Preventative Medicine for the Environment: Developing and Implementing Environmental Programs that Work

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Healthcare is the largest single industrial sector in the US economy—$2 trillion dollars annually. It's 16 percent of the US economy and estimated to grow to 20 percent by 2015. There are just fewer than 6,000 hospitals and more than 500,000 clinics, long-term care, and other types of facilities, most operating seven days a week, twenty-four hours per day. The global engine that drives this medical industrial complex contributes to a wide variety of environmental and related health concerns. No other healthcare system in the world has higher costs per patient day. While some might suggest that's a reflection of the highest quality care in the world, it's also an indicator of unparalleled resource consumption that include impacts from the design, manufacture, delivery, use, and disposal of materials used in the delivery of care that may very well be jeopardizing the health of the planet and threatening the availability of clean air, water, and ecosystems.

Healthcare facilities alone generate a tremendous variety and quantity of waste—at least 2 million tons of waste per year—that may represent real occupational and environmental health threats. It's the fourth largest consumer of energy, spending $6.5 billion on energy costs alone and accounting for 11 percent of all commercial energy use. Water consumption and discharge to public sewer systems are excessive. Healthcare institutions are consistently within the top ten water users in their communities. Waste water contains toxic lab and cleaning chemicals and pharmaceutical compounds, many of which are not broken down in sewage treatment plants and are disposed of in landfills, result in sewage sludge applied to farmland, or are released in rivers and streams.

The delivery of high-quality healthcare has imposed a high environmental cost that, until the mid-1990s, was largely ignored by the healthcare sector and environmental regulators. Regulators focused on other industry sectors while healthcare appeared immune to scrutiny due to the *higher mission* of providing healthcare. Further, the healthcare "sector" has never been perceived by the community as an *industry* at all, and certainly not one that is polluting. The vision of spewing smokestacks or polluted waterways is *not* associated with the local hospital.

However, it was only ten years ago that 6,200 medical waste incinerators were responsible for healthcare being identified as the fourth largest source of mercury emissions and the second leading source of dioxin emissions, along with a host of other concerns associated with incineration such as acid rain and heavy metal and particulate emissions linked to asthma and other health ailments. Today there are fewer than 100 medical waste incinerators, but thousands of municipal waste incinerators continue to operate. So while healthcare specifically is no longer among the largest identifiable sources, many healthcare institutions send their waste to incinerators that continue to contribute to environmental and human health threats.

In the late 1990s, the US Environmental Protection Agency (EPA) targeted healthcare for environmental compliance inspections—what they found was startling.

Helpful Websites

American Institute of Architects:
http://www.aia.org

Green Guide for Health Care:
http://www.gghc.org/

Hospitals for a Healthy Environment:
http://www.h2e-online.org

US Environmental Protection Agency,
Energy Star: http://www.energystar.gov

Energy and Water Use Reductions

- Kaiser Permanente Hawaii Region in Honolulu, Hawaii, retrofitted parking garage lighting resulting in energy reductions and savings of $30,427 in 2004.
- Bronson Methodist Hospital in Kalamazoo, Michigan, converted computer monitors from 15-inch CRTs (75 watts) to LCD 17-inch flat screens (40 watts) saving $21,850 per year.
- Ridgeview Medical Center in Waconia, Minnesota, implemented water conservation efforts saving 3 million gallons of water and $25,000 a year.

Source: H2E 2005 awards application

Compared to general industry where 1 in 30 inspections resulted in compliance violations and fines, in healthcare, 1 in 2 facilities were found to be out of compliance with basic environmental regulations. That means that, on average, 50 percent of the nation's hospitals may be inappropriately managing their hazardous chemicals—not identifying and/or disposing of them properly, not keeping proper records, violations in managing underground storage tanks—among a long list of specific infractions.

The problems are not insurmountable, and the solutions can be cost-effective and practical. There are many examples of environmental leadership in facilities that have implemented comprehensive and sustainable programs with full support from administration and staff. While there are certain programs that cost money (e.g., recycling batteries and fluorescent bulbs or purchasing a more environmentally preferable product), there are more examples of how pollution prevention programs are cost-effective and relatively easy to implement.

The goal of this paper is to suggest steps in moving from the theoretical aspects of why healthcare facilities should adopt green principles to how to do it. This paper has three primary objectives: to provide an overview of the planning and implementation of a comprehensive environmental program including basic waste management considerations and cost-benefit analysis, to suggest the necessary conditions that must be adopted to institutionalize sustainable programs and, finally, to provide specific examples of practical and cost-effective programs to suggest the broad applicability of these programs across the entire sector.

Hospitals for a Healthy Environment

Hospitals for a Healthy Environment (H2E) was launched in 1998 by agreement between the EPA, American Hospital Association (AHA), American Nurses Association, and Healthcare Without Harm (HCWH) as a result of the damning reports identifying healthcare as leading sources of toxic chemical emissions to the environment—mercury and dioxin, specifically, but there are others. The agreement set forth goals to create a program to advance pollution prevention in the nation's hospitals creating a national movement for environmental sustainability in healthcare.

H2E is based on a vision of a healthy healthcare system—a system in which an environmentally aware and engaged healthcare community is dedicated to the health of patients, workers, their communities, and the global environment. H2E's work intends to create operational systems where patients and staff interact in a healing environment that embraces safer building products, clean air, reduced toxins, safe working practices, energy and water efficiency, environmental education, and a commitment to public health demonstrated through specific, practical waste-volume and toxicity-reduction programs. H2E works to make that system a reality by assisting the healthcare sector to accomplish the tasks that will institutionalize environmental stewardship in our nation's hospitals. Throughout the paper, there are references to H2E award-winning facilities that have implemented a variety of programs consistent with the vision of a greener healthcare sector.

Healthcare waste

Today, medical waste treatment and disposal is a multibillion dollar industry, yet most hospitals are not aware of how much waste they generate or how much they spend annually on disposal, not to mention

the environmental impacts created in the process. Scoping the opportunity to improve performance and reduce management and disposal costs begins with a basic understanding of the waste streams and the relative environmental impacts and disposal costs of each, which differ significantly. Regulated medical waste (RMW), or red bagged waste, costs about ten times more to treat and dispose of than does regular trash or solid waste. Hazardous chemical waste, while the smallest by volume, less than 1 percent of the total waste, can be 500 times more expensive than solid waste.

A highly regulated environment

There is a dizzying array of regulations that may add management or operational costs. To name a few, the Occupational Safety and Health Administration (OSHA) Hazard Communications Plan outlines how facilities "use" hazardous chemicals in the workplace and how those hazards must be communicated to all staff. OSHA's Bloodborne Pathogens Standard outlines how facilities must handle potentially infectious materials. EPA's Resource Conservation and Recovery Act (RCRA) regulations govern how to manage hazardous chemical waste, and the Department of Transportation (DOT) regulations outline how it can be shipped and transported. Health Insurance Portability and Accountability Act (HIPAA) regulations set guidelines for the management of confidential materials.

These costs, however, are the expenses of doing business in any institution that uses chemicals or other potential hazardous materials that may harm workers (OSHA) or the environment (RCRA). They are not optional. Pollution prevention (P2), on the other hand, is seen by many as being optional. That is a mistake. H2E subscribes to helping hospitals to *first* be in compliance—it's the law. But also, as community health leaders, it's imperative for hospitals to go *beyond* compliance. P2, or beyond compliance programs, means that hospitals minimize or eliminate the use of hazardous chemicals in the first place, thereby reducing the regulatory liabilities and costs.

Data collection

You can't ***manage*** what you don't know you have...

Compiling environmental and waste data provides powerful benchmark data to help prioritize environmental efforts based upon waste category and cost analysis. For example, if a facility doesn't know how much RMW is generated as a percentage of the total waste and doesn't know the cost, there are more than likely big opportunities to reduce the amount to the target rate and significantly reduce costs.

Table 1 describes the four basic waste streams, their typical disposal cost per ton, and the target percentage of total waste potential assuming best practices. If a facility is generating any more than a target of 8 percent to 15 percent of total waste in red bags, then it is spending ten times more per pound for every pound over the target generation rate.

Few facilities understand, or have compiled, all the costs associated with their waste management program, including a long list of *hidden* fees: hauling fees, tipping fees, processing fees, container rental fees, etc. After including all these costs and surcharges, is the cost per ton for a particular waste stream above the regional or national benchmark? Are there opportunities to renegotiate contracts because the data has identified glaring inefficiencies? Is the facility using the right container size and maximizing how often a waste container is pulled? Data provides the answers to these questions, and the findings are impressive.

Wheaton Franciscan Health System, a seventeen-hospital system in the Wisconsin area, launched a data collection effort in 2005 and, in the first year, estimated a systemwide savings of $600,000. Metro Health in Grand Rapids, Michigan, also launched a similar effort but as a single hospital and too realized about $40,000 in potential cost savings after one year.

Table 1: Basic Waste Streams

Waste Type	Definition	Target as Percentage of Total Waste	General Disposal Methods	Typical Cost for Disposal
Waste reduction programs (recycling, reuse, source reduction)	Reducing: using less product in the first place, thereby generating less waste Reusing: materials exchanges, using a product until it is no longer usable Recycling: Refuse which is reprocessed into new products	20-40%	Most recyclables are shipped off site for processing and subsequent reuse.	Wide range • Cardboard and paper should generate revenue. • Glass and plastics typically cost. • Objective: total cost of program should beat landfill costs (i.e., avoided landfill costs pay for the program)
Infectious waste	Solid or liquid wastes that have a significant potential for transmitting infection or require special handling due to state regulations and some federal regulations	8-15%	• Treatment, such as autoclave then landfill • 10% of total RMW is path waste requiring incineration	Off-site treatment: $0.26 - $0.38 per lb; $500 – $800 per ton
Hazardous chemical waste	Solid or liquid waste containing flammable, toxic, corrosive, or reactive chemicals. Also includes a special hazards category (i.e., radioactive) and listed wastes.	<1%%	Managed according to OSHA, EPA, and local and state regulations and shipped off site for proper disposal.	Up to $5000 per ton depending upon material
General solid waste	Solid wastes that are not hazardous, infectious, or recyclable; may include some food wastes, trash, and construction and demolition waste (although those too can be recycled)	50%	Landfill or municipal solid waste incinerator	Wide range depending upon area of country: $0.02 - $.50 per lb.; $33-$100 per ton

Putting together the fundamentals of a comprehensive environmental program

Organizational infrastructure and leadership

Until the recent advent of the greening of healthcare, few facilities understood their waste management infrastructure. Environmental programs have typically been highly decentralized across many departments: environmental services (housekeeping), facilities/engineering, safety and security, purchasing. Or maybe these programs are virtually nonexistent, decentralized or not, resulting in a lack of leadership and focus.

Regulated Medical Waste Reduction

Foote Health System in Jackson, Mississippi, reduced its RMW from 180 to 105 tons over two years, saving $44,100 a year.

Source: H2E 2005 awards brochure

Facilities must create an organizational chart of what department or staff person has authority and responsibility for each waste stream in Table 1, including regulatory oversight, general operations and billing, and new employee and annual training requirements. They then should *designate a leader*. For facilities that have begun to implement comprehensive programs, centralization of these programs and having someone in charge is a natural progression. An environmental programs coordinator is referred to throughout the rest of the document and is assumed to be a staff person internally coordinating and implementing a variety of environmental programs.

Waste segregation and collection infrastructure

The basics of a waste management program means providing the proper containers—color coded, properly labeled, and strategically placed for all waste streams, increasing the likelihood that the right materials will go into them. So, for example, red bags should never be placed under handwashing sinks where no infectious waste is generated while handwashing. Recycling bins should always be placed next to copiers where there is 100 percent likelihood of paper generation. Beverage container recycling bins should always be found in conference rooms where a lot of catering takes place or in patient kitchens where these containers are also generated.

Training, education, and communications

On the first day of employment, new staff members should understand their responsibilities in participating in an institution's environmental programs. In fact, participation according to policy (then, of course, a facility needs policies), should be part of the official job description. Particularly where occupational and patient safety is concerned, it is every staff member's responsibility to use materials responsibly and manage the waste that he or she generates appropriately. Training doesn't stop at new employee orientation, but is a continuous program of improvement and education.

Public relations opportunities should not be overlooked. Not only should staff know about the commitment to the environment and community health, but also patients and community members should be informed of progress as well through articles in internal newsletters, community newspapers, and a web page dedicated to the facility's environmental programs.

Cost per ton used in the analysis in Figure 1

$60

$600

$2,000

Avoided landfill @ $60/ton

Green Memorial Hospital vs. Brown Medical Center

Typical reasons given for lack of broader participation implementing environmental programs include no time, no space, and no money.

Let's first address the *no money* barrier by a simple waste management comparison of two hypothetical 425-bed hospitals that both generate almost 2,400 tons of waste annually. In summary, Green Memorial Hospital has a progressive and comprehensive waste management program that includes an innovative recycling program where 38 percent or 900 tons of its waste is recycled, saving $54,000 in avoided landfill costs. Green has an ongoing RMW management program and manages a consistent generation rate of 10 percent. Green spends about $245,000 per year on waste disposal.

On the other hand, *Brown Medical Center* doesn't have a waste segregation or recycling program. The 900 tons of materials that Green Memorial is recycling is being disposed of in a combination of expensive regulated medical waste and solid waste. It spends $596,000 annually on waste disposal. That's a difference of $351,000!

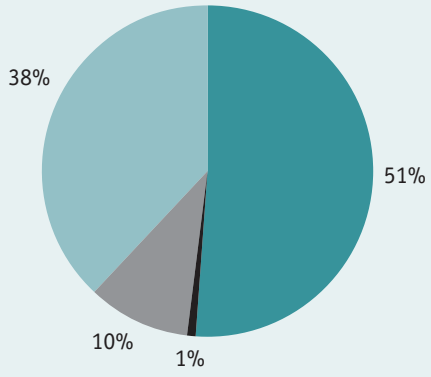
Hospitals can't afford *not* to pay attention to the backdoor. The hospitals above are hypothetical, but hundreds of H2E partner hospitals have won recognition exemplifying the many opportunities to save resources through improved waste management and environmental programs coordination.

As this comparison illustrates, it's shortsighted to not invest in the resources to institutionalize programs that will ultimately pay for themselves. The commitment requires a shift in mindset and leadership to make the investment. Savings must be tracked on an annual basis and reported to the institution's leadership. This step cannot be underestimated and is discussed further in this paper.

Figure 1

Green Memorial Hospital

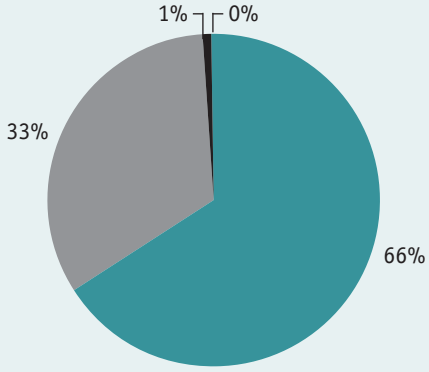
Total Waste Disposal Costs = $245,000



- Solid waste: ~ 1200 tons = $72,000
- RMW: ~ 225 tons = $135,000
- Hazardous chemical waste: ~ 19 tons = $38,000
- Recycling: Assumes breakeven costs. Avoided landfill cost of $54,000!

Brown Medical Center

Total Waste Disposal Costs = $596,000



- Solid waste: ~ 1550 tons = $93,000
- RMW: ~ 775 tons = $465,000
- Hazardous chemical waste: ~ 19 tons = $38,000
- Recycling: no recycling program

Other barriers

No time

Today, particularly in smaller facilities, one director may have responsibility for all support services—housekeeping, facilities, linen, dining, safety and security, purchasing, in addition to construction, emergency preparedness, and contingency planning. Without the investment in additional resources to realize the potential savings, asking existing staff to add P2 projects to already overburdened plates is indeed overwhelming. When working with hospitals to encourage them to make the investment, it's important to understand the reality of *no time* considerations. This barrier may slow down the implementation, but there is enough data available to begin to make a cost-benefit argument to investing the necessary resources, even in small steps, to make the time that is required to implement sustainable programs.

Dartmouth Hitchcock Medical Center

DHMC in Lebanon, New Hampshire, has employed a full-time waste manager since 1990. They have achieved a 40 percent recycling rate—among the highest in the nation. DHMC closed an on-site waste incineration and installed an autoclave after which the waste is landfilled. They implemented a red bag waste reduction program that saved $250,000 the first year and has continued to pay for itself with sustained reductions.

No space

In older facilities, not having enough space is also a reality. Nurses' stations, dirty utility rooms, kitchens, meeting rooms, office space, trash docks—none of these areas have space for multiple recycling bins. Theoretically, the same amount of material coming into the facility is leaving the facility, but compare dock and handling space allocated for receiving functions to space for trash docks. Until recently, design considerations did not include space for multiple source-segregated materials. The *American Institute of Architects Guidelines for Design and Construction of Hospitals and Health Care Facilities* released earlier this year specifies design and space requirements for waste handling, storage, and treatment. This is a fundamental breakthrough that allocates appropriate space and will significantly improve the ease in which these programs can operate.

But for most facilities that have older buildings and are short of space, many have come up with some innovative ways to overcome this barrier.

Commingling materials

Instead of categories and containers for white paper, mixed (colored) paper, cardboard, newspaper, confidential paper, etc., all paper is combined into one category and assumed to have the potential to contain private information and treated with universal privacy precautions. Of course, that means that magazines and newspapers are treated as confidential, but by simplifying the system, facilities are (1) able to replace trash containers with recycling bins, (2) significantly increase compliance with HIPAA, and (3) significantly increase recycling rates. The ability to collect commingled recyclables may depend on a local recycling hauler's ability to collect the materials together, as well as the ability to manage confidential documents securely.

Commingled beverage containers include aluminum cans, plastic soda and water bottles, and glass juice bottles. Few facilities have the space to collect these materials separately. If a facility doesn't have access to a materials recovery facility in the community that can sort recyclables, some healthcare facilities have employed developmentally disabled members of the community to sort recyclables on site. Some space is required for the task, and strong support staff and commitment is necessary. However, commingling beverage containers saves space, increases staff access to recycling them and will, therefore, increase participation and recycling rates.

Collection and storage at the backdoor

Space for box trucks, compactors, and roll-offs (30- to 40-yard containers typically found near the trash dock that store trash, construction, and demolition debris or recyclables for transportation) is very limited. Facilities have placed large containers in the parking lots or knocked holes in walls and used chutes to connect to containers outside. Big balers can be installed that can compact up to 1,000 pounds of cardboard per bale that reduces storage-space requirements. Baled cardboard can also generate revenue. Smaller balers that make "hay-bale" sized bales of up to 100 pounds also reduces storage requirements for tin and aluminum cans, shrink wrap, and plastics by compacting them. When there is an environmental commitment and a financial benefit, there is most often a way to address the no-space barrier, but creativity and commitment are required.

Without a leader, however, the opportunities to develop and implement these or any program is much more limited. The next section suggests creating an infrastructure to institutionalize environmental programs by having a champion or coordinator who can develop and manage programs and garner department and leadership support.

Environmental programs coordinator: Watching the backdoor

The trash dock can tell stories of inefficiencies and lack of systems. One can see where unused surgical supplies are thrown away at the end of a case in the operating room, or where an office move took place, perhaps someone retiring because office supplies, books, file folders, even equipment, are thrown away because there was no place else to put it. An environmental programs coordinator is charged with the task of watching the *backdoor* for opportunities to reduce waste. The following programs are examples of identifying problems at the backdoor and implementing practical solutions and process improvements that can be implemented to address the problems of materials being tossed.

Unopened and unused supplies in the trash

The problem with tossing unused supplies is obvious enough: not only is there an environmental impact of disposal, but also the purchasing cost implications of this inefficiency are staggering. Ironically, healthcare providers are often not aware of the purchase costs of supplies. When a patient is discharged, all the supplies in that patient room are typically summarily tossed. What might an environmental coordinator do?

- Most of the time, staff members throw away materials because they don't know what else to do with them once removed from a supply cart. A disposition policy for patient-care supplies can address three options for material disposition: restocking, donation, disposal/recycling as follows.
- Supplies that should be restocked: Working with the infection control to address patient-safety issues, develop a policy for which type of supplies and in what condition should be restocked. For example, rehab devices that don't fit a patient, such as collars and splits, are obvious items to restock. Unopened supplies whose packaging is not contaminated in any way should always be restocked. Collect data of material that are no longer tossed and extrapolate savings if possible—there is potential to save tens of thousands of dollars in the avoided cost of re-purchasing expensive supplies, and these numbers can help provide documentation to support the environmental coordinator position.
- Supplies that are opened but unused and cannot be re-stocked or used in any way: Create a donation program through a well-established national or international charity. Also consider local charities or organizations including shelters, nonprofit clinics, even farms or animal shel-

ters. A donation program requires a small space to store the surplus—a place to go through the materials before they leave the facility. Establish well-defined policies that outline what is acceptable or not. Work with public affairs to communicate your efforts and successes with donation programs. The program will be more successful if there is broad support from staff and the communities that understand where the materials are going and what positive impacts the programs have created from waste reduction to charitable efforts. (More information on development and implementation of a donation program can be found on the H2E website at www.h2e-online.org/.)

Equipment Reuse Program

Alta Bates Summit Medical Center in Oakland, California, implemented an equipment reuse program capturing equipment that was destined for the trash and netted the facility $53,500 in 2004.

Source: H2E 2005 awards brochure

- Supplies that must be thrown away: Some opened supplies cannot be donated or reused. But these supplies are *not* regulated medical waste, they are not contaminated and should be recycled or disposed of in the solid waste. A comprehensive waste management policy should include proper disposal of nonregulated medical waste.

Medical supplies in the operating room

Coordinators can work with operating room (OR) purchasing staff to provide data that would drive changes on how supplies and instruments are utilized in the OR. Start with resource reduction, meaning using less material in the first place. In the OR, can some supplies remain unopened until they are needed? Assess OR pre-packaged case-pack contents to remove items in the pack that are *rarely* used. Next, assess waste minimization opportunities—how are unused items being disposed? Go back to the guidelines for disposition of patient-care items and funnel appropriate items for restocking or donation. Is packing recyclable? If so, create the infrastructure to capture and manage that material.

Disposable vs. reusables

Disposables have been *sold* to facilities based upon a financial analysis of decreased labor that would otherwise be required to wash or launder reusable items. But a life-cycle analysis is rarely done (or repeated after a time) that includes increased purchasing costs of more units, labor costs to stock and transport disposables, and disposal costs. A coordinator's job is to track and report on this reality. For example:

- Re-useable linens and gowns: A "choose reusables" campaign is an effective way to educate staff to reach for a reusable gown or to promote reusable towels and chux (underbed garments that are perfectly reusable). To also ensure that reusable materials are not being thrown away, usage reports combined with watching the backdoor will identify action items to reduce waste.
- Single-use device reprocessing programs: Outsource the re-processing of single-use, disposable items. Facilities across the country have saved up to 30 percent on the purchase of new devices. While further study is necessary to assess the full environmental impact of reprocessing, reprocessing single-use items reduces the use of virgin materials and manufacturing impacts.

Environmentally preferable purchasing

Environmentally preferable purchasing (EPP) is the act of purchasing products/services whose environmental impacts have been considered and found to be less damaging to the environment and human health when compared to competing products/services. Downstream corrections of environmental or occupational health issues are almost always more costly—in terms of dollars, labor, technical complexity, and adverse publicity—than preventing the harm in the first place.

Reprocessing Single-Use Devices

- Bronson Methodist Hospital in Kalamazoo, Michigan, implemented a single-use device reprocessing program for sequential compression devices and EP catheters, saving $137,700 from 2003-2004.
- Foote Health System in Jackson, Mississippi, also saved $56,281 on a single-use device reprocessing program in 2004.

Source: H2E awards

The environmental coordinator can also provide leadership in the selection of environmentally preferable goods and services. A good EPP program can significantly reduce overall impact on the environment; reduce costs with lower purchase prices or changes that eliminate some waste disposal; reduce the need for worker-safety measures and hazardous waste disposal; provide a healthier environment for patients, workers, and employees through reduced exposure to hazardous substances in such products as cleaners, solvents, and paints; and create opportunities for positive publicity and promotion.

Understand recycling and waste markets

The analysis of the Brown and Green facilities assumes a breakeven cost of recycling. Paper and cardboard recycling has the potential to generate revenue, but that will only happen if there is someone responsible who understands recycling markets and holds recycling haulers accountable. Understanding recycling markets will also help prioritize the development of recycling programs within the institution.

HIPAA

The Health Information Portability and Accountability Act plays a role in the cost of paper disposal and recycling. Patient information on paper and other media must ultimately be destroyed to protect privacy. HIPAA does not dictate that materials be shredded, but that it be managed securely. However, misinformation, perceived risk, and document-destruction vendors have collectively created a new and expensive waste stream—confidential shredding—that is often unnecessary. Without a coordinator ensuring efficient and secure processes and connecting the HIPAA program to the recycling program, facilities are spending too much money and not taking advantage of the opportunity to increase paper recycling.

Institutionalizing environmental programs: Creating Green Teams

While having a dedicated environmental coordinator onboard is the most likely indicator of the potential for success, implementing sustainable and institutional environmental programs requires participation from a wide variety of individuals and departments, from senior leadership to frontline workers. In most facilities, environmental programs responsibilities are decentralized making the development of institutional goals and action plans a challenge. This section suggests a variety of different ways to create committees or teams, but the main objective is to create a broad framework to bring decision-makers and implementers together to make change happen.

There are potentially three different layers of leadership in a highly functioning environmental program:

- Environmental Leadership Council: Comprised of representatives from senior leadership that have the authority to make high-level institutional commitments and the ability to commit financial resources to those commitments
- Green Team (Ecology or Environmental Committee): Comprised of department director-level representatives from a variety of departments who have either operational and implementation responsibility for, or interest in, a variety of environmental programs
- Recycling coordinators (ecology or environmental coordinators): Departmental-level coordinators who have communications and some implementation responsibility in his/her department or area

Recruiting staff

Unless responsibility for environmental programs is somebody's full-time position, most participants on these committees serve on a volunteer basis. For the most successful committees, it's important to find the balance between staff that *must* participate versus those concerned and motivated staff that *want* to participate. For example, it is *strongly* recommended that the director of environmental services participate on the Green Team, but that person might not be the biggest advocate.

Environmental advocates and key clinical staff, both doctors and nurses, are always important members of the team.

Environmental Leadership Council

Environmental Leadership Council representatives have clout. The ELC is charged with high-level decision-making and might only need to meet on a quarterly basis. The ELC can support the funding of an environmental initiative where additional financial commitments may be required, for example, a new waste management system, water conservation effort, or the purchase of a product that is environmentally preferable but has an up-charge like recycled content copy paper. The ELC should adopt a statement of environmental principles to lead and direct the mission of the organization. The ELC might consider presenting the statement to the board of trustees. Any high-level facility goal can be addressed by the ELC.

Other examples include:

- a human resources initiative to formalize environmental programs participation as a part of every employee job description
- a new construction or renovation project—the ELC is in a position to adopt and actively support a goal of using the *Green Guide for Health Care* and Leadership in Energy and Environmental Design (LEED) certification
- a chemicals policy that might direct the institution's goal to support global efforts to reduce the use of toxic chemicals and, thereby, affirming the institution's core mission to improving health

Suggested participants for the ELC include

- board of trustees member
- chief operating officer
- chief financial officer
- chief medical officer
- vice president nursing
- vice president support services (which might include environmental services, safety, facilities, purchasing)
- environmental program leaders

Green Team (Ecology or Environmental Committee)

Green Team representatives are responsible for the operations and/or staff that oversee a wide variety of waste and

Chemical Use and Waste Minimization/Solvent Recovery

Albany Medical Center in Albany, New York, is operating a chemical reclamation facility that annually recycles more than 50 percent of its RCRA-regulated chemical wastes, avoiding $1.7 million in removal costs and reclaiming 147 tons of chemicals for laboratory use at a value of $1.06 million since the program's inception in 1995. The program paid for itself in about six months.

environmental programs, typically, members are department directors or responsible staff members at similar functional areas. A Green Team has a multidepartmental perspective on designing and implementing programs. For example, the type of recycling containers appropriate for clinical areas may not be the best solution for administrative areas. The Green Team will also set yearly goals that include recycling, RMW reduction, hazardous chemical reduction, EPP strategies, energy conservation, water conservation, and preference for reusables. The Green Team chair can report to the ELC.

Suggested participants for Green Teams include:

- environmental services (including key waste handlers and supervisors)
- safety
- facilities
- nursing and medical staff
- infection control
- purchasing/materials management
- radiology
- laboratory
- other staff from key clinical departments or ad-hoc members as needed

A Green Team can also be created on a departmental level where the determination and development of specific action plans are made relevant to their setting. For example, an OR Green Team might include representatives from anesthesia, surgical services, radiology, or OR purchasing representatives. A Chemicals Reduction Task Force focused on the reduction of hazardous chemicals could include participants from the lab, housekeeping, and/or engineering.

Recycling coordinators

Recruiting staff in every department to help manage the waste management program is a great way to help environmental coordinators stretch limited resources by decentralizing some of the responsibility where it can be more efficiently and effectively implemented anyway—at the departmental level. Recycling coordinators serve as point people to provide critical communication to staff in their departments on recycling and waste management information. Implementing this program is easy and the long-term benefits make the program sustainable.

Recycling coordinators' responsibilities might include the following:

- Acting as communication liaison with the primary waste manager—for example, coordinators receive e-mail updates communicating how the entire facility is doing against waste management and minimization goals, which includes things that are going well *and* problems that need to be addressed. Coordinators then communicate this information to *all* staff via staff meetings, posting fliers or copies of e-mails, and by encouraging word-of-mouth information sharing.
- Monitoring waste containers in their areas for proper placement and labeling to encourage waste segregation and recycling. Recycling containers that are not color-coded, have no labeling and no coordinator responsible for monitoring its use, will guaranteed, have trash in it. Coordinators can request additional containers or labels as well as fliers and educational materials.

- Facilitating waste management education. Coordinators should ensure staff is aware of red bag minimization programs, recycling procedures, proper hazardous waste disposal, and all environmental program initiatives.
- Serving as a resource. Staff in the department should know who the coordinator is and that he or she is the person to go to with recycling and waste management questions. Coordinators are also the primary liaison with housekeeping staff and supervisors in the area.

The best coordinators are those who care about these issues. Having e-mail is helpful as the primary forum for communication. A department or area can have more than one coordinator if the department is too big for one, if there are evening/night and weekend staff that should have their own coordinator, or if there are different staff meetings or groups that the coordinator doesn't communicate with easily.

Conclusion

Waste is a measure of inefficiency. The evidence of this inefficiency in healthcare institutions across the country is clear when looking at the materials that are being tossed every day that equate to tossing millions of healthcare dollars while at the same time negatively impacting the environmental and health of the very communities in which they serve.

We already know what is desirable—solutions that are sound, practical, and provide both environmental and financial benefits. We know the obstacles to broad implementation that tend to be perceived as barriers, but perceived cost and risk factors are being dispelled as hospitals across the United States have shown that investing the resources into improving their environmental performance is a good and worthy investment.

There is a clear vision of the healthcare facilities of the future: high performance buildings that use less energy, less water, require fewer chemicals to maintain, that are designed for maximum operational waste management systems; where materials are purchased with health and the environmental considerations; where materials are used efficiently, staff take responsibility for and participate in waste minimization programs; and end-of-life considerations are maximized that include reuse and recycling. Today, there is a network of resources to tap into so that no facility has to start from scratch or go at it alone.

Author Biography

Laura Brannen is the executive director for the Hospitals for a Healthy Environment (H2E)—a national program designed to move the healthcare sector toward providing healthcare in a manner that reduces its potentially significant impacts on environmental and human health. Brannen has been working in the healthcare environmental programs field for twenty years. She started her career at the Massachusetts General Hospital as assistant director of environmental services, then moved to New Hampshire and worked at Dartmouth-Hitchcock Medical Center for ten years as the environmental programs coordinator. She has been with H2E since 2001 and is a nationally recognized speaker and leader in making change toward environmental sustainability in healthcare.