wrap & Hard Cases

Increase use of duplex printing.

Departments without duplexing capabilities should receive duplex printers & copiers during replacement purchases. Centralized printers encourages less convenience printing and promotes more exercise (walking to the printer!)

Have departments provide solutions as to how they can minimize paper towel use.

Generally, waste is due to the excessive amount or length of towels that is dispensed per use. Elimination of paper towels through use of hand dryers or other options should also be considered depending upon department or user needs. Also see additional BMPs regarding paper towel dispenser options.



Figure 11. Paper towel dispenser pre-cut & battery-free

Continual improvement regarding efficiency and use of inventory.

Regularly assess inventory effectiveness such as kit utilization, menu selection, excess office supply, etc. Monthly meetings are an ideal opportunity to discuss these.

All Departments

Reuse - Reprocessing - Donations

Another common waste reduction activity involves “reuse” – which often involves the purchasing of durable tools and equipment rather than disposable, single use supplies. In some cases, items are “repurposed” or “reprocessed” rather than “reused” which, in the medical field, is unthinkable when it comes to reuse of items such as surgical towels.

Again, these are the BMPs that are common to most of the departments in varying degrees and the more specialized diversion activities will be listed by department.

REUSE

Encourage staff to use reusable mugs, utensils, etc.

Regularly assess activities and procedures and look for opportunities to implement reuse activities such as reusable food trays, reusable gowns, reusable ice packs, rechargeable batteries, etc.

Use Reusable Medical Devices.

These devices are designed and labeled for multiple uses and are reprocessed by thorough cleaning and high-level disinfection or sterilization between patients. They are made of materials that can withstand repeated reprocessing, including manual brushing and the use of chemicals. (See Reprocessing)

Creative reuse

Many of the medical supply and instrument packages can be reused as trays for office supply and other handy needs.



Figure 12. Collected lids are reused where needed

Address concerns and issues regarding BMPs that require additional education, standards (reprocessed items may not be as sharp as single-use ones), and logistics (items purchased by one department may get sent to another department and not returned to the original source).

REPROCESSING

Most of the reprocessing opportunities involve surgical instrumentation and other medical devices. These may include, but are not limited to: surgical instruments (clamps and forceps; endoscopes such as bronchoscopes, duodenoscopes and colonoscopes, graspers and scissors, laparoscopic surgery accessories (arthroscopic shavers, etc.)



Figure 13. Reprocessing Collection

DONATIONS

Develop formal & non-formal donation & liquidation procedures for supplies, instruments, equipment, etc. Recipients can include mission relief, training facilities, non-sterile related use (training, chemistry classes / laboratories, insect research, etc.) These practices are easy to suggest but take some effort to develop relationships. Don't be discouraged by setbacks and be sure that the donations will do more good than harm. Patient care equipment and patient monitors, laboratory and diagnostic equipment are among those devices that can be donated or recycled.

Make it easier to allow companies to be on the list for donations, particularly donations of non-medical items.

Food and Nutrition

One of the largest opportunities for a hospital facility to divert waste is from the Food and Nutrition, cafeteria, and other food service departments. Most of the food packaging materials, such as cardboard, aluminum and steel cans, glass and plastic containers, plastic bags and paperboard packaging, can all be recycled, usually together in one "single stream." If the Food and Nutrition department and/or cafeteria has an area where a separate recycling dumpster can be placed and serviced by a recycler, the program can be a separate and more comprehensive program than the rest of the hospital facility.

There are also other diversion options such as food waste composting, grease recycling, and reuse options which are listed below.

HOSPITAL-WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not paying by weight, be sure to include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten and recycle all cardboard - separating "bag in a box" if needed. Check with hauler if waxed cardboard can be accepted or composted. In one case, vendor took back waxed cardboard. Monitor whether staff is handling the cardboard correctly and making sure it gets recycled.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program which is often centralized by Materials Management or Facilities Engineering. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that recharge or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Beverage Containers

Having an aesthetically pleasing recycling container for "bottles and cans" is a visual example that a "hospital is recycling." Patients and visitors often perceive that if there is no visible "bottle and can recycling", then the hospital isn't doing its part in preserving the environment. Recycling containers should be placed in public areas, conference rooms and employee lounges. A large amount of recyclables can be collected especially during events catered by the in-house food establishment.

EXPANDED RECYCLING FOR F&N

Expand Recycling to Include Mixed Materials

Office paper & menus, chipboard boxes, glass & plastic containers, steel / tin cans, aluminum, plastic trays, waxed cardboard (often compostable), plastic buckets, and egg crates and unsoiled paper trays, milk wax boxes, film plastic & bags. Separate "bag-in-a-box" for recycling. A few recyclers will accept polystyrene cups & clamshells. Be sure signs in the cafeteria are clear & show pictorial examples of items that can be recycled, composted or trashed. Collect recyclables from both the kitchen and public areas using clear signage (including photo examples of what can and cannot be recycled). Next to every recycling container must be a convenient trash container to prevent contamination. If the Food & Nutrition department and/or cafeteria has an area outside where a separate recycling dumpster can be placed and serviced by a recycler, the program can be a separate and more comprehensive program than the rest of the hospital facility.

RECYCLING OPPORTUNITIES

Here are examples of product packaging that can be targeted for recycling from the Food and Nutrition and/or cafeteria areas of the hospital facility.



Figure 14. Recyclable items common to food services

Source Separated Mixed Recyclables

Mixed recyclables containers should be used for all the food containers emptied from the food preparation area. Cardboard should still be broken down and placed with the regular cardboard recycling program in order to maximize the space allotted for the mixed recyclables. Cereal box type (chipboard) should also be broken down and included. If other departments place large items such as 50-gallon drums in the mixed recyclables container, then other smaller recyclables cannot be accommodated.



Figure 15. Mixed Recyclables Bins – placing cardboard and large containers make them less efficient

RECYCLING – SPECIFIC TO FOOD & NUTRITION

Recycle Grease

With today's demand for fuel, there are opportunities to receive payment for recycling grease. However, many hospitals have eliminated grease since they are no longer frying and are baking instead.

Compost Food Waste

Find a recycler to compost prep food only, not patient trays, including coffee grounds, egg shells, waxed cardboard, napkins, and green waste.



Figure 16. Food Composting collection program

SOURCE REDUCTION

- Use Electronic Data Interchange (EDI) and online viewing to reduce paper usage.
- Use duplex printing whenever possible and use paper without PHI for scratch paper.
- Reduce product consumption by only providing patients the selection of one item instead of as many as they want (e.g. juice at meals).
- Reduce paper usage by printing the daily menus on less paper (half or third of a sheet.)
- Serve overage / left overs to employees or donate "over meals" to shelter or lottery for staff.
- Eliminate cooking oil for frying and bake foods instead.
- Use durable food service items: trays, covers, washable plates, eating utensils, glasses and cups for cafeteria and patient service.
- Sell reusable mugs with no-spill lids, then offer discounts to anyone using their own mug.
- Use cloth towels (not disposable fiber towels).

- Be sure patient trays are not slippery which requires the purchase of paper liners.



Figure 17. No-slip trays do not need paper liners

- Aim for elimination of disposable trays. If they are not readily available, guests will not pick them up automatically.



Figure 18. Tray only if needed

- Start up a "think before you use" campaign to decrease use of disposable items: napkins, condiments, etc.
- Install utensil dispensers that limit amounts of utensils that can be handled or taken.



Figure 19. Utensil dispensers eliminate waste

MISCELLANEOUS

- Be sure any "coffee carts" or other such vendors also know where to divert their compostables & recyclables.
- Convert to food ware for better recyclability & sustainability (Chlorine bleach free, BPA free, eliminate polystyrene, compostable, etc. Note: most compostables end up in the landfill, so decisions to purchase them should be based on avoiding petroleum dependency and making sure they are made from non-GMO sources).
- Pre-cut perishables may save time, but also creates non-compostable trash – check to see if they are recyclable or can be collected and donated to a food bank.



Figure 20. Pre-cut food trays say “reusable”

- Support local farmers, fair trade products, buy organic and consider practices such as “Meatless Mondays.”
- Use Energy Star appliances, especially dishwasher systems that do not require “warm-up” pre-cycles.
- Check the internet for specialized recycling programs for items such as hairnets and other plastic items.



Figure 21. Be sure signs are clear & not easily moved

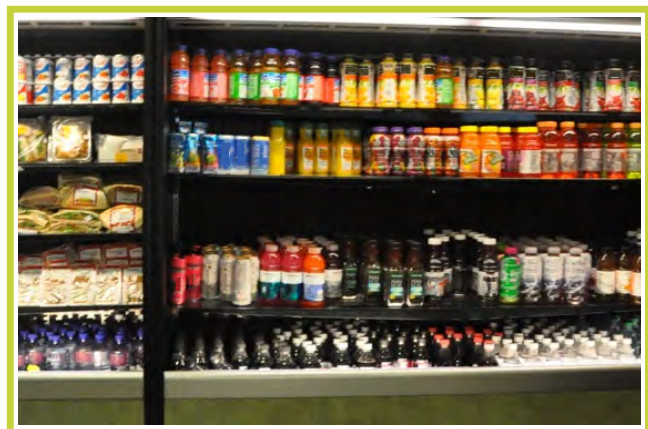


Figure 22. Potential CRV to Recycle! Note: “Open Air” refrigeration is less efficient

In-Patient & Out-Patient Pharmacies

Although these departments may appear to be similar in terms of the process flow of the materials that they handle, there are enough differences in how they operate that each have unique opportunities to divert waste as well. The Best Management Practices that are common to both are listed first and other practices are listed under in-patient or out-patient pharmacy department where they were first observed. However, it does not mean that these BMPs are exclusive to one area and not the other, in fact, it is advantageous when departments can build upon each other's success.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten and recycle all cardboard (including small boxes). Some pharmacies have small cardboard compactors for their smaller cardboard boxes.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that recharge or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled, keeping them out of the PHI Document Destruction stream and reducing costs. Non-PHI white ledger paper, mixed office paper (junk mail & envelopes), chipboard boxes, small glass bottles, plastic film, bags & bubble wrap, polystyrene peanuts, coolers & blocks, and plastic bottles (all # types & sizes) without PHI information. This will take cooperation and training in order to ensure that items with PHI are not placed in these recycling containers. One area to begin is where the supplies and inventory are unpacked or a bin for collecting the packaging once they are emptied.



Figure 23. Boxes can be recycled once they are emptied

RECYCLING – SPECIFIC TO PHARMACIES

Recycle PHI Pill Containers

Ask the document destruction vendor if they will collect and recycle all pill containers with PHI.



Figure 24. Plastic pill container recycling - the plastic in #2 bottles is different than #5 caps so ask if they take both

Recycle Other Items with PHI including CDs/DVDs

This document destruction vendor also accepts CDs & DVDs along with non-PHI documents, office paper, etc. However, if the pharmacy is paying by pound for document destruction or can easily fill a recycling container in the back with supply boxes and office paper, it may be more cost effective to have a separate, non-PHI recycling container.



Figure 25. Additional items along with PHI

SOURCE REDUCTION

- Use smaller labels such as those that are ~ 1/5 page size.
- Use duplex printing whenever possible including all handouts for meetings.
- Ask vendors to deliver product in a plastic bag placed in a cardboard box instead of a polystyrene box or in a reusable tote.
- Consider an automated pill dispensing system that will result in reduction of unnecessary inventory as well as paper and cartridge reductions.

Figure 26. Pill dispensing system



REUSE

- Use paper without PHI for scratch paper.
- Use / reuse inter-office envelopes.
- Return polystyrene coolers & ice packs back to the vendor and use reusable ice packs for transport between hospital departments and satellite facilities. Give disposable ice packs to patients.

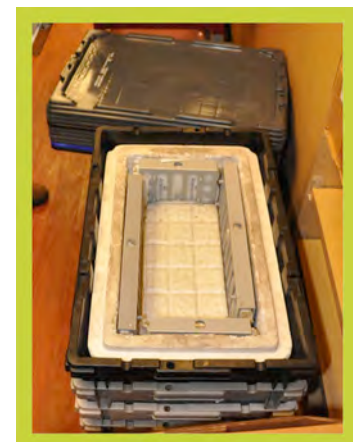


Figure 27. Reusable coolers

Out-Patient Pharmacy Specific Activities

Email vs. printing patient medication information

Develop infrastructure that allows patients to receive their information via email. Patients often discard their paperwork immediately after receiving them in the pharmacy.

Eliminate pre-printed back sheets

Paper used for reports should not have pre-printed information (such as mailing instructions) on the backside of each sheet, this prevents the ability to do duplexing printing - add a single page of instructions to each order instead.

Maximize use of paper on reports / documents

Reduce margins and program reports & summaries to maximize paper use. Duplex printing also reduces paper use and costs.

Update label programs

Use a label program that prints on rolls and eliminates paper waste (some only print on the top 1/6 of paper). Thermal printing will decrease toner cartridge usage but may not hold up to heat exposure.

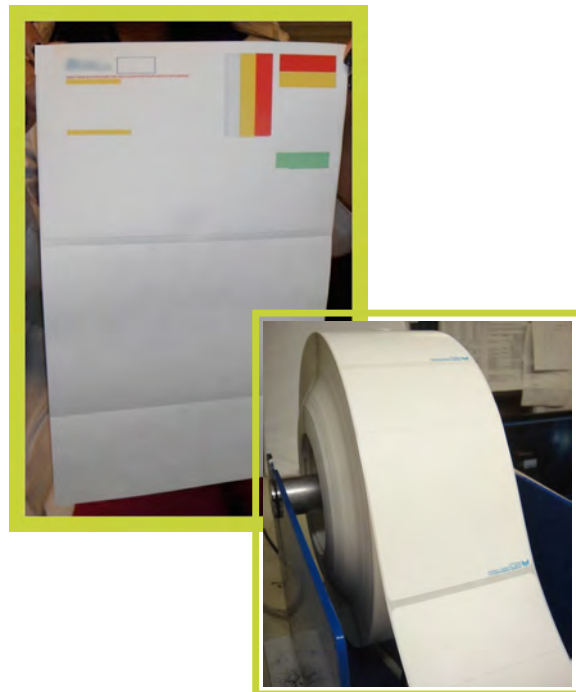


Figure 28. More efficient labels (on a roll)

State Drug Redistribution Program

California's SB-1329 Prescription drugs: collection and distribution program becomes law.

Existing law authorizes a county to establish, by ordinance, a repository and distribution program under which a pharmacy that is owned by or contracts with the county may distribute surplus unused medications, as defined, to persons in need of financial assistance to ensure access to necessary pharmaceutical therapies. Effective January 1, 2013, facilities or clinics licensed by the California Department of Public Health (CDPH) may choose to participate in the Drug Repository and Distribution Programs (RDPs). SIRUM.org is the online community connecting safety-net clinics with donated drugs from suppliers, pharmacies, and health facilities.

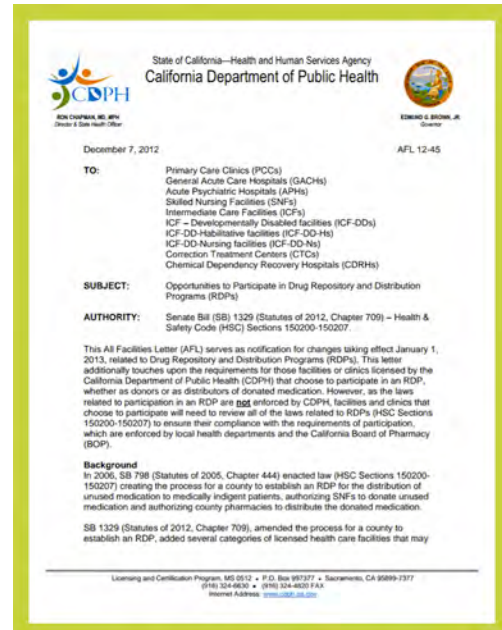


Figure 29. CDPH Notification AFL 12-45

Public Biohazard Collection

As of September 1, 2008, it has been illegal for sharps generated at home to be disposed in trash or recycling containers. They too, must be placed in a container that is rigid, leak-proof, puncture resistant, sealed and clearly marked with the bio-hazard symbol. Sharps users can take their filled sharps container to appropriate collection sites, which may include doctors' offices, hospitals, health clinics, pharmacies, health departments, community organizations, police and fire stations, and medical waste facilities.

This public "bio-hazard" collection box is located in the hospital's pharmacy waiting area. Having a designated collection bin helps in mitigating rogue medical wastes that are often disposed while patient /visitors are at the hospital facility.



Figure 30. Public Biohazard collection bin

Pharmaceutical "Take Back" Programs

The U.S. Department of Justice has a National "Prescription Drug Take-Back Day" which is focused on proper disposal of prescription drugs and preventing problems related to prescription drug abuse. Many hospital facilities have participated in this program in the past. Check with the U.S. Department of Justice website for the upcoming date. http://www.deadiversion.usdoj.gov/drug_disposal/takeback/index.html

Also, the Los Angeles City & County sponsored permanent collection S.A.F.E. Centers accept all pharmaceuticals (except for controlled substances) anytime during their hours of operation.

http://www.lacitysan.org/solid_resources/special/hhw/safe_centers/

Laboratories

Hospital laboratories vary in number, size and testing services. Most of the waste types generated include non-contaminated waste (regular trash), regulated medical waste (RMW or biohazardous waste, including pharmaceutical and sharps), and hazardous (chemical) waste. Instead of removing regular waste containers from the department altogether in order to prevent the accidental disposal of biohazards into a non-contaminated waste stream, laboratories that choose to instill proper staff education to foster a culture of safety and environmental responsibility will also keep disposal costs low if regular trash is not placed in with the RMWs (red bags).

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten and recycle all cardboard (including small boxes). Many large plastic containers are shipped in cardboard boxes and must be removed in order for them to be recycled. Ideally, these large plastic containers, usually #2 HDPE, will also be recycled.



Figure 31. Some cardboard is more difficult to recycle because of the plastic containers that need to be removed. Notice the flattened cardboard in the back.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that recharge or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps. Many collection containers have been observed in staff break rooms.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, small glass bottles, plastic film, bags & bubble wrap, polystyrene peanuts, coolers & blocks (separate from cardboard first), and plastic containers (such as sani-wipes) & bottles (all # types & sizes). In some locations throughout the nation, the recycling program items are collected by the provider of the lab materials.



Figure 32. Collection of magazines & other office mail to be recycled

RECYCLING – SPECIFIC TO LABORATORIES

- There are limited recycling programs for pipette tip boxes & inserts, trays, metal alcohol cans, plastic or glass reagent containers and flasks. Strict protocols must be followed for decontamination, and ways to insure that the recycler does not receive items that may be hazardous. Also, check with the supplier to see if they will take back any of their packaging for recycling.



Figure 33. Pipette tip box recycling
(photo courtesy of Chem Health Saf. PMC 2008 April 28)

- There are even fewer known recycling programs for cleanroom & lab materials such as: Tyvek wear, gloves, booties, masks, hair nets and other items that stay generally uncontaminated. Check the internet for cleanroom supply recycling programs.
- There are strict regulations regarding recycling of empty aerosol cans. Check with the hospital's EHS if your department so chooses to implement this program.

DONATIONS

- Send old equipment to an Instrument repair company for repair or recycling or donate - see: <http://www.calrecycle.ca.gov/reuse/links/Medical.htm>

SOURCE REDUCTION

- Scan, duplex & reuse scratch paper; if there is no duplexing function, feed paper in manually. Request duplexing printers.
- Use hand held scanners instead of paper for Patient IDs.
- Use Electronic Data Interchange (EDI) & online viewing to reduce paper usage and place orders online. Be sure unnecessary pages don't print.
- Re-evaluate printing of unnecessary printouts – first select "preview" and reduce print to eliminate pages with only a few words or ask IT to re-adjust printouts.
- Reduce paper by not printing orders from ER or reports.
- Reduce Post-its use by reusing paper instead.
- Sort into Excel to reduce paper printing.
- Consider paper towel roll dispensers & do not leave a stack of C-fold towels out on top of the counters. Use rechargeable batteries & set towel length for 6" or 10". Mechanical pulls don't require batteries. Hand dryers eliminate paper waste altogether.
- Replace dry ice usage with reusable ice packs.

REUSE

- Reuse bubble wrap and similar packaging.
- Return packaging to regulars such as the Red Cross.
- Reuse polystyrene coolers & ice packs (non-specimen related). Purchase durable coolers & packs for in-house usage.



Figure 34. Boxes returned to Red Cross and durable cooler & ice pack for reuse.



- Request that suppliers deliver in packaging that uses minimal packaging, polystyrene, or delivers in returnable totes.

Labor & Delivery (Can also be applied to Patient Floors)

Although similar to most patient floors, Labor & Delivery departments generate additional waste due to the unpredictable lengths of stay, spouse (additional gowns in the delivery room) & family visits, and other related activities. According to sources, 30-70% of a hospital's waste stream comes from the Operating Rooms and Labor & Delivery suites alone. These are the two areas where hospitals eager to expand their sustainability programs are now focusing their efforts.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten and recycle all cardboard. Time and motion studies have found that transporting broken down boxes to the collection area was more efficient than carrying one or two bulky boxes several times. Convenient size boxes can also be reused by patients who need to carry home flowers, gifts, etc.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps. Consider placing them in the staff break rooms and the waiting areas as well.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider the use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that recharge or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, small glass bottles, plastic film, bags & bubble wrap, and plastic containers (such as sani-wipes) & bottles (all # types & sizes).

Recycle Polypropylene (#5) Blue Wrap

Recycle polypropylene sterilization wrap, more commonly known as "Blue Wrap". Practices such as reuse (using the wrap on floors to wipe up fluids or donating them to animal shelters) or replacing them with the use of hard cases are also disposal diversion strategies being put to use. Check to see if the paper indicator tape needs to be removed prior to recycling. (Fortunately, most indicator tapes are now lead-free, however, paper can be a contaminate in the plastic recycling process.)

Recycle Saline/Sterile Water Bottles

Saline & sterile water / irrigation bottles (mostly plastic #2 or #5) are often recycled with the polypropylene Blue Wrap.



Figure 35. Recycle Blue Wrap & Sterile Saline Bottles

SOURCE REDUCTION

- Use EMR (electronic medical records) to help the department go paperless.
- Duplex whenever possible & use paper without PHI for scratch paper.
- Only print discharge summaries upon request or patient may throw them away into regular trash bins.
- Order forms for labs, etc. may not be needed so ask IT for print as an option only. If lab order forms are not needed, push to have print as an option only.
- Order items such as water pitchers separately from lids if lids are not being used.
- Use hard cases instead of polypropylene "blue wrap" for sterile instruments wrap.
- Consider paper towel roll dispensers & do not leave a stack of C-fold towels out. Use rechargeable batteries & set towel length for 6" or 10". Mechanical pulls don't require batteries. Hand dryers eliminate paper waste altogether.
- Have staff use reusable mugs & do not provide polystyrene cups to patients.
- Switch from disposable to cloth diapers and gowns.



Figure 36. Retest epidural cassette batteries and reuse good ones

REUSE

- Retest discarded epidural cassette batteries and reuse good ones.
- Reuse blue wrap on the floor for liquid absorption.
- Have blue towels laundered and repurposed for cleaning rags by housekeeping.
- Reuse laps as soap dish to give the newborn babies a bath & reuse the bulb syringe during the bath as well. This saves using tubs each time.
- Use reusable safety scalpels or at least ones with reusable handles with replaceable blades.
- Use reusable ice packs & coolers.
- Use refillable spray bottles.

REPROCESSING

- Use reusable stabilizers or reprocess them.
- Use an in-house program or a service to sterilize & reprocess trays.
- Reprocess Sequential Compression Device (SCD) compression sleeves.

DONATIONS

- Collect lost & found. If not claimed, donate to charity.
- Save extra equipment or instruments from surgical kit if it's individually wrapped for use later or donate.

MISCELLANEOUS

- Place trash bins in rooms closer than the Red bags.
- Reuse sterile water bottles to empty catheters that can then be emptied before placing in red bags to reduce weight & volume.
- Foley catheters and urine & stool containers with no blood or other medical wastes can be placed in trash instead of red bag.



Figure 37. Reuse lap sponge containers as a soap dish and the bulb syringe during the bathing of the baby

Operating Rooms (OR)

According to sources, 30-70% of a hospital's waste stream comes from the Operating Rooms and Labor & Delivery suites alone. Hospitals eager to expand their sustainability programs are now focusing their efforts in these two departments and are finding that many strategies don't add risk to patients but help them to reduce waste, save money and reduce their carbon footprints. A study conducted at the Johns Hopkins University School of Medicine found that the top five strategies in a sustainability program were: reducing and segregating operating room waste; reprocessing single-use medical devices; making environmentally conscious purchasing choices; managing energy consumption; and managing pharmacy waste.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten and recycle all cardboard from special orders delivered directly to the OR. Time and motion studies have found that transporting broken down boxes to the collection area was more efficient than carrying one or two bulky boxes several times.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps. Consider placing them in the staff break rooms and the waiting areas as well.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider the use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that have recharging capabilities or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Miscellaneous

There is a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, empty glass bottles that contained alcohol (ethanol, methanol, isopropanol), plastic film, bags & bubble wrap, and plastic containers (such as sani-wipes) & empty bottles - all plastic #1-#7 types & sizes, such as those that contained disinfectant (bleach, parquat, betadine, or sterile water & saline bottles, etc.) Check with EHS regarding the need to triple rinse any containers prior to recycling.

Recycle Polypropylene (#5) Blue Wrap

Recycle polypropylene sterilization wrap, more commonly known as "Blue Wrap". Practices such as reuse (using the wrap on floors to wipe up fluids or donating them to animal shelters) or replacing them with the use of hard cases are also disposal diversion strategies being put to use. Check to see if the paper indicator tape needs to be removed prior to recycling. (Fortunately, most indicator tapes are now lead-free, however, paper can be a contaminate in the plastic recycling process.)

Recycle Saline/Sterile Water Bottles

Saline & sterile water / irrigation bottles (mostly plastic #2 or #5) are often recycled with the polypropylene Blue Wrap.



Figure 38. Recycle Blue Wrap & Sterile Saline Bottles

RECYCLING – SPECIFIC TO THE OR - IV BAGS

- There are a few recycling programs beginning around the country that recycle IV bags (that do not contain medicine), tubing & syringes. More importantly, hospitals are switching to non-PVC intravenous solution bags and IV tubing that does not contain the plasticizer DEHP.



Figure 39. IV bag that is Latex, DHEP & PVC free

REPROCESSING

There are a number of third party reprocessors and manufacturers of single use medical device (SUDs) that provide “take back”, reprocessing, and recycling programs. Many will also take back unused, unopened, expired and cancelled case items. Some of the medical devices have portions that can be returned for reprocessing along with a “disposable” portion. Some of the contracts made with certain manufacturers may not make it cost-effective to purchase reprocessed devices, but there may be a third party medical device reprocessor willing to take the items for selling elsewhere. Some of the devices simply have portions that need to be disposed of properly. In any case, these will all *feel* like “recycling programs” because they will have collection containers. Clear signage and continued in-servicing of staff regarding what is and is not accepted will determine the success and cost savings of such programs. Of course, it goes without saying that each hospital's infection prevention team must first review the following opportunities and determine if these practices meet the standards they have set to ensure patient and staff safety.

Reprocess devices such as:

- Non-invasive devices such as: ECG leads & wires, pneumatic tourniquet cuffs, SCD/DVT compression sleeves (including types that do not contain latex or PVC), and pulse oximeter sensors.



Figure 40. pneumatic cuffs & oximeter sensors collection for reprocessing

- Suture passers, ultrasonic scalpels, trocars and laparoscopy instruments.

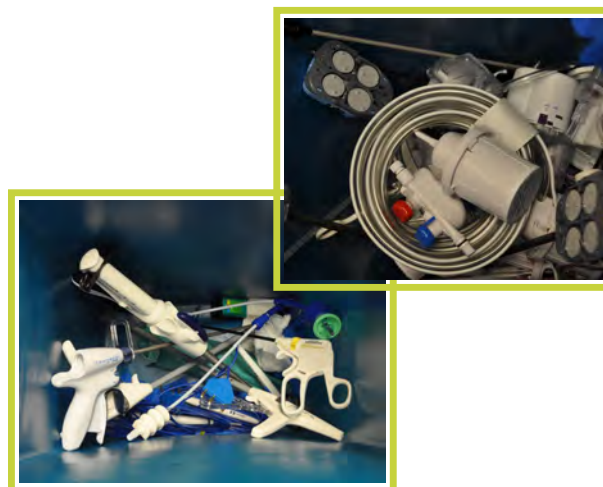


Figure 41. laparoscopic and other device collection for reprocessing

- EP & Cardiovascular Devices: EP catheters & cables, diagnostic ultrasound catheters, tissue stabilizers & heart positioners.
- Orthopedic and arthroscopic equipment such as arthroscopic wands & shavers, blades, and external fixation devices.

REPROCESSING (continued)

- Participate in “take back” of unused, unopened, expired and cancelled case items.



Figure 42. Stryker's “Take Backs”

- Consider programs such as one company's “green bag” system that reprocesses and sterilizes stainless steel basin/bowls, plastic items, gowns, towels, table covers, sheets and coveralls.



Figure 43.
SRI's Green Bag Program

- Reusable sharps containers reduce costs by only paying per sharps/pound not the container. Some companies also recycle the sharps' plastic & metal after autoclaving the contents.
- Metal suction irrigation tips (versus plastic) can be reprocessed and reused.
- Use scissors with reusable plastic handles that are sent back for reprocessing.

SOURCE REDUCTION

- Cancelled cases generate waste that can be diverted:
 - send unused tubing to anesthesia
 - sponges can be taken by employees
 - donate drapes to medical mission
- Use instruments that can be re-sterilized.
- Use reusable gel stabilizers instead of disposable foam stabilizers.
- Place duplicate green towels & other extras on the back table.
- Convert surgical drapes into biopsy cloths.
- Donate extra items and items from kits.



Figure 44. Items collected & donated to mission



Figure 45. Hard cases vs. blue wrap

SOURCE REDUCTION (continued)

- Use hard cases instead of polypropylene "blue wrap" for sterile instruments wrap. If using blue wrap, reduce base set-up kit packaging (sealed bags over blue wrap).
- Confirm that empty alcohol and betadine plastic bottles do not have to be red bagged and implement this practice to reduce red bag costs. Recycle if there is a program available and EHS approves.
- Use smaller red bags for smaller 2-gallon waste bins in OR room.
- Allow employees to take extra dry ice & polystyrene coolers.
- Place an intra-department sanitizing system in the supply room.
- Encourage staff to use reusable mugs.
- Have materials management deliver only in totes so there is very little cardboard.
- Duplex whenever possible and use paper without PHI for scratch paper.
- Post work schedules on-line instead of printing and use back of paper assignment sheets for scratch paper.
- Implement procedures or use software that can decrease paper usage. One hospital saves a ream of paper each week because case batch prints are not used and Central Supply picks the cases.
- Use scanning guns to help reduce paper waste.

Figure 47. Customizing kits may also reduce costs

REUSE

- Reuse pillows: clean when patient is discharged and be sure to keep inventory since many are left in the closets.
- Keep items from kits that are not used during surgical procedure for reuse (e.g. knives & defoggers).
- Use reusable blades and scalpels instead of single-use items.
- Use rechargeable batteries (and be sure to recycle at end of life).
- Use refillable spray bottles.
- Reuse the plastic packaging tray tops from irrigation pumps and other supplies.



Figure 46. Packaging reused as trays

MISCELLANEOUS

- Consider "compartmentalizing" diversion programs and start by implementing recycling and other diversion activities in certain phases such as OR set-up or cancelled cases.
- Regularly review instruments and kits to reduce items that expire, are un-necessary, and are over packaged.



Materials Management / Inventory Management / Central Supply

Vital to all hospital operations is the supply chain and its management – from inventory and procurement practices to performance and patient safety. Best management practices in terms of disposal reflect cost reduction strategies as well: inventory reduction, purchasing efficiencies, increased tracking using technology and more. A thorough study of such strategies is beyond the scope of this manual, however, most activities directly related to “reducing, reusing and recycling” non-medical waste are listed here.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion. Usually, the document destruction company collects the containers themselves, however, regular monitoring and oversight is advised since empty containers are often being serviced. Most of the paper from this department does not contain PHI and if there is a separate paper or mixed recyclables collection, the paper can be placed there.

Recycle Cardboard

Recycle cardboard & break down boxes so they can easily be taken to the baler or compactor. Determine if your handling practices are environmentally sustainable and cost effective – too much contamination may decrease the revenue that cardboard recycling can generate. Placing cardboard boxes into a bin without first breaking them down requires more space and frequent trips by the hauler in order to recycle these. Compactors create denser loads. Baled cardboard generates even better returns and decreases services calls to collect the baled cardboards.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps. Consider placing them in the staff break rooms.

Recycle Toner Cartridge/Ink Jet

Toner cartridges are usually recycled by Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider the use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types. This department or Facilities Engineering usually collects from all hospital departments. Verify with EHS whether collection containers need to be dated and if both ends of the batteries need taping and/or if other special packing instructions are required by the Department of Transportation (DOT) regulations.

Recycle E-waste

Provide instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that recharge or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling. Many hospitals offer an annual “e-waste recycling event” where the members and community are encouraged to bring in their electronics for recycling. These programs have been successful and the revenue possibilities are an added incentive.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, glass bottles, metal cans, plastic film, bags & bubble wrap, and plastic containers (such as sani-wipes) & plastic bottles (all # types & sizes). Due to issues with some re-furbishers, recycle mattresses instead.

Pallet Recycling

Requesting that vendors take back their pallets is a common practice, but sometimes it is not feasible. Set aside pallets to be recycled, be sure they are not placed in the compactors. Pallet recyclers often repair them so try to get them to take broken ones as well.



Figure 48. Recycle Pallets

FUTURE RECYCLING OPPORTUNITIES

Recycle I.V. Bags, Tubing & Syringes Bedpans, Wash Basins & Denture Cups Nitrile Gloves & Tyvek® Suits

Medicine free IV bags, tubing and syringes remain among the hard to recycle plastics prevalent in the healthcare field. Bedpans, wash basins & denture cups are being recycled in the Northeastern states. Nitrile gloves and Tyvek suits, usually from cleanrooms only, are two other possible recycling programs. Manufacturers are experimenting with using a more recycling-friendly types of plastic in hopes to encourage more recycling. More importantly, hospitals are switching to non-PVC intravenous solution bags and IV tubing that does not contain the plasticizer DEHP.



Figure 49. There are few known IV bag recycling programs today

Recycle Film Plastic and Bags

As Materials Management staff break down inventory that are then distributed to their intended departments, a natural tendency to collect a “bag of bags” was observed in numerous areas and in other departments throughout the hospital. These film plastics can be collected for recycling and baled (for higher revenue) along with the stretch wrap used to palletize loads. Some Materials Management departments have been placing the balled up stretch wrap into the top plastic tote bin and returning them to the vendors / distribution centers.



Figure 50. Plastic bags & film wrap already being collected and can be reused or recycled

Scrap metal recycling

Scrap metal should definitely be recycled during construction and demolition activities, but there are internal construction and repair activities that regularly generate recyclable materials. Old equipment, un-repairable beds and furniture may also be candidates for scrap. Many facilities find a local scrap metal recycler who is willing to come out and pick up items upon request. Coordinate with engineering, facilities and food & nutrition so they know where to take their scrap metals.

SPECIALIZED RECYCLING PROGRAMS

Materials / Inventory Management may provide the oversight for the following recycling programs and should be able to provide training and answer questions regarding collection specifics. Regularly survey departments and EVS to confirm that they are recycling and that items are being collected:

Recycle Polypropylene (#5) Blue Wrap

Check to see if the paper indicator tape needs to be removed prior to recycling. Additional revenue may be achieved by baling the material. Donations of blue wrap to animal shelters have also been welcomed.

Recycle Saline/Sterile Water Bottles

Saline & sterile water / irrigation bottles (mostly plastic #2 or #5) are often recycled with the polypropylene Blue Wrap.

Sharps Container Reuse or Recycling

Significant savings are being realized by keeping the plastic sharps containers out of the biohazardous red bag waste stream. One company actually empties and sterilizes the sharps container robotically while another sterilizes the entire container and its contents and then shreds and recycles the plastic and metal components. (Check the All Departments section of this manual for additional information regarding these programs).



Figure 51. Sharps containers are collected, sent for robotic emptying & sterilization and reuse.

REPROCESSING

Medical Device Reprocessing

There are a number of medical devices and surgical instruments that can be reprocessed by the manufacturer or a third party entity. (Check the Operation Room section of this manual for more information.) Many will also take unused, expired or cancelled case items in a separate collection container. Again, regularly communicate with departments and EVS (Environmental Services) to insure that these are being collected and reprocessed for credit.

- Non-invasive devices such as: ECG leads & wires, pneumatic tourniquet cuffs, SCD/DVT compression sleeves (including types that do not contain latex or PVC), and pulse oximeter sensors.
- Suture passers, ultrasonic scalpels, trocars and laparoscopy instruments.
- EP & Cardiovascular Devices: EP catheters & cables, diagnostic ultrasound catheters, tissue stabilizers & heart positioners.
- Orthopedic and arthroscopic equipment such as arthroscopic wands & shavers, blades, and external fixation devices.
- Programs such as one company's "green bag" system that reprocesses and sterilizes stainless steel basin/bowls, plastic items, gowns, towels, table covers, sheets and coveralls.



Figure 52. SRI's Green Bag System

SOURCE REDUCTION

- The use and return of product in plastic tote containers replaces cardboard that would have otherwise been used. They are easier to unpack and can be stacked for return. These plastic tote containers are sometimes color coded for quick delivery to specific locations.



Figure 53. Product Delivery in Returnable Totes

- Check the expiration date of all products at the time of delivery, and refuse to accept short-dated items from a supplier.
- Have floors & storerooms check supplies for product and pull products 2 months prior to due date unless they feel they can deplete their inventory by the expiration date.
- Return unused IV solution bags to vendor.
- Reuse bubble wrap, air bags and polystyrene peanuts/popcorn packaging.
- Get printers that have duplex options & set duplexing as the default.
- Set printer to black & white print only to save color ink.
- Send beds to engineering if they are repairable.
- Reuse pillows: clean after the patient is discharged and be sure to keep an inventory since many are left in the closets.



Figure 54. Pillows are cleaned after the patient is discharged.

DONATIONS / LIQUIDATIONS

Medical donations are nothing new, however they have a number of issues that often prevents hospitals, long-term care facilities and others from participating: legal issues, sterility issues, language incompatibilities (think how this impacts pharmaceutical instructions), inappropriate donations (companies that “dump” supplies for a tax write off), and expiration dates. The World Health Organization (WHO) has written guidelines for foreign aid, and with today’s technology and the experience gained since it was last revised, the medical community can strive to provide aid in a more compatible manner. A number of non-profits, such as Direct Relief, do their best to eliminate non-essential or un-needed items from being distributed during relief efforts.

- Set up an area for donations or soon to expire materials, that can be donated to animal rescue, wildlife assistance organizations or medical school for training purposes. Partner with an organization or group of volunteers that can help to un-package or somehow indicate that the items are for training purposes only.



Figure 55. These may have found another purpose rather than the trash, but is it worth the time & effort?

- Some hospitals take orthopedic equipment donations from their patients – walkers, crutches, commode chairs, etc.
- UCLA has an online bulletin board (Dollar Saver) where the departments (including medical) can list available equipment for sale for a month. This can be available either to the public, internally or between hospital facilities.

MISCELLANEOUS

- Dispose inventory on date of expiration rather than a month before – or have a program to divert inventory about to expire.
- Self-contained sterilization / waste treatment processes both non-medical and medical (red bag) waste on site but usually results in lower diversion rates due to single source for solid waste disposal and possibly “heavier trash” due to steam treatment. Often recyclables are placed in these containers with no possibility for diversion. There are additional fees for services to address (destroy) PHI issues.



Figure 56. San-i-pak System

Two excellent resources to find recyclers are:

L.A. County Smart Business:

<http://ladpw.org/EPD/brtap/recyclingsite/index.cfm>

Earth 911: <http://earth911.com/>

A few non-profits listed on the City of Los Angeles' Bureau of Sanitation's website will accept medical supply donations and can be found at: http://www.lacitysan.org/solid_resources/recycling/publications/PDFs/NonProfitList_2-28-13.pdf

ALSO SEE PURCHASING BMPs

Environmental Services / EVS

Environmental cleaning services / EVS plays an important role in the success of any waste diversion program. The EVS team should have a say in decisions affecting disposal and diversion activities. Quality patient care and a safe and clean hospital environment is their priority, and an efficient disposal strategy means less handling of regulated medical wastes. These activities also help preserve our environment.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion. Usually, the document destruction company collects the containers themselves, however, regular monitoring and oversight is advised since empty containers are often being serviced. Most of the paper from this department does not contain PHI and if there is a separate paper or mixed recyclables collection, the paper can be placed there.

Recycle Cardboard

Breaking down boxes so they can be taken to the baler or compactor is important in terms of recycling because they require less trips to the bins. Convince departments that it is easier for them to breakdown the boxes when unpacking their inventory, and keeping areas clear of boxes is a safety issue as well. Determine if your handling practices are environmentally sustainable and cost effective – too much contamination and bins “full of air” (because of whole boxes) may decrease the revenue that cardboard recycling can generate. Compactors create denser loads. Baled cardboard generates even better returns and decreases service calls to collect the baled cardboards. Be sure to separate plastic containers (bag in a box) that come surrounded by a cardboard box.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are commonly collected by employees or EVS, or donated to a local charity, Boys & Girls Club or the Los Angeles Conservation Corps. Many collection containers have been observed in staff break rooms, conference rooms and other work areas. The hospital may also have recycling bins in public areas, conference rooms, cafeteria and lobbies that need to be serviced by EVS. Be sure that there are adjacent trash containers next to each recycling container in the public areas.

Recycle Toner Cartridge/Ink Jet

Toner cartridges are usually recycled by Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider the use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, and devices that have rechargeable capabilities or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, glass bottles, metal cans, plastic film, bags & bubble wrap, and plastic containers (such as sani-wipes) & plastic bottles (all # types & sizes).

Pallet Recycling

Request that vendors take back their pallets. Check with Materials Management for a recycling program for the other pallets including broken ones. Be sure no one places them in the compactors.

REDUCE – REUSE - RECYCLE

- C-fold paper towels use more material; consider paper towel roll dispensers so stacks of extra towels are not left out. Use rechargeable batteries and set towel length for a minimum of 6" or 10". They are usually factory set at over 10" (longest length). Mechanical pulls don't require batteries. If batteries are required, then use the rechargeable type and recycle the spent ones. Hand dryers eliminate paper waste altogether.



Figure 57. Simple ways to reduce waste:
Avoid stacking towels on top of dispenser,
Set lengths to shortest settings,
Mechanical limiting perforated towels don't use batteries.

- Donate old equipment / machines, beds, pillows, and chemicals that are not used.
- Re-upholster or recycle/donate furniture.
- Use projection screen for meetings instead of handouts.
- Donate or repurpose used blankets and blue wrap to shelters or animal rescue projects.
- Purchase cleaning supplies in 55-gallon refillable or recyclable drums and use concentrated cleaning solutions that staff mixes as needed.
- Reuse pillows – collect & clean after patient is discharged. Be sure to check closets for extras.

- Recycle soap bars & bottles.



Figure 58. Recycle plastic cleaning containers
Check with EHS & recycler regarding need to triiple rinse containers or not

- Use washable mop heads instead of disposable ones.
- Use rags instead of disposable wipes. Have linens wash OR towels and repurpose as rags.

Figure 59.
OR towels
washed &
repurposed
as rags

**MISCELLANEOUS**

- Use physical rather than chemical cleaning methods (e.g. steam disinfection instead of chemical disinfection).
- Verify with EHS regarding chemicals that should & should not be placed down the drains
- Farmer's Markets should haul away their trash or hospital should have them participate in facility diversion programs.



Figure 60. Have Farmer's Markets recycle & compost

EHS - Environmental Health & Safety / Engineering / Facilities / Landscaping

Although these departments have different duties, their ongoing responsibilities dictate waste diversion strategies that have facility-wide impacts every day. They are important members on any hospital's Green Team and can offer suggestions to improve sustainability practices beyond waste and recycling, but also in terms of energy, water, air quality, chemical alternatives and other environmental concerns.

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion. Usually, the document destruction company collects the containers themselves, however, regular monitoring and oversight is advised since empty containers are often being serviced. Most of the paper from this department does not contain PHI and if there is a separate paper or mixed recyclables collection, the paper can be placed there.

Recycle Cardboard

Recycle cardboard & break down boxes so they can easily be taken to the baler or compactor. Be sure to separate plastic containers or polystyrene foam that come surrounded by a cardboard box. Be sure all contractors and other outside vendors know where the recycling bins are as well.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are commonly collected by employees or EVS, or donated to a local charity, Boys & Girls Club or the Los Angeles Conservation Corps. Many collection containers have been observed in staff break rooms, conference rooms and other work areas. The hospital may also have recycling bins in public areas, conference rooms, cafeteria and lobbies that need to be serviced by EVS. These are the most visible to the public that often assumes, "if they aren't recycling bottles and cans, they aren't very green." Be sure that there are adjacent trash containers next to each recycling container in the public areas.

Recycle Toner Cartridge/Ink Jet

Toner cartridges are usually recycled by Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Remind staff to carefully handle to prevent inhalation of toner dust.

Recycle Batteries

EHS should regularly publicize the packing instructions (such as taping the ends or labeling the containers with start dates) for the battery recycling collection program and encourage the use of rechargeable batteries to reduce the number of batteries in the waste stream. Packing instructions are dependent on the changing Department of Transportation regulations. In many cases, unspent batteries can be diverted for use in less critical situations and extend the life of the batteries.

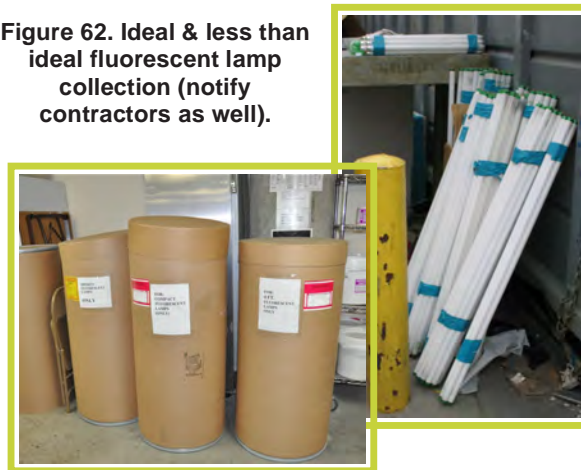


Figure 61. Battery Collection

Recycle Fluorescent Lamps & CFLs

Other Universal Wastes that need to be collected for proper disposal include fluorescent tubes, compact fluorescent lamps (CFLs), metal halide lamps, sodium vapor lamps, cathode ray tubes, instruments that contain mercury, and others.

Figure 62. Ideal & less than ideal fluorescent lamp collection (notify contractors as well).



Recycle E-waste

EHS should assist Materials Management in developing facility-wide instructions regarding collection of e-waste, electronics, appliances & microwaves (some are not e-waste, but most recyclers will take them), devices that have rechargeable capabilities or have digital clocks, etc. If items are functioning, they can be redistributed, repaired, sold, or donated prior to recycling. Some hospitals sponsor a collection event geared for participation from the community.

Green Waste Recycling

A significant diversion activity at most facilities involves diversion of green waste. After reducing waste through xeriscaping and grasscycling practices, hospitals can ask their landscaping contractors to haul away the green waste or obtain green waste recycling bins which are then taken away for composting. Smaller amounts of green waste (such as for indoor plants) can be placed in the food waste recycling bins.

Recycle Miscellaneous

There is still a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, glass bottles, metal cans, plastic film, bags & bubble wrap, and plastic containers & bottles (all # types & sizes). Some hospitals are implementing a “mixed single stream” recycling program that commingles all of these items together in one bin – similar to what people have at home. This type of program is effective in non-patient related areas.

Other Recycling / Collections

Other collection programs for aerosol cans, fluorescent light ballasts (PCBs in older models), items with mercury switches (old thermostats), pharmaceuticals, are usually handled by Facilities Engineering or EHS. Outside contractors often place these items in any trash cart and should be required to recycle as part of their contracts.

Pallet Recycling

Request that vendors take back their pallets. Check with Materials Management for a recycling program for the other pallets including broken ones. Be sure they are not placed in the compactors.

Construction Waste Recycling

Construction waste from both small, ongoing repair and maintenance projects as well as from major construction and expansion projects, can and should be included in a hospital's waste diversion strategies. Require contractors to include diversion and reporting, (many municipalities require these reports as part of the permitting process) and there are deconstruction specialists that can help with these activities.

REDUCE – REUSE - RECYCLE

- C-fold paper towels result in the use of more material; consider paper towel roll dispensers so stacks of towels are not left out on top. Use rechargeable batteries and set towel length for a minimum of 6" or 10". They are usually factory set at over 10" (longest length). Mechanical pulls don't require batteries. If batteries are required, then use the rechargeable type and recycle the spent ones. Hand dryers eliminate paper waste altogether. Solar panels can make up for the increase in electrical energy use.
- Use physical rather than chemical cleaning methods (e.g. steam disinfection instead of chemical disinfection).
- Farmer's Markets should haul away their trash or the hospital should have them participate in facility recycling and diversion programs.

Landscaping Specific

- Ask tree trimmers to leave some of the mulch in designated areas for application on-site.
- Transition landscaping to drought-tolerant and xeriscaping (reduce grass areas).
- Have landscapers grasscycle, particularly in areas that receive less foot traffic.

Education is Key!

Medical waste training to keep non-medical wastes, such as packaging, out of the red bag saves money. Guidelines regarding chemicals and pharmaceuticals that should not be placed down the drains need constant reminding. Get the Green Team to help sustain the message – ideas such as “Caught Being Good” provides positive motivation and can go a long way.

Disposal

Regularly review disposal & recycling reports to keep track of progress and efficiencies. Compactor fullness monitoring systems are helpful but changes in trash density or materials being placed in the compactor (removal of food waste due to a food composting program) may require changing the settings on the fullness monitoring system.

Figure 63.
Pressure gauge
indicates fullness



Other: ER / ICU / PCU / TCU / Patient Rooms / Nurses' Stations

Each of these areas of a hospital, although similar to other areas such as the OR and Labor & Delivery, have their own unique challenges. Despite the urgent nature of an ER and the non-stop action in an ICU, there are staff from these areas who also want to do their part in increasing their department's sustainability practices. The health and well-being of the staff is important in order for them to be effective caregivers -- health and safety issues and environmentally sustainable activities are not mutually exclusive. So who better to suggest waste diversion activities than those who deal with such waste every day?

HOSPITAL –WIDE RECYCLING PROGRAMS

Recycle Document Destruction

PHI Document Destruction is usually recycled. If the medical facility is paying by service frequency and not by weight, include non-PHI paper if there is room in the container to increase paper diversion.

Recycle Cardboard

Flatten & recycle all cardboard from special orders delivered directly to the unit. Time and motion studies have found that transporting broken down boxes to the collection area was more efficient than carrying one or two bulky boxes several times.

Recycle Beverage Containers

Beverage containers (CRV= California Redemption Value) are often collected by employees or the custodial staff, or donated to a local charity such as the Boys & Girls Club and the Los Angeles Conservation Corps. Consider placing them in the staff break rooms and the waiting areas as well.

Recycle Toner Cartridge/Ink Jet

Toner and ink jet cartridges are usually recycled by a centralized entity such as Materials Management, IT or by the office supply vendor. The smaller ink jet cartridges can also be donated to a school or charity fundraising program. Consider the use of remanufactured toner cartridges but be sure the refurbishing company replaces all the worn parts, particularly the drum unit, and that their facilities operate in a manner that is safe for their employees.

Recycle Batteries

Reduce battery waste by switching to rechargeable batteries, reuse unspent batteries by use in less critical situations and recycle all battery types as instructed by the Hospital's battery collection program. The Materials Management or Facilities Engineering is usually responsible for this collection program. Verify whether the container needs to be dated and if both ends of the batteries need to be taped.

Recycle E-waste

Follow facility instructions regarding collection of e-waste, electronics, appliances, microwaves, CFLs, devices that have recharging capabilities or have digital clocks, etc. If items are still functioning, they can be redistributed, repaired, sold, or donated prior to recycling.

Recycle Miscellaneous

There is a significant amount of recyclables that can be recycled. Non-PHI white ledger paper, mixed office paper (junk mail, magazines & envelopes), chipboard boxes and other packaging, plastic film, bags & bubble wrap, and plastic containers (such as sani-wipes) & empty bottles - all plastic #1-#7 types & sizes, such as sterile water & saline bottles that are often collected in the OR with Blue Wrap. Start with pre-patient & non-contact items. Exceptional programs also recycle bed pans, wash basins denture cups, water pitchers (in non-isolation rooms), non-medicated or non-blood contaminated IV bags and tubing (however, these programs are still rare until the type of plastic used becomes more recyclable).

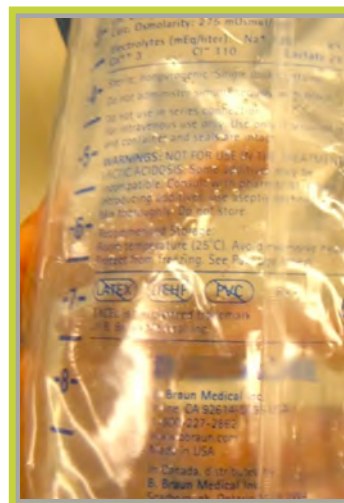


Figure 64. IV bags that are Latex, DHEP & PVC free

SOURCE REDUCTION

- Place all unused surgical supplies (from packets) into a tub to be used and sorted at a later time.
- Divert instruments & equipment for mission relief or other organizations
- Provide a DVD for images rather than film.
- Use EMR (electronic medical records) to help the department go paperless.
- Duplex whenever possible & use paper without PHI for scratch paper.
- Only print discharge summaries upon request or patient may throw them away into regular trash bins.
- Order forms for labs, etc. may not be needed so ask IT for print as an option only. If lab order forms are not needed, push to have print as an option only.
- Ideally, recycle used water pitchers; ask vendors not to deliver lids if floors do not use; eliminate PHI (remove label if necessary) so pitcher can be placed in regular trash; refill pitchers instead of new ones daily to the same patient. Use washable linens, bed pads, underpads, gowns, and emesis basins and reusable pillows.
- Switch from disposable egg crate mattresses to permanent waterproof mattresses.
- Set up system where nursing staff evaluates personal care items such as aspirin packets, tissues, shampoo, baby wipes and diapers for reuse (following infection control guidelines) instead of automatically disposing them.
- Have staff use reusable mugs & do not provide polystyrene cups to patients.
- C-fold paper towels result in the use of more material; consider paper towel roll dispensers so stacks of towels are not left out on top. Use rechargeable batteries and set towel length for a minimum of 6" or 10". They are usually factory set at over 10" (longest length). Mechanical pulls don't require batteries. If batteries are required, then use the rechargeable type and recycle the spent ones. Hand dryers eliminate paper waste altogether. Solar panels can make up for the increase in electrical energy use.



Figure 65. If items such as pitcher lids and boxes are not needed, have Materials Management request that supplier does not include them



Figure 66. This ER put items aside to donate for mission work