Environmentally Preferred Sourcing Program EPS Toolkit: Hazardous materials

Exposure to hazardous chemicals, materials or wastes can cause or contribute to many health problems. Some chemicals are inherent safety hazards because they have the potential to cause fires, explosions and other serious accidents.

There are several hazardous waste issues commonly found in hospitals including improper labeling, storage, and/or disposal, inadequate manifests and insufficient staff training.

Managing your hazardous materials has many benefits, including:

- Protecting the health and safety of staff, patients and visitors
- Reducing inventory control costs
- Decreasing waste disposal costs
- Ensuring regulatory compliance

What you can do

This section provides several suggestions and many focus on pharmaceutical waste, medical waste, cleaners, pesticides, and chemicals.

Know the rules and regulations

Several federal environmental agencies are involved in regulating hazardous waste and hazardous materials. These include the Environmental Protection Agency (EPA), the Drug Enforcement Agency, the Occupational Safety and Health Administration (OSHA), and the Department of Transportation as well as state and local environmental agencies and departments.

Several laws also are involved, including the Resource Conservation and Recovery Act, the Clean Air Act and the Clean Water Act. Ensure that your hospital's personnel know the rules and regulations that affect your facility, including:

- What type of waste generator your organization is — conditionally exempt small quantity generator, small quantity generator or large quantity generator
- Whether the organization is required to have an EPA identification number
- What requirements for storage, handling, disposal and record-keeping the organization or certain departments must follow
- Whether your facilities are required to have an air emissions or water discharge permit

Understand hazardous waste classification

Every type of hazardous waste falls under a certain classification. The rules that apply to your facility will depend on how much waste, and what type of waste, your organization generates.

Misclassifications can lead to citations and penalties. It is important to know the correct classification of all of your facility's waste, as different sets of rules will apply, depending on the total amounts of each type of hazardous waste that the facilities generate per year.

Note that the regulations in your state may differ from the federal regulations. See the definitions of hazardous materials, hazardous wastes and universal wastes.

Train all employees, thoroughly and often

Ensure that all employees are thoroughly familiar with the proper waste management, handling and emergency procedures relevant to their responsibilities. We recommend that staff understand and follow the

requirements of OSHA's Hazard Communication Standard (HazCom). This framework covers all chemicals in the workplace. It establishes uniform requirements to make sure that the hazards of each of these chemicals are evaluated, that this hazard information is transmitted to employers who deal with the chemicals and to employees who might be exposed to them. Most chemicals used in the workplace have some hazard potential, and thus will be covered by the rule. Further information is available on OSHA's website.

- Build appropriate training into employee orientation. Ensure that this training familiarizes new staff with procedures, equipment and systems to effectively respond to emergencies.
- Schedule annual reviews for all areas and ensure the schedule provides the opportunity for all staff to attend, including night, part-time and per-diem workers.
- Establish a policy that requires ongoing training for all staff, relevant to their responsibilities and ensure training is provided whenever a new hazard is introduced into the work area.

Establish an overarching waste-reduction policy

An overarching waste-reduction policy will show your intent to get serious about waste reduction and better enable your organization to implement policies for minimizing hazardous waste generation as well. Sample language could include:

"XXX Hospital is committed to continuous improvement of waste management practices and a reduction in the proportion of waste sent to the landfill. All staff members at every level should take every opportunity to minimize avoidable waste and ensure that materials no longer required are managed according to the following hierarchy of options:

- Reduce at source — using and discarding less material generally, segregating wastes and asking suppliers to take back packaging and reusable containers
- Reuse and repair — passing on to others reusable chemicals and equipment no longer required and repairing in preference to replacing equipment where appropriate
- Recycle — separating materials for recycling, such as mixed waste paper, cardboard, cans, printer consumables and waste electrical and electronic equipment
- Responsibly dispose — complying with all regulations for safe handling and disposal of wastes

Continual improvement shall be guided by consideration of value for money and environmental benefits of options for each waste type."

Minimize your hazardous waste generation

Under the Resource Conservation and Recovery Act (RCRA), most hospitals are required to minimize waste generation. Good purchasing procedures can help identify and reduce potential waste before it enters your facility. Review and evaluate the materials you are using and look for less- or nontoxic substitutes.

Other ideas:

- Channel material purchases through a central person or department. Ensure that waste reduction policies are followed.
- Consider your intended use and standard operating practices in order to purchase materials in the right size and type of container.
- Buy in pre-weighed packages to reduce handling losses.
- Buy in bulk where appropriate to reduce the number of containers requiring disposal, especially if refillable containers are used.
- Buy containers that are more wide than tall, because they have less "cling," resulting in greater material use and less container residue.
- Buy containers that minimize disposal problems (e.g., refillable pressurized spray cans in place of single- use aerosol spray cans).
- Establish receiving procedures to prevent acceptance of shipments that are off-spec, incorrect, or improperly packaged.
- Create purchase agreements that specify terms and conditions for receiving material orders, including provisions that allow you to inspect materials prior to acceptance and address responsibility in the event of a release.
- Establish a policy for accepting chemical samples so they do not accumulate and add to the waste disposal load. Designate one person responsible for acceptance of chemical samples, test on a bench scale basis to reduce disposal volume and require that suppliers accept back the unused samples they provide.
- Take steps to ensure new equipment purchases will generate the least amount of hazardous waste possible.
- Consider waste reduction when planning expansions, and evaluate potential new construction to determine whether their design is amenable to waste reduction, proper recycling and treatment needs. Ensure everything that could be classified as universal waste, and therefore recyclable, is.

What are hazardous materials, hazardous wastes and universal wastes?

Hazardous materials generally applies to certain raw materials or products, purchased from outside suppliers that are stored and used at your facility. Generally, materials are designated as hazardous materials when they pose a significant risk to people or property. The specific definitions depend on the agencies that write the rules.

Hazardous wastes is a term reserved for materials that meet very specific criteria spelled out in the federal RCRA and the regulations associated with it. It applies to certain materials that are generated as wastes from processes carried out at your facility. Hazardous waste regulations are developed and enforced by the EPA and by state and local environmental agencies.

Universal Wastes is a special category established by the EPA to encourage recycling of certain common items that might otherwise be classified as hazardous waste. The list includes:

- Hazardous waste batteries
- Hazardous waste thermostats (e.g., mercury-containing)
- Certain hazardous waste lamps
- Certain hazardous waste pesticides
- Batteries
- Mercury containing equipment (e.g. thermostats)
- Mercury lamps (e.g. fluorescent light tubes)
- Pesticides

Note that states have autonomy when it comes to the universal waste rule. Before you designate any hazardous waste as a universal waste, check with your state agency to see if it will allow it. Most states follow the federal rule. Some, however, have expanded on it.

OSHA's Hazard Communication Standard

Because of the seriousness of safety and health problems surrounding the use of chemicals, and because many employers and employees know little or nothing about them, OSHA developed a framework called the Hazard Communication Standard (HazCom).

HazCom covers all chemicals in the workplace. It is designed to ensure that information about these hazards and associated protective measures is disseminated. It requires chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import, and to provide information about them through labels on shipped containers and more detailed information sheets called Safety Data Sheets (SDSs).

All employers with hazardous chemicals in their workplaces must prepare and implement a written hazard communication program, and must ensure that all containers are labeled, employees are provided access to SDSs, and an effective training program is conducted for all potentially exposed employees.

Managing pharmaceutical wastes

Pharmaceutical waste can be generated through intravenous preparation, general compounding, spills or breakage, partially used vials, syringes and IVs, and outdated pharmaceuticals. Certain pharmaceutical wastes are classified as hazardous wastes and require special procedures for appropriate and safe disposal.

What you can do

Know how your waste is categorized

Some pharmaceutical wastes are regulated as medical waste, or under separate state regulations, while others must be treated as hazardous waste under the RCRA, which is the main federal law governing the disposal of hazardous waste. While primarily intended to address waste generation in industrial settings, the RCRA regulations are increasingly enforced in the health care environment. Practice Greenhealth has extensive information on categorizing pharmaceutical waste and determining state requirements on its website.

Determine a baseline

Identify potentially hazardous products within the facility. This process can prove challenging, because the RCRA regulations were not written with the health care industry in mind and may be difficult to interpret within a health care setting.

Certain states have adopted standards even more stringent than those outlined by RCRA and the drugs specifically identified within RCRA only reflect the medications available in 1976, the year the regulations were enacted.

Therefore, hospitals must determine what medications should be treated as hazardous waste, even if they are not specifically mentioned in the RCRA standards (e.g. newer cancer drugs). Additionally, you must:

1. Document current practices. Determine what pharmaceuticals are being wasted, why they are being wasted and how you can minimize the waste from occurring.
2. Determine the cost of handling and disposing of pharmaceutical waste, including the time that it takes for staff to review waste regulations and product expiration dates as well as the disposal fees for various waste streams. This will help you determine where to focus your efforts first.

Reduce what enters your facility

Minimize pharmaceutical waste at the source by reducing what enters your facility. Opportunities include:

- Implement purchasing practices that minimize waste, such as selecting products with less packaging or without preservatives, ordering single-dose containers that do not need a preservative and accepting drugs with an expiration of greater that one year (unless they only have shorter expiration dates).
- Work with manufacturers to meet your needs. For example, request that the manufacturer use less packaging or produces certain doses of medication.
- Control pharmaceutical samples to ensure that pharmaceutical representatives are not oversupplying and that physicians are providing samples to patients and rotating sample inventory. If particular drug samples are consistently being wasted, determine whether usage patterns have changed for particular drugs. Or, do not allow samples or limit samples to the top ten drugs prescribed.
- Purchase products in the doses that are routinely administered to minimize wasted product. For example, if your facility purchases 100-milligram (mg) tablets of a medication but only 50 mg are routinely administered, changing purchasing patterns could reduce the amount of waste generated.
- Purchase oral syringes and bulk liquids rather than pre-packaged unit dose liquids to minimize product waste. With an oral syringe, the exact dose can be dispensed, eliminating waste.

Use reverse distribution

Reverse distribution is a process whereby some unused but potentially usable pharmaceuticals can be returned to the manufacturer for credit. These pharmaceuticals are not considered to be wastes, according to an EPA interpretation. (Note that this exclusion applies only to bona fide returns for credit, and not to broken containers, spilled contents, compounding leftovers, or similar cases).

Ensure that you deal with reverse distributors that are in compliance of EPA rules. Ask if they are members of the Returns Industry Association, whose members are "committed to high quality standards, economies within the reverse distribution process, full regulatory compliance, and protection of the environment." Vizient™ offers contracts with seven reverse distributors. (Be careful. The EPA considers expired pharmaceuticals to be wastes. It is illegal to send hazardous waste, in this case expired pharmaceuticals, to a reverse distributor who does not have an EPA identification number.)

Change your practices

Make better use of products by:

- Labeling patient-specific medications used during a hospital stay for home use. With a discharge prescription from the physician and proper outpatient labeling, a patient can take the medication home and finish using the product.
- Monitoring expiration dates on syringes and vials on general crash carts. Because these are typically removed within three months prior to outdate, use them in the emergency department or in intensive and/or critical care units.
- Implementing a strict inventory control program to limit the amount of product that expires before use. Minimizing outdated pharmaceuticals will save resources spent on the management of such products.

Segregate your pharmaceutical wastes

Segregate your wastes into groupings based on where they go for disposal. Use color-coded containers that are clearly and consistently labeled. Train your staff to recognize the color code you use and to segregate waste carefully, using appropriate precautions.

If a waste is infectious and hazardous, try to remove the infectious portion and handle that separately or disinfect the waste first. A couple of examples:

- For an unused flu vaccine, remove the sharp from the syringe and place it in the sharps container. Then place the barrel of the syringe with the remaining vaccine in the hazardous-waste container.
- With an IV, separate the infectious component (the sharp and T-interlock) from the noninfectious component (the tubing and reservoir). At all times, keep safety foremost in your mind and use adequate personal-protective equipment.

Reduce chemotherapy waste

Chemotherapy waste can be minimized through the following methods:

- Use hard plastic buckets rather than brown paper bags to deliver chemotherapy drugs to the appropriate department(s). This will reduce waste while providing greater spill and leak protection during transport. Retain partial chemotherapy vials until they expire for potential use in oncology pharmacies.
- Prime and flush chemotherapy IVs with saline prior to dispensing and after administration. This ensures that the patient receives the full dosage, reduces the opportunity for employee exposure and enables IV bags and tubing to be managed as trace chemotherapy waste.

Common color codes for segregation use in health care

Color	May mean:
Red	Biohazardous, biomedical, infectious, regulated medical
Yellow	Chemotherapy — trace or debris
Blue	Chemotherapy (trace or debris), linen
Purple, magenta, yellow	Radioactive
Dark blue	Hazardous waste
White	Hazardous waste or municipal solid waste

Medical waste

Hospitals discard anywhere from 5 percent to 50 percent of all waste into the medical (often called red bag) waste stream. If more than 15 percent of your waste is red bag, there is an opportunity to reduce this waste and, in turn, your costs.

What you can do

Properly segregate your waste

Take a look into a few of your red bags. You may find coffee cups, packaging, IV bags and even food. First, work with your infection control committee to establish up-to-date definitions of regulated medical waste. Then, to ensure proper segregation:

1. Standardize all waste receptacles, their placement and signage.
2. Place the red bag in a central location.
3. Use open containers for clean waste and closed containers for red bag.
4. Place a sign above and on all containers explaining acceptable wastes.
5. Avoid placement of red bag waste containers under sinks and in hallways.
6. Always place a nonregulated waste container beside the regulated one.
7. Remove red bag containers from patient rooms, except those patients in isolation or under precautions.
8. Check state regulations for isolation waste requirements and ensure that this waste is being separated correctly.
9. Pay special attention to high waste-generating areas like the operating room, laboratories and dialysis. Suction canisters are reportedly responsible for as much as 40 percent of the infectious waste generated in the O.R. Consider fluid management systems that offer mechanical disposal of waste and disinfection of the canisters, while reducing the risk of exposing staff to pathogens. Mechanical disposal and disinfection saves transportation costs, removes the canisters from the regulated waste stream and meets OSHA's standards for controls.
10. Monitor work areas regularly.
11. Consider tracking generation rates, employee training and rounding through Environment of Care's Hazardous Material and Waste Management Plan.

Train, train and retrain

Include training for all employees. Train each employee several times, using employee orientation programs, annual updates and as-needed while doing rounds. Remember that each individual learns differently, so use different training methods, including lots of physical examples of wastes, during training.

Ensure that your training schedule catches all staff, including casuals. Adapt your training to the needs of different departments (emergency versus intensive care unit) and different stakeholders (physicians working in the operating room versus nurses doing emergency intake).

Consider department-specific policies

Department-specific policies work in areas such as laboratories. Waste management and environmental teams can work with these areas to identify appropriate methods of segregation for pipettes, syringes, loops and other items.

Gather the various items and make decisions based on regional regulations and local input. Then write down what you decide, and create posters with pictures that indicate each type of waste. Ensure that all new lab personnel are trained in proper waste segregation and do annual refresher training with all lab staff.

Suggested waste management products

SteriCycle (SV1246), Daniels (SV1243), and NOVAPLUS/ Clean Harbors (SV1241) offers pharmacy waste management services for members through Vizient. Members interested in accessing services with SteriCycle (SV1246) should complete a letter of participation, which can be found through their local SteriCycle representative, and the applicable service agreement with Stericycle.

What is medical waste?

Medical waste is referred to differently across the country — biohazardous or regulated medical waste (RMW), infectious waste or simply red bag waste. This waste includes infectious or potentially infectious pathological waste, sharps, blood, body fluids, waste cultures and stocks. Management of this waste varies regionally, so ensure that you know your state regulations.

What are suction canisters?

Suction canisters are single-use devices used in hospital operating rooms. As much as 40 percent of the infectious waste generated from operating rooms is suction canister waste. Because a solidifying material is usually added to the canister, there is an additional exposure risk for the employee who adds the solidifier.

There are new alternatives available that allow hospitals to discharge their suction canister wastes from certain medical procedures to a sanitary sewer system — not all states allow this. These new, canister-free vacuum systems have many benefits. They reduce the amount of waste discarded and the amount of infectious waste that needs to ship off-site. They also reduce the risk of employee exposure to infectious waste.

Reducing hazardous cleaners, pesticides and other chemicals

Hospital cleaners, pesticides and other chemicals can contain hazardous constituents. Sustainable products protect staff, patients and the public from potentially hazardous substances, reduce disposal costs and decrease the use of water and products.

What you can do

Choose environmentally friendly alternatives

Many environmentally friendly products are now available and well-tested for performance. Ask the Vizient Environmentally Preferred Sourcing team for a list of contracted products, ask colleagues in other hospitals for recommendations or use third-party certified products (see following list).

Work with infection control

It is crucial to include infection control team members in the product review process, because they need to be comfortable with the efficacy and the environmental attributes of the new products chosen. Before making a decision to purchase a green product:

- Ask the vendor for evidence of its products' environmental performance, including any certification, labeling or documented research findings that demonstrate the product's environmental preferability.
- Ask about the availability of training for staff and about the provision of educational materials such as posters.
- Ask if other purchasing entities, such as states or cities with environmental purchasing programs, select the products.
- Ask if other health care facilities or group purchasing organizaiton members are satisfied with the products available through agreements. Enlist your vendor to speak with senior management if needed to explain the benefits of the new products in terms of worker safety, patient and staff satisfaction and environmental improvements.

Include vendor or product evaluation criteria

Establish criteria that will ensure environmentally preferable products take preference. Sample language for a cleaning contract could include:

> "Environmentally preferable means that a product or service has a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.
>
> The following five characteristics, if present to some verifiable or demonstrable degree in an offered cleaning product, will, assuming that the product otherwise meets efficacy requirements, receive more favorable consideration under the "Environmental Preferability component of the evaluation:
>
> - Minimizes skin, eye and respiratory irritation
> - Exhibits partial or complete biodegradability
> - Avoids unnecessary additives including dyes and fragrances
> - Is packaged in recyclable or reusable containers
> - Meets or exceeds the relevant Green Seal standards in whole or in part"

Use third-party certification

An efficient way for your facility to adopt environmental specifications without doing extensive product research is to use third-party environmental certification as a product screen. Before specifying a certification or label, investigate the standard it is based on and verify that it meets your organization's goals.

If the certification standards do not fully reflect your organization's concern, request certification plus specify additional criteria of your own. Hospitals can use third-party certifying organizations by:

- Adopting the detailed specifications these organizations develop for their certification standards as contract specification language
- Restricting purchases in specific product categories to products that are certified by a specific organization
- Working with a third-party certifier to validate the claims of a vendor

A list of a variety of third-party certifiers can be found in the resources section.

Address specific criteria

Determine what performance and environmental criteria — no carcinogens, no mercury, low volatile organic compounds — your facility wants to specifically require (and has the means to evaluate). Then use contract-specific language to address chemical content, packaging, shipping, and end-of-life collection and recycling services for your chemicals. Ensure that:

- Your specifications are objective and verifiable. Don't simply state "reduced environmental impact" or "green." Choose specific attributes, such as "biodegradable," "mercury-free" or "nonhazardous under RCRA."
- Communicate specifications clearly. For instance, if you require a "mercury-free" chemical reagent, specify the acceptable level (i.e., down to 1 ppb) and indicate how the mercury content must be verified.

Otherwise vendors may interpret this as no mercury in excess of 1 percent (the level that triggers SDS disclosure).

Create a prohibited chemicals list

Start with specific chemicals — mercury, phthalates — or classes of such chemicals, such as heavy metals, carcinogens and reproductive toxins. Through your purchasing initiatives, develop a product-level template that requires disclosure of these substances for all products offered on a contract bid.

Keep in mind that there may be categories of product where you will want to allow certain products with some amounts of your restricted chemicals — for example mercury-containing fluorescent bulbs, which create huge energy savings and have no mercury-free alternatives yet, or formaldehyde for lab uses, even though you may prohibit it in building materials.

You may wish to establish a specific exemption for such obvious products, but also to develop an exemption procedure that allows staff to purchase specific chemicals for necessary uses with case-by-case permission.

Consider operational changes

In addition to determining desired product criteria, consider physical plant and process changes as well. Here are ideas:

- Employ preventive strategies such as removing absorbent materials, carpet for example, from areas where moisture is present to address mold contamination; or reduce soiling and wear on floor surfaces by installing walk-off mats at all entrances, which can reduce the need for cleaning with harsh chemicals.

- Eliminate spray application in favor of pour-and-wipe products where possible, which can significantly reduce airborne contamination inside a facility. Reduce the frequency of floor-finish buffing — which can aerosolize finish polymers and cause respiratory problems — and using buffing equipment with active vacuum attachments, can minimize patient and staff exposures.
- Use new tools, such as microfiber mops or rags and automated equipment like autoscrubbers and extraction machines, which can significantly reduce chemical and water usage as well as improve the ergonomics of floor cleaning. Perhaps start with a pilot project for these new tools.

Reduce the use of pesticides

Pesticides are substances used to control pests such as insects, rodents, birds, unwanted plants and fungi. Because the effect of a pesticide is to kill living organisms, they all pose risks to our health and the environment. Due to their toxicity, multiple laws including the Federal Insect, Fungicide and Rodenticide Act and the RCRA regulate the storage, mixing, use and disposal of pesticides. Note that states are allowed to impose regulations on pesticides beyond these obligations, which may be more stringent.

Sustainable landscaping practices minimize costs and reduce pesticide use:

- Use compost as a soil amendment to reduce the need for chemical fertilizers or pesticides
- Incorporate native plants, which generally require less fertilizers and pesticides
- Spot treat whenever possible
- Set mower blades higher to fight weeds and diseases without pesticides
- Grasscycle — leave grass clippings in place (don't bag) when mowing
- Produce less green waste by limiting fertilizer and water use
- Use mulch around trees and in flowering beds as weed prevention
- Purchase only what you need and can use for a specific treatment; return unused excess product to supplier if possible

Implement an integrated pest management program

An integrated pest management program can be simple or sophisticated. It is designed around six basic components:

1. The emphasis is on control, not eradication. Wiping out an entire pest population is often impossible and the attempt both costly and environmentally unsafe. Decide what constitutes acceptable pest levels, and apply controls if those levels are exceeded.
2. Select plant varieties best for local growing conditions, quarantine new plants and remove diseased plants immediately.
3. Regular observation is the cornerstone of integrated pest management. Visual inspection, insect and spore traps, and other measurement methods are used to monitor pest levels.
4. Should pests reach an unacceptable level, first consider mechanical methods as control options. They include simple hand-picking, erecting insect barriers, using traps, vacuuming, and tilliage to disrupt breeding.
5. Natural biological processes are the next step, focusing on beneficial insects that eat target pests. Biological insecticides also fit in this category.
6. Chemical pesticides are generally only used as a last resort and only at specific times in a pest's life cycle.

More about environmental certification and labeling organizations

Environmental certification, labeling or standard setting organizations develop specifications or definitions for environmentally preferable products and in most cases certify products that meet those standards.

Third-party certification provides assurance that a product has been independently tested and found to meet criteria, which verifiably reduces its negative environmental and health impacts. All certifying or labeling organizations provide lists of their certified products; some will work with purchasers to review products and determine if a specific product meets a purchaser's particular criteria.

The Vizient Environmentally Preferred Sourcing (EPS) Program offers members supply and service cost savings through more than 36,000 supplier agreements. EPS suppliers have verified EPS attributes and provide products that can support members' sustainability objectives. This toolkit is a resource to help members create or enhance their sustainability programs.

As the nation's largest member-driven health care performance improvement company, Vizient provides network-powered insights in the critical areas of clinical, operational, and supply chain performance and empowers members to deliver exceptional, cost-effective care.

To learn more, contact us at eps@vizientinc.com.