

OSHA & Worker Safety

Green and Clean

How hospitals can protect patients and workers by using earth-friendly and sustainable products/practices

They say that cleanliness is next to godliness. But there's a devil in the details—namely that proper cleaning of health care facilities (HCFs) comes at a price, not only in terms of product and labor costs but in the effects that harmful cleaning chemicals can have on patients, staff, and visitors.

The truth is as harsh as some of the chemicals used: Certain ingredients in cleaning, sanitizing, and disinfecting products can present health hazards. Such ingredients include those shown in the box at right. Common symptoms that result from working with these and other chemicals are skin rashes, eye and skin burns, coughing and wheezing, asthma, shortness of breath, and headaches or dizziness.

From antimicrobials and pesticides to floor strippers and fragrances, more chemicals are used in health care than in any other sector.¹ What's more, recent data indicate that health care was the industry most frequently recognized among confirmed cases of work-related asthma, with the top causative agents being cleaning products and poor indoor air quality.²

Safety switch

Considering the dangers of cleaning products, it's no surprise that more HCFs today are implementing alternative cleaning products, including sustainable environmental cleaning agents and fragrance-free products. The advantages of buying products that have positive environmental at-

tributes—such as low toxicity, low volatile organic compound (VOC) content, and biodegradability—include the following:

- Lower risk of injury or illness to patients and hospital workers
- Improved indoor air quality
- Reduced water and ambient air pollution
- Reduced packaging waste and transportation energy (when buying cleaners in concentrates)
- Reduced costs³ (in some circumstances)

In addition, HCFs are increasingly turning to equipment that reduces the use of chemicals and aids in safer and more environmentally friendly cleaning practices. These include use of microfiber mops, cloths, and dusters; high-filtration HEPA vacuums; walkoff mats positioned inside and outside entryways; hands-free mops; automated scrubbing machines; and chemical-free cleaning systems. HCFs today can also explore alternatives to pesticides, such as integrated pest management, a process that removes pathways and attractions for vermin to hopefully eliminate the need for chemicals.

Two Joint Commission Environment of Care (EC) standards that reinforce the importance of adopting sustainable products and practices are as follows:

- EC.02.06.01—The hospital must establish and maintain a safe, functional environment. Element of performance (EP) 20 specifies that

Is It Green?

Beware! Products that contain any of the following could cause harm to your patients and staff—and even visitors to your facilities:

- Volatile organic compounds (VOCs)
- Alkylphenol ethoxylates
- Quaternary ammonium chlorides
- Ethylene glycol ethers

areas used by patients must be clean and free of offensive odors.

- EC.02.02.01—The hospital must manage risks related to hazardous materials and waste. EP 5 requires that risks associated with selecting, handling, storing, transporting, using, and disposing of hazardous chemicals must be minimized.

Defining “green”

In HCFs, routine cleaning of rooms, bathrooms, glass, carpets, floors, walls, equipment, and surfaces is essential. In addition, surface disinfectants are commonly used in clinical areas to kill pathogenic microbes and prevent disease transmission.

“In health care, cleaning has a dual purpose—making surfaces clean and presentable, as well as significantly contributing to infection control,” says

Kathleen Fagan, MD, MPH, medical officer, Office of Occupational Medicine, OSHA, Washington, DC “Green cleaning adopts those two purposes but additionally considers patient, worker, and environmental safety,” Fagan says.

Joel Sigler, manager, National Environmental, Health & Safety with Kaiser Permanente, Rockville, Maryland (headquarters of the Mid-Atlantic States regional office), describes what green cleaning products should *not* do. “A green product should not require any special personal protective equipment to use; cause respiratory irritation or sensitization or skin or eye damage; contain any carcinogens, mutagens, or teratogens; or contribute to smog, damage equipment, or cause harm when put down the drain,” says Sigler. “Furthermore, the packaging should ideally be 100% postconsumer content and reusable.” (See the sidebar at right for other important criteria to consider.)

“The concept of green cleaning should also focus on cleaning practices, not just products,” says Sigler. He offers these examples:

- Use rubber flooring that doesn't require waxing or stripping.
- To reduce chemical exposures, consolidate the number of cleaning products used. “Using a general surface cleaner may be effective for floor and glass cleaning as well as general surfaces, thereby eliminating the need for three separate cleaning products,” says Sigler.

Two case studies

Switching to green products may do more than safeguard your facility's occupants and create less stress on the planet.¹ It can also limit liability and drive a marketplace shift by creating greater demand in the industry. Furthermore, it can lower disposal costs and positively affect

How to Choose a Green Cleaning Product

Before buying sustainable cleaning products, the Environmental Protection Agency (EPA) recommends that you consider these tips*:

- Evaluate performance, price, availability, regulatory requirements, and environmental impact to determine the best overall value.
- Be cautious about marketing claims such as “green,” “eco safe,” and “environmentally friendly.” Ask manufacturers and vendors to clearly and specifically define their green claims.
- Ask manufacturers if they've conducted life cycle studies on their products.
- Look for environmental attributes in the product, such as the following:
 - Minimal presence of or exposure to potentially harmful chemicals, such as corrosive or strongly irritating substances, carcinogens, ozone-depleting compounds, and volatile organic compounds
 - Reduced and/or recyclable packaging and recycled content in packaging
 - Reduced bioconcentration factor and flammability
 - Reduced or no added dyes (except when added for safety), fragrances, or skin irritants
 - Usable in cold water to conserve energy
 - Use of renewable resources

In addition, consider purchasing products† that:

- Carry the EPA's “Design for the Environment” label (see the list of products at <http://www.epa.gov/dfe/pubs/projects/formulat/formpart.htm>).
- Are certified as “green” by third-party independent organizations, such as Green Seal (<http://www.greenseal.org/FindGreenSealProductsandServices.aspx?vid=ViewProductDetail&cid=16>), EcoLogo (<http://www.ecologo.org>), and GreenGuard (<http://greenguard.org>)

* US EPA. Cleaning. Environmentally preferable purchasing. Accessed Oct 25, 2012. <http://www.epa.gov/epp/pubs/products/cleaning.htm>.

† US Environmental Protection Agency. Greening your purchase of cleaning products: A guide for federal purchasers. Accessed Oct 25, 2012. <http://www.epa.gov/epp/pubs/cleaning.htm>.

an organization's bottom line, as evidenced by the following two hospital case studies.

Green cleaning example: Kaiser Permanente. In 2009, Kaiser Permanente, headquartered in Oakland, California, adopted a multi-year environmental stewardship strategy that involved substituting cleaning chemicals with safer alternatives to decrease toxicity exposure at its participating hospitals and facilities. For example, cleaning products containing fragrances that often cause respiratory problems for workers and pa-

tients were replaced with fragrance-free alternatives. Total green cleaner use increased from 23% to 43% of purchase dollars, and because green cleaners are sometimes less expensive, a savings of approximately \$85,000 (9% annually) was realized.³

Green cleaning example: University of California Davis Medical Center. In 1999, the University of California Davis Medical Center in Sacramento, California, changed from using conventional loop mops to microfiber

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mops, which are lighter, more absorbent, and better able to penetrate surface pores. This resulted in a 60% lifetime cost savings for mops, 95% reduction in chemical costs associated with mopping tasks, and 20% labor savings per day.⁴

Establishing a green cleaning program

Beth Eckl, environmental purchasing expert in Reston, Virginia, recommends that HCFs implement a well-planned green cleaning policy and program after a careful due diligence period.

“This requires reviewing the latest products, equipment, and procedures and then deciding on the best practices and products that fit within your policy’s design,” says Eckl. “You also need proper buy-in and support from infection control and environmental services staff as well as top management, and you need to educate staff on your chosen procedures.”

It’s also crucial to garner feedback from employees when structuring a green cleaning program. “Health care facilities should follow a systems-based approach to green cleaning whereby management and workers collaborate on creating an action plan—and not just think that switching to green products alone will solve the problem,” Fagan says. “Everything needs to be scrutinized, and key questions need to be addressed. How is the product going to be used and ap-

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plied? Is there adequate ventilation? When should cleaners be used versus disinfectants, or both?”

In addition, an HCF should perform an infection control risk assessment to pinpoint areas within the facility that necessitate routine cleaning as opposed to spaces that demand both cleaning and disinfection.

Before hunting for a new chemical supplier and shifting to a different product line, talk with your current chemical supply company and ask for trials of new products, recommends the Massachusetts Nurses Association.²

Finally, be aware that, while OSHA doesn’t have any rules specific to green cleaning, the agency does require HCFs to provide safe working conditions, proper training for employees using cleaning chemicals, labels on hazardous materials, and safety data sheets (for-

Best Practices

The Massachusetts Nurses Association suggests that health care facilities take the following steps to reduce exposure to cleaning chemicals*:

- Evaluate products currently used by reviewing the adverse health and environmental effects noted on the safety data sheets (SDSs). Begin to use alternative products that have less potential for adverse health effects and environmental pollution.
- Include a person with expertise in occupational health and safety on any committee or group that selects these products.
- Provide hazard communication training that meets the following requirements of the OSHA Hazard Communication Standard 1910.1200(h)(3), “Training and Education”:
 - Contains at least (ii) the physical and health hazards of the chemicals in the work area and (iii) the measures for workers to use to protect themselves from these hazards
 - Follows the requirements of OSHA Standard 1910.1200(g)(8), and SDS, are readily available
- Develop and communicate methods for reporting any symptoms that workers and patients experience when cleaning products are in use. Provide medical evaluation and treatment as necessary.

* Massachusetts Nurses Association. Exposure to environmental cleaning chemicals in health-care settings. Accessed Oct 26, 2012. <http://www.massnurses.org/nursing-resources/position-statements/env-cleaning-chem>.

merly known as material safety data sheets). 

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4. US EPA. Using microfiber mops in hospitals. *Environmental Best Practices for Health Care Facilities*. Washington, DC: EPA, 2002.

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