

September 2011

Maryland H2E News Roundup



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What is Your Toxic Footprint?

Do you know what's in the products and supply chain at your facility?

1. Know and identify chemicals
2. Determine chemical hazards
3. Reduce hazards/continuous improvement
4. Implement and update chemical policies

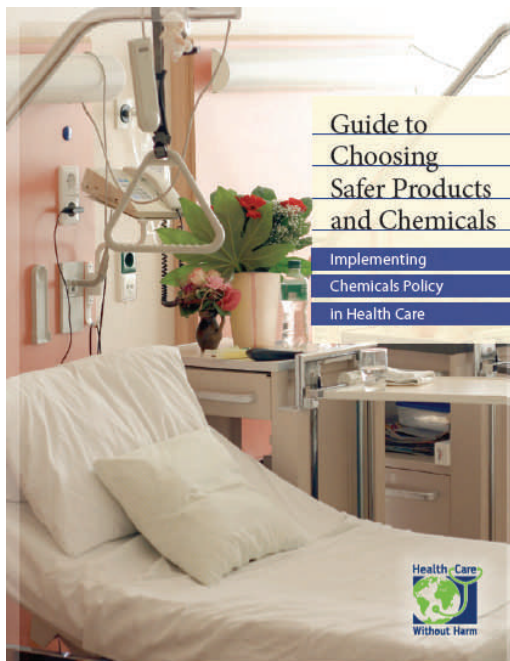


Many products used in a hospital contain a surprising number of toxic chemicals. This includes cleaning agents, bug sprays, patient meals, medical equipment, furniture, and more. Synthetic chemicals can help eliminate pathogens and pests, soften the plastic of IV bags, and render mattresses flame retardant. Yet the same chemicals can be reproductive hazards, endocrine disruptors, carcinogens, asthmagens, allergens, and more, all causing the unintended consequence of adverse health effects.

As health care providers, we have the moral obligation to understand the issues surrounding the use of toxics in health care and we must act with imperative to develop and implement programs and policies that minimize patient, staff, and community exposures. We must reduce the purchase, use, and disposal of toxic chemicals that induce harm. The foundation of our business — First, Do No Harm — is the driving force in creating hospitals as true places of health and healing.

This special edition of the **MD H2E News Round Up** is geared towards raising awareness on the presence of toxic chemicals used within hospital walls and highlights practices for using less toxic, yet equally effective, products. This is not meant to be a comprehensive guide for eliminating toxic chemicals in health care but serves as a primer to assist those who want to learn more. Click on the links associated with each article inside this newsletter and begin the journey to a less toxic environment. As MD H2E, we strive to include examples from Maryland hospitals as well as touch on national trends as appropriate.

Implementing Chemicals Policy in Health Care



Every person is exposed to a complex mixture of hundreds of exogenous chemicals every day. Industrial societies are experiencing an increase in diseases and conditions such as cancers, birth defects, and infertility that are linked, to a varying extent, with environmental exposures.

So begins the introduction to Health Care Without Harm's *Guide to Choosing Safer Products and Chemicals: Implementing Chemicals Policy in Health Care*.

This comprehensive guide to product selection and chemicals policy includes a rationale and explanation for why hospitals should address this topic, how to develop policies, and implementation strategies. The guide states that even as the evidence linking chemical exposures to adverse health effects and environmental consequences continues to grow, laws and regulations lag behind. The burden is on the health care industry to identify products that are made with chemicals that are safe to use, but with so many thousands of chemicals on the market that have had limited test-

ing, it's impossible to judge each chemical on a case-by-case basis. Thus the need for a comprehensive chemicals policy. [Click here to read more.](#)

Environmentally Preferable Purchasing with Kaiser Permanente: The Sustainability Scorecard

SKU-level questions:	Desired Answer
NICU Product?	
PICU Product?	
Latex-free?	Yes
Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls, Polybrominated diphenyl ether, <1,000ppm or Cadmium <100ppm	Yes
Polyvinyl Chloride (PVC)-free?	Yes
Diethylhexyl phthalate (DEHP) - free?	Yes
California Prop 65 Chemical <threshold or warning level	Yes
If yes to (A), List Chemical Abstracts Service (CAS) #'s (separated by ",")	(fewest listed)
Product - Contain more than 10% post-consumer recycled content?	Yes
Primary Packaging - Contain more than 5% post-consumer recycled content?	Yes
Secondary Packaging - Contain more than 30% post-consumer recycled content?	Yes
Product - Designed for multi-use (i.e. not a single-use device) ?	Yes
Manufacturer's product code for environmentally preferable alt.	

In an effort to ensure the environmental safety and sustainability of the products and medical equipment it buys, Kaiser Permanente developed an environmentally preferable purchasing scorecard.

The Sustainability Scorecard requires suppliers and vendors to provide environmental data of their wares.

This enables Kaiser Permanente to assess the sustainability of each item it purchases for its facilities and it encourages suppliers to offer more green products.

In an article with *The Street*, Kaiser Permanente's vice president and chief procurement officer, Dean Edwards, said at the time, "Kaiser Permanente recognizes we can improve health today and for the future by taking a close look at the products we purchase. With Kaiser Permanente's size and influence, the work we're doing is continuing to move the industry."

Kaiser Permanente is able to give a large push to the industry, considering it has purchasing power of more than \$1 billion each year.

To learn more about Environmentally Preferable Purchasing, go to:
http://www.gghc.org/documents/TechBriefs/GGHC_TechBrief_EPP.pdf

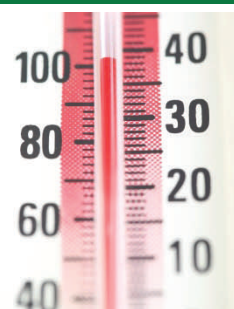
Mercury Audits at Three Maryland Hospitals

Mercury, a potent neurotoxin that affects the brain, spinal cord, kidneys, and liver, is commonly found in hospitals in blood pressure devices and gastroenterology instruments, as well as in thermometers, batteries, and cleaning solutions, all of which have mercury-free alternatives that are safe and cost-effective. Typically, clinical devices account for 80-90% of the mercury in a health care facility.

In 2007, Maryland Hospitals for a Healthy Environment, with funding from the Maryland Department of the Environment, undertook mercury audits at three Maryland hospitals.

Mercury was found in a variety of locations in the three different hospitals, and staff knowledge about devices containing mercury ranged from general to excellent.

Hospital 1 had already made impressive progress with eliminating mercury in clinical areas, with most of the chemical element present in esophageal dilators. All thermometers but one were digital. Mercury in Hospital 2 was found mostly in sphygmomanometers, along with dental mercury amalgams in the dental clinic. Hospital 3 (a psychiatric institute) proved to have the least amount of mercury of the three. All three facilities had mercury in fluorescent bulbs, which can't be totally eliminated, but can be properly recycled. All three used low-mercury bulbs. Six months after the initial audit, all three hospitals had started or made plans to switch to mercury-free products, with staff successfully educated.



For any hospital addressing mercury elimination, the audit contains seven actions for taking the next steps:

- 1. Develop a mercury management policy**
- 2. Develop a purchasing policy**
- 3. Prepare a budget for the removal and disposal of the mercury containing devices**
- 4. Develop and implement training tools**
- 5. Partner with the physician base**
- 6. Continue to expand recycling efforts**
- 7. Publish success stories!**

[Maryland Hospitals for a Healthy Environment Mercury Audit](#) (begins on page 4 of the report)

Practice Greenhealth Launches New Initiative

Practice Greenhealth has announced the formation of the Greening the Supply Chain™ Initiative. The Initiative extends Practice Greenhealth's leadership role in supporting hospitals by engaging businesses in meeting the emerging demand for more environmentally preferable purchasing (EPP) practices for products within health care facilities, GPOs and in the business marketplace. These businesses are coming together with those in the health care sector to address all those elements that are essential to producing environmentally preferable products and processes. The comprehensive Greening the Supply Chain™ Initiative is being launched in order to provide a common set of tools for purchasers, suppliers and manufacturers to ensure that environmentally preferable products are indeed available, cost competitive, of comparable quality, and generate a sector wide market shift in the direction of sound EPP practices.



The Greening the Supply Chain™ Initiative encompasses:

- Practice Greenhealth's Environmentally Preferable Purchasing Supporter Program, a collaborative effort between GPOs and Practice Greenhealth to bring greater environmental consciousness to the purchasing process;
- Development of Standardized Environmental Disclosure Questions for Medical Products, based on the Kaiser Permanente Sustainability Scorecard, to create an industry standard for evaluating the sustainability of medical products;
- Establishment of the EPP Business Leadership Coalition, designed to provide broader, shared involvement on the part of hospitals, GPOs and businesses;
- Practice Greenhealth's EPP Partnership Program, a collaborative relationship between Practice Greenhealth and hospitals that mirrors the work of the Supporter Program;
- Expansion of education and training opportunities for those involved in the EPP process.

To learn more about the Greening the Supply Chain™ initiative visit:

www.practicegreenhealth.org/gsc

Hazardous Drugs: NIOSH Impact Sheet

By David LaHoda, posted on August 11, 2011:

NIOSH has added [hazardous drugs in healthcare](#) to its Impact Sheet web page this month. While modern medicine has created powerful drugs to treat a wide range of conditions, healthcare workers who handle these medications are being exposed and may demonstrate adverse health effects, according the impact sheet.

The [hazardous drugs in healthcare](#) impact sheet also provides the following key points:

- Exposure to hazardous drugs may occur through inhalation, skin absorption, ingestion, or injection.
- Adverse health effects from hazardous drug exposure may include harm to internal organs, damage to the reproductive system, genetic damage, birth defects, and cancer.
- About 8 million U.S. healthcare workers are potentially exposed to hazardous drugs, including pharmacy and nursing personnel, physicians, environmental services workers, workers in research laboratories, veterinary care workers, and shipping and receiving personnel.

Check out the Handling Hazardous Drugs Safely Checklist on the [OSHA Healthcare Advisor Tools page](#).

<http://blogs.hcpro.com/osha/2011/08/niosh-posts-impact-sheet-on-hazardous-drugs-in-healthcare/>

University of Maryland Medical Center Hazardous Drug Policy and Program

Determine Steps



- Define list of medications to be treated as federally-regulated and non-federally regulated hazardous
- Determine how to dispose of and store hazardous medications in the pharmacy
- Determine labeling and dispensing of medications as hazardous
- Develop policy and procedure
- Educate staff

Collection



- Each nursing unit and pharmacy satellite has a black bucket placed in a central location
 - Medication Room
 - Dirty Utility Room
- Lined with a 4ml liner
- Safety Rounds
 - If full, a call is placed to "One Call"
- Picked up by Safety Specialist and bucket relined
- Items sorted



Policy Education - Purpose



- To **protect** employees and the environment from the hazards presented by the **use or handling** of hazardous medications
- All medications are designed to have a physiological effect, therefore are potentially harmful when used or handled inappropriately
- Examples of medications:
 - Chemotherapy Agents
 - Antiviral Drugs
 - Hormones
 - Antibiotics



Hospitals across the country are researching and implementing proper handling and disposal practices for hazardous pharmaceutical drugs and waste. Failure to comply with hazardous waste regulations under the Resource Conservation and Recovery Act could result in a fine of tens of thousands of dollars.

Last year, the University of Maryland Medical Center (UMMC) implemented a hazardous pharmaceutical waste management program for the **Safe Handling of and Disposal of Hazardous Medications**, which won the hospital an [MD H2E Trailblazer award](#). The slides on the left are from UMMC's Trailblazer presentation in February 2011, showing part of the hospital's process in developing and implementing its policy. [See the entire presentation here.](#)

In a [video](#) about the program posted to UMMC's website, Sustainability Manager Denise Choiniere says:

"It was a long process, which was a partnership between pharmacy nursing and our safety department. And we looked at our current practices: how best do we capture these medications? While that was being developed, we also looked at how people are handling the medications, which made this policy a little more involved. **It wasn't only disposal, it was handling**; we really wanted to make sure there was a component in there that employees are protecting themselves when exposed to these medications [such as chemotherapies]."

Protecting the employees includes special bins and labeling, as well as vigorous education about proper protection to wear while handling the medications.

Questions or comments, please contact:

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www.mdh2e.org

Green Cleaners

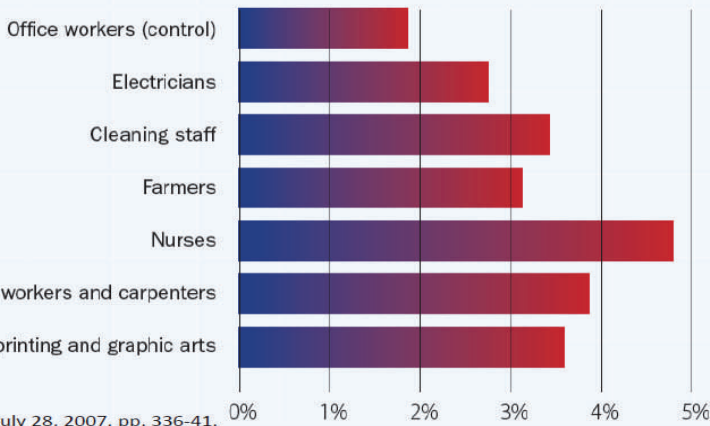
To keep a hospital clean – that is, to minimize patient and staff exposure to viruses, bacteria, infectious agents, and more – may require the use of toxic chemicals. Some chemicals in routine cleaning products are known to cause cancer, damage the central nervous system, cause reproductive disorders, skin irritation, and more. According to a [guide published by Health Care Without Harm](#), cleaning chemicals chlorine bleach and ethanalamine (ETA) are known to trigger asthma (see pg. 8 of this newsletter for a list of asthmagens in the health care setting). [Alkylphenol ethoxylate surfactants](#) may disrupt the hormonal system.



Floor strippers and waxes commonly have high Volatile Organic Compound (VOC) levels, phthalates, and heavy metals. According to [The H2E 10 Step Guide to Green Cleaning Implementation](#) an estimated 35% of conventional cleaning products can cause blindness, severe skin damage or damage to organs through the skin. A review of Washington State workers compensation data indicated that the average reported injury costs companies \$624 in lost time and medical expenses.

Nurses Rate of Work-Related Asthma

ASTHMA CASES ACCORDING TO OCCUPATION³



The Lancet, Vol. 370, July 28, 2007, pp. 336-41.

A 2007 study in the [Lancet](#) concluded that nurses had the highest rate of work-related asthma of any field examined in the study. The chart on the left shows that nurses were found to have higher rates of work-related asthma than sawmill workers, printers, and even cleaning staff. [Another study](#) pointed to cleaning chemicals as one probable cause. Because a hospital never closes, nurses are exposed to cleaning chemicals (that might otherwise have been utilized after hours in another occupation). Nurses are also often expected to clean certain surfaces in between patients.

There are many preventative policies and programs a facility can employ to reduce its use of cleaning products. Walk-off mats at entrances lessens the amount of outside contaminants tracked in, microfiber mops enable a sparser application of cleaners, and removing carpet removes the concern of mold and the toxic shampoo (often containing formaldehyde or pesticides) used to clean it.

It is also useful for a facility to identify what its cleaning needs are in each hospital area. For example, a waiting room does not need to be cleaned in the same way as an operating room, while a patient room has its own unique needs and concerns.

How to find reliable green cleaners? Work with your GPO, and consider products that are Green Seal certified. [Click here to learn more about green cleaning products.](#)

Additional resources:

http://www.issa.com/?id=grres_green_cleaning1

<http://www.gghc.org/>

Antibacterial Chemical Raises Safety Issues

A recent New York Times article centered on triclosan, a chemical used in antibacterial soap which has long been under scrutiny for its presence in and possible effects on human health. The Centers for Disease Control and Prevention have found the chemical is present in 75% of people; the Food and Drug Administration is currently studying triclosan's safety. Studies have shown that triclosan is a hormone disrupter and may also cause bacteria to become resistant to antibiotics, a finding many manufacturers dispute. Consumer groups are advocating for the banning of triclosan in antiseptic products. In 2005, an FDA advisory panel stated that soap made with triclosan isn't any more effective at preventing illness than regular soap and water, a claim that soap producers dispute.

According to the [Environmental Working Group](#), antibacterial agents are cause for concern because bacteria may become resistant over time. [Studies have also shown](#) that antibacterial soaps can cause dry, cracked skin, especially in health professionals who frequently wash their hands. Dry skin means the depletion of the lipid barrier, allowing the detergents to penetrate the skin layers more easily. Dry skin also depletes the natural skin bacteria, or flora, allowing harmful bacteria to colonize.

Environmental Working Group's survey on nurses' health concluded that using a mild soap, followed by an alcohol gel to kill germs may be an effective alternative, with less of a drying effect. [Other studies](#) suggest that such a regimen may increase health care professionals' compliance with hand washing policies.

Calvert Memorial Hospital is one Maryland hospital that uses triclosan-free hand soap from GoJo, a company with a sustainability commitment. In the fall of last year, an employee read about triclosan and notified Infection Control. IC researched it, and along with the Director of Housekeeping contacted distributors that could recommend and supply an alternative hand soap.

[Click here to read the New York Times article on triclosan.](#)

Sterilants and Disinfectants

What kind of an effect will a product specifically formulated to destroy (microscopic) life have on human health? That's a question to consider when using sterilants and disinfectants, which are considered necessary to keep hospital instruments clean and to prevent patients and staff from coming in contact with viruses, bacteria, and spores.

The most common sterilant used in health care is ethylene oxide (EtO), which is used to sterilize instruments. EtO is a known [human carcinogen](#), asthmagen, and irritant that requires special handling. The Environmental Protection Agency states that ethylene oxide may pose reproductive hazards and damage to the central nervous system, liver, and kidneys. In one [Nurses' Health survey](#), nurses with frequent, long-term exposure to EtO reported 45% higher rates of asthma than nurses with less contact.

Glutaraldehyde is the most ubiquitous disinfectant, used for instruments, bottles, and scopes. It has been shown to trigger asthma, skin irritations, nosebleeds, nausea and [more](#). Glutaraldehyde can be expensive, as well, as its use requires special ventilation hoods and other equipment and training.

There are safer choices for both. An autoclave can sterilize instruments with water heated to above boiling temperatures in a pressurized chamber. Hydrogen peroxide is a safer disinfectant, with fewer chemical byproducts. Peracetic acid- and orthopahaldehyde-based high-level disinfectant solutions can be used as well.

Safer alternatives are used at **Greater Baltimore Medical Center**. The hospital does not use EtO; instead of glutaraldehyde, GBMC uses Cidex OPA for high level disinfection.

Although some medical devices list EtO or glutaraldehyde as the only allowable sterilant or disinfectant, there are alternatives for many uses of these chemicals. Always work with infection control in making the right choice of sterilants and disinfectants at your facility.

<http://www.epa.gov/region9/waste/p2/projects/hospital/glutareth.pdf>

http://www.noharm.org/lib/downloads/cleaners/10_Reasons_Glutaraldehyde.pdf

http://www.noharm.org/us_canada/issues/toxins/cleaners_pesticides/cleaners.php



Green Cleaning at Anne Arundel Medical Center

Glove Up to Wipe Down

From AAMC's Patient Safety Newsletter, March 2011:



How long does a surface wiped with a germicidal wipe need to remain wet to disinfect? 2 minutes!

Proper disinfection of our equipment and surfaces is an important practice to protect our patients from the spread of infection. It is the **responsibility of every health care worker** to know how to use the germicidal wipes in order to effectively clean and disinfect surfaces. The time ("contact time") the surfaces and equipment need to remain wet after being wiped with germicidal wipes is **2 minutes**. Non-critical patient care equipment (e.g., wheelchairs, stretchers, stethoscopes, blood pressure cuffs, etc.) requires cleaning and disinfection **between each patient**. Germicidal wipes (purple top) are used on most non-critical equipment, while bleach-based wipes are used for equipment used in Contact C (e.g., *Clostridium difficile*, rotavirus, etc.) isolation rooms.

Disinfectant sprays (e.g., Virex) are used mainly by Environmental Services and should be avoided by most healthcare workers/ volunteers, as the wet contact time required for disinfection is 10 minutes plus air drying – too long to wait in most circumstances.

The wipes are soaked in strong as well as effective chemicals, so anyone using them should wear gloves. Just remember to:

"Glove Up to Wipe Down"

an initiative begun by the Green Team.

Seven years ago, Anne Arundel Medical Center decided to change its cleaning practices. According to Charlotte Wallace, pediatric nurse and green team chair at Anne Arundel Medical Center, "A lot of it has to do with the long shifts. The ER gets cleaned 10-12 times in a single shift. And often, staff will take it upon themselves to wipe down the bed and surfaces when the cleaning staff can't get access between patients." Which is why **Anne Arundel Medical Center switched to Green Seal-certified cleaners back in 2004. Says Wallace, "My personal theory is that the least toxic product you can use is safest for you and the environment...It just made sense. It didn't cost much more and was better for everyone involved."**



The transition was smooth for the hospital, which had consulted with those responsible for infection control, and the green cleaners have proved equally successful at cleaning as the more chemically-laden ones. The Medical Center didn't stop there, though. "Chemicals can absorb through your skin, which is harmful to the medical staff, so we also started a 'Glove up to wipe down' campaign to educate the staff about wearing gloves while using Sani-Wipes," says Wallace. "In 2009, we also began to use [microfiber mops](#) everywhere except the OR."

Study Examines Chemotherapy Exposures to Nurses

By David LaHoda On August 23, 2011

A study warns that a lack of safety measures with the highly toxic drugs used in chemotherapy is placing nurses at risk.

Researchers from the University of Michigan Comprehensive Cancer Center report that **nearly 17% of nurses in outpatient chemotherapy infusion centers have had accidental exposure to the drugs they administer to patients.**

"Any unintentional exposure to the skin or eyes could be just as dangerous as a needlestick," says lead study author Christopher Friese, R.N., Ph.D., assistant professor at the University of Michigan School of Nursing.

While there are policies and regulations requiring a robust response to needlesticks involving bloodborne pathogens, there are no mandatory standards with chemotherapy exposure explains Friese.

[The study](#), which appeared in *BMJ Quality and Safety* found that facilities with more staff and resources report fewer exposures. Another procedure requiring two or more nurses to verify chemotherapy orders was also associated with a lower exposure reports.



<http://blogs.hcpro.com/osha/2011/08/study-examines-chemotherapy-exposures-to-nurses/>

DEHP-Free Tubing

DEHP is a plastic softener used in IV bags, tubing, catheters, and more. It is also a toxic chemical, known to be a [potential male reproductive toxicant](#). The problem with using [DEHP in IV materials](#) is that the [chemical leaches out](#) when the plastic comes in contact with liquid. Because of the increased neonatal risks, the NICU is one hospital area to seriously consider DEHP-free products.

University of Maryland Medical Center (UMMC) has taken steps to reduce this risk. Over a year ago, the hospital switched to DEHP-free tubing, which connects the IV bag to the patient. According to Denise Choiniere, Sustainability Manager, "The FDA has put out a warning – people should limit their exposure to DEHP, and the most vulnerable are neonate males, pregnant women, and pre-pubescent males. We saved money and have seen no difference in the efficiency of the product." For more information about DEHP in medical devices, see this [FDA assessment](#).

MD H2E audited NICUs at three Maryland hospitals to identify products containing the chemical and to develop a plan to remove those products. Products containing DEHP that were the highest priority for elimination were ones that hold blood, breast milk, and nutritional formulas, including blood and food bags, tubing, and breast pumps. The audit concluded with five steps to eliminating DEHP in the hospital setting.

- 1. Determine DEHP content in all products as possible.**
- 2. Work with vendors and group purchasing organizations (GPOs) to request DEHP-free formulations.**
- 3. Educate staff and health professionals about DEHP-free products and associated health risks.**
- 4. Work with purchasing team to identify and demand DEHP-free products.**
- 5. Develop DEHP-free purchasing policy for the NICU.**

[Click here to read more.](#)

Potential Asthma Triggers and Alternatives

Below is a list of various chemical categories that trigger asthma and how to reduce exposure.

Asthma risks posed by chemicals used in healthcare environments

Chemical	Use in hospitals	Asthmagen or asthma trigger?	How to reduce exposure	Safer Alternatives
Cleaners, disinfectants/sterilizers	Cleaning products, equipment sterilizers	Asthmagen and asthma trigger	Use microfiber mops, refine cleaning practices, isolate chemicals	<i>Products free of:</i> <ul style="list-style-type: none"> Ethylene oxide Formaldehyde Glutaraldehyde Green Seal approved products
Natural rubber latex	Gloves, catheters, and other hospital products	Asthmagen, possibly asthma trigger	Use non-latex or powder-free latex gloves	Non-latex or powder-free latex gloves
Pesticides	Indoor and outdoor areas	Asthmagen	Integrated Pest Management programs	IPM* - using non-toxic pest control methods & products
Volatile Organic Compounds (VOCs)	Formaldehyde: building materials, paper products, tissue fixatives	Asthmagen, possibly asthma trigger	Increase general ventilation to diffuse VOC off-gassing	Low- or no-VOC products Formaldehyde-free products
Baking flour	Kitchens and bakeries	Asthmagen and asthma trigger	Mechanical flour sprinklers, good ventilation systems, quick cleanup of spills with wet mop	Pre-combined dry ingredients, low-dust flour, ready-to-bake dough
Acrylics: methyl methacrylate and cyanoacrylate	Acrylic resins used in medical and dental polymers and cement	Asthmagen and asthma trigger	Isolate, enclose, and automate processes that use acrylic compounds, improve ventilation systems	<i>Products free of:</i> <ul style="list-style-type: none"> Methyl methacrylate Cyanoacrylate Acrylic compounds
Perfumes/fragrances	Scented cleaners, fragrance-emitting devices, people wearing perfume	Asthma trigger	Institute fragrance-free policies	Fragrance-free products
Phthalates (plasticizers)	Widespread: plastics, medical devices	Undetermined	Improve ventilation for moisture control to decrease emissions	Phthalate-free products, (both medical & office products)
Environmental Tobacco Smoke (ETS)	Individuals who smoke	Asthmagen and asthma trigger	Maintain a smoke-free facility and grounds	
Biologic allergens	Mold/fungus, indoor pollen, dust/dust mites, pet hair, cockroaches	Asthmagen and asthma trigger	Good housekeeping and building maintenance practices, moisture control	
Pharmaceuticals	Antibiotics, laxatives, antihypertensives, antituberculosics, H2 blockers	Asthmagen	Hoppers, ventilation hoods, personal protective equipment, respirators	Clinical substitutions if possible

* IPM – Integrated Pest Management is a systematic approach to managing pests provides a comprehensive framework for assessing pest problems, assessing the sources of food, water and nesting that support growth and reproduction of pests, determining the non- and least-toxic techniques and products to be employed, and evaluating success and/or need for additional considerations.

Compiled by Dr. Barbara Sattler, RN DrPH, FAAN (sattler@son.umaryland.edu) and Laura Evans, MPH (levan004@umaryland.edu)
Environmental Health Education Center: University of Maryland School of Nursing

Sinai Hospital Leaves Vinyl, VOCs, Formaldehyde Behind

From the [Green Healthcare Construction Guidance Statement](#), put together by the Green Building Committee of the American Society for Healthcare Engineering:

Growing awareness about the relationship between indoor environmental quality -- materials, lighting, thermal comfort -- and human health and productivity has catalyzed substantial research to support healthier buildings. Eliminating materials identified as allergens, mutagens, carcinogens and endocrine disruptors, while providing access to daylight and comfortable indoor climate, are fundamental green building elements. Engage in a design process that balances the objectives of a well daylit, comfortable, energy efficient and non-toxic indoor environment and results in improved productivity and patient outcomes.

Toxic chemicals like vinyl, volatile organic compounds, and formaldehyde are frequently used to make building materials and furnishings. The health impacts of these chemicals and their location in hospitals are worth a closer examination.

Vinyl, specifically, polyvinyl chloride (PVC), is the most common plastic used in medical devices and packaging and can be found on the floors and walls of many hospitals. And yet it's also a human carcinogen. Phthalates, which leach out of plastic and disrupt the endocrine system, are used to soften the material. The chlorine in PVC creates dioxins in the incinerator; dioxins are highly toxic chemical compounds known to pollute the environment and are associated with cancer.

Volatile Organic Compounds (VOCs) are chemicals that can be found in paints, cleaning supplies, furnishings and more. Depending on the material they're used in, VOCs can be released in the form of a gas. VOCs are associated with some cancers, headaches, allergic reactions, dizziness, memory impairment and a host of other symptoms. As VOCs are more concentrated indoors, it's important to have increased ventilation where products that release VOC gasses are used.

Formaldehyde is often found in pressed wood products, paints, and other building materials. Formaldehyde can trigger asthma attacks and may cause cancer. It's also known to cause irritation of the eye, nose, and throat, coughing, and allergic reactions.

Since vinyl, VOCs, and formaldehyde are commonly used in building materials, adhesives, and sealants, as well as furnishings in hospitals, to the detriment of patients and staff who are chronically exposed, it is important to find less toxic alternatives.

In 2010, Sinai Hospital of Baltimore opened the Alfred I. Coplan Pediatric Hematology Oncology Outpatient Center, where young, vulnerable patients are treated. **Sinai Hospital used many vinyl-free and low VOC materials in creating the visually appealing clinic.** The picture on the right demonstrates how a hospital, with a little creative thinking, can reduce the risks to its patients' health.

For more:

- <http://www.ewg.org/reports/greening>
- <http://www.epa.gov/iaq/voc.html>
- <http://www.epa.gov/iaq/formalde.html>



Sinai Hospital of Baltimore Pediatric Hematology / Oncology Clinic

- Roller Shades – Vinyl-free
- Painting – Zero VOC paint
- Millwork – Formaldehyde-free substrates
- Wall Protection – Vinyl-free
- Sealants / Adhesives – Low VOC
- Floor Base – Vinyl-free rubber
- Flooring – Vinyl-free flooring and Low VOC adhesives (Lineoleum flooring)



Integrated Pest Management



Springfield Hospital Center used to spray chemical pesticides to keep any and all bugs out of campus buildings, a practice still standard at many Maryland hospitals and often considered vital to protecting patient health. That has all changed; nary a pesticide has been sprayed on the campus in three years: not in the kitchen, in patient rooms, or even on the grass.

SHC is part of the Maryland Department of Health and Mental Hygiene hospital system and in 2006 Maryland Pesticide Network (MPN) selected the facility to be part of the [Integrated Pest Management in Health Care Facilities Project](#), a project initiated with Beyond Pesticides and in collaboration with MD H2E. After a walk-through of the facility, MPN determined that ants, roaches, and groundhogs were a problem. Pests in a hospital are more than an inconvenience; roaches, rodents, and birds can carry diseases, and rodents chew on wires, causing infrastructure damage. While pesticides help keep invaders at bay, they also have the potential to harm humans. Studies have shown [fetuses](#), [children](#), [the elderly](#) and the sick are [more vulnerable](#) to the threat of such toxic chemicals.

When hospital staff and outside pest contractors are properly educated and understand that pesticides should only be used as a last resort, then IPM practices are easy to implement. Pests require water, food and shelter to survive. If there's water pooling, or food left out, or cardboard boxes piled up against a wall, then pests are not far behind. Regular monitoring and site inspections by employees as well as vendors, along with education of patients and staff, can make a big difference. More examples of the measures Springfield Hospital Center has taken that can be done at any hospital include:

Exclusion

- Properly close doors and add door sweeps
- Seal everything! Fixtures, electrical panels, bumper guards, and anything mounted on a wall (paper towel dispensers, framed pictures, etc) should be sealed with caulk. Give a pest nowhere to run and nowhere to hide.

Harborage

- Shelving units should be 6" off the ground for easy cleaning and inspection.
- Get rid of cardboard! Roaches will eat it and lay eggs in it.



Cleaning

- Regularly fill drains with clean water to prevent cockroaches from coming up the sewer system.
- Clean recycling bins and trash carts on a regular basis.
- Keep walls, floors, corners, baseboards, ice machines and drains clean.

Land Care

- Plant pest-resistant grasses
- Fertilize with compost and aerate



Food without Pesticides at Union Hospital of Cecil County

Chemicals that kill insects, weeds, rodents, fungi, and bacteria, also allow higher crop yields for farmers. However, pesticides used for farming pollute the air, water, and the soil, and humans. The ingestion of produce grown with pesticides has been [linked to learning and motor delays in children](#). A link has also

been made between pesticide exposure and an increased risk of [various cancers](#) and some studies show impairments to the [immune system](#).

Union Hospital of Cecil County has acted to reduce this risk and has been purchasing produce from Priapi Gardens since 2009. Priapi Gardens is certified organic and is located in Cecil County – meaning Union Hospital gets fresh, local, sustainable produce during the growing season! "We have been able to develop a relationship with [Priapi Gardens], which is 15 minutes from the hospital," said Holly Emmons, Food Service Manager at Union Hospital, in a [Health Care Without Harm webinar](#) from 2010. "As a result of our relationship, they've been able to extend their growing season."

Union Hospital gets arugula, boc choy, strawberries, raspberries, and more. The local organic produce goes into patient meals and is served in the coffee shop and cafeteria. It's also sold in Union's Wednesday local produce market. And the unsold produce at the end of the market day gets used in production. The hospital also composts on campus, reducing the need for chemical fertilizers for landscaping.

In 2010, 9% of all of Union Hospital's produce was local and organic. In 2011, local organic produce is expected to make up 14% of the purchased total!

<http://practicegreenhealth.org/topics/sustainable-food>

http://www.noharm.org/us_canada/issues/food/resources.php

Pesticides as a Last Resort

Pesticide use in hospitals is the focus of a May article from **The Joint Commission's *Environment of Care News***. The following is excerpted from that article. <http://www.jcrinc.com>

The Honeymoon Is Over for Pesticides

The pest control contracts with which customers are most familiar are scheduled maintenance contracts: A vendor comes to spray on a predetermined weekly, monthly, quarterly, or annual basis, regardless of whether pests or pest-related damage have been spotted on the grounds or within a facility. But these pesticide-dependent practices don't effectively eliminate pests and pest-related problems.



A recent Maryland Health Care Facilities Pest Management Survey found a general reliance on toxic pesticides at Maryland hospitals and elder care facilities. Of the 25 pesticides identified by survey participants as being used at facilities, 11 are linked to cancer, 12 are associated with neurological effects, 10 are associated with reproductive effects, and 10 cause liver or kidney damage.

Integrated Pest Management Defined

Although there is no standard accepted definition of IPM, the IPM methodology generally establishes a sustainable approach to managing pests. IPM combines biological, cultural, physical, and—as a last resort—chemical tools in a way that minimizes health and environmental risk. IPM pest management techniques commonly include the following:

- *Exclusion techniques*—Sealing cracks and crevices with caulk or steel wool; repairing door sweeps and leaking pipes
- *Mechanical techniques*—Using traps and vacuuming
- *Sanitation techniques*—Washing all recycle bins, trash cans, carts, kitchens, and floor drain covers

"All nonchemical strategies such as behavior change and trash management must be exhausted before introducing pesticides as the last resort of an IPM program," says Jay Feldman, executive director, Beyond Pesticides.

Educate and Implement

IPM education for staff should cover information about entryway controls, attraction, and harborage. Entryways such as loading docks and doorways without effective air curtains, door sweeps, or light traps can attract pests. Removing harborage opportunities means eliminating comfortable pest living spaces and involves addressing details about mop storage and dirty-water management. Simple adjustments can eliminate pests without the use of chemicals (for example, changing trash receptacles or trash receptacle locations).

"A large portion of pest management is people management," Plisko says. "The number of food sources for pests in a health care facility is huge. We must teach and reteach staff about how to clean up after themselves." Denise Choiniere, R.N., M.S., sustainability manager at UMMC, incorporates sustainability across hospital operations and clinical practice, evaluating patient, employee, and environmental safety. "An effective IPM program has to benefit every department," Choiniere says. "IPM theory means finding and eliminating the source." UMMC employees are educated through the facility's volunteer green team, which is a subcommittee of the environment of care team, and represents 20 departments.

Concludes Feldman, "The health care commitment to 'first, do no harm' can play out in the pest management arena as we avoid using toxic chemicals that are really not needed when a good pest prevention program is in place."

Resources for Integrated Pest Management

Not sure where to start in implementing integrated pest management (IPM)? The Integrated Pest Management in Health Care Facilities Project (coordinated by Maryland Pesticide Network and Beyond Pesticides) has created a Model IPM Policy, Model IPM Plan, Model Landscape Policy, and Sample IPM Contract. To access these model policies, visit <http://www.beyondpesticides.org/hospitals/policies.htm>.

"Our Toxic Vanity" from Maryland Nurse News and Journal



Barbara Sattler, RN, DrPH, FAAN

Program Director, Maryland Hospitals for a Healthy Environment

Recently published in the Maryland Nurse News and Journal

http://www.nursingald.com/Uploaded/NewsletterFiles/MD8_11.pdf

Two days after Karen, a Nurse Midwife from the Pacific Northwest, attended an environmental health conference at the University of Washington, she went to have a routine mammogram. As she was asked to remove any remnants of deodorant from her underarms—a routine procedure that removes any possible chemicals that might distort the mammography results—she remembered one of the conference speakers who spoke about the wide range of potentially toxic chemicals that are in so many of our personal care products. She went on to have her procedure and returned home, where she looked up the chemical ingredient in the wipes that she used, as well as the name brand deodorant that was provided for patients to put on after they are finished with their mammograms.

To Karen's dismay, the wipes contained several chemicals that are associated with health risks, including the risk for cancer. She was quite sure that the mammography center staff had no idea about the risks associated with the ingredients in their products. Most of us assume that if a product is available for sale, especially a product that we'll be using on our bodies, it must be safe and have somehow been approved by some government body. But Karen had learned differently at her recent conference and in the letter that she wrote to the head of the mammography center she explained that personal care products, including any cosmetics, are not regulated by the US government. They can put practically anything in those products—and they often do. She suggested that the center might want to evaluate the products they were using and select alternatives that were safer and did not cause the same health risks.

Karen told the center director that it was easy to look up products by their names, check the ingredients, AND find out about the potential health risks. All of this can be found on the www.ewg.org/skindeep/ website that has information on over 65,000 personal care products.

The center director got back to Karen immediately and thanked her for bringing this concern to their attention. The center director also said that they had used the database and found safer alternatives which they were in the process of purchasing. This is a story with a happy ending. But how many women (and men and children) in the US are using products without knowing about the potential health risks? Practically all of us.

Congress is currently considering a bill that will change all that. It's called the Safe Cosmetics Act of 2011. While each of us could look up our cosmetics and shampoos and see what hazards they might pose and find alternatives, wouldn't it be better if the really bad chemicals were just banned and that health risks get listed on the container? The Safe Cosmetics Act is a piece of legislation that EVERY nurse should be supporting.

For more information about the Safe Cosmetics Act, go to: www.safecosmetics.org. You'll find a wonderful video called "The Story of Cosmetics." Definitely share this site with your colleagues. And also go to the website for the Alliance of Nurses for Healthy Environments where you can specifically engage in supporting the Act as a Registered Nurse: <http://envirn.org/pg/pages/view/14782/safe-cosmetics>

Author: Barbara Sattler, RN, DrPH, FAAN, Professor and Director of the Environmental Health Education Center, University of Maryland School of Nursing and Board member of the Alliance of Nurses for Healthy Environments. www.enviRN.org Dr. Sattler also chairs the new Environmental Health Committee of the MNA.

Dr. Sattler is the founder and Program Director of MD H2E.

Did you Know? Halogenated Anesthetics

According to the [Canadian Centre for Pollution Prevention](#):

1. The global warming potential of **halogenated anesthetics** is up to 2,000 times greater than carbon dioxide (CO₂).
2. The anesthetic gas emissions from 1100 hospitals across Canada per year are estimated to be over 1.1 million tons of CO₂ equivalent.
3. Many scavenging systems vent into the atmosphere.



A Closer Look at Kaiser Permanente:

Kaiser Permanente has implemented many groundbreaking programs and initiatives over the years.

Take a look at two policies that any hospital could gain some inspiration from:

Kaiser Permanente's
[Chemicals Policy](#)

Kaiser Permanente's
[Environmentally Preferable Purchasing Policy](#)

What is Maryland H2E?

Maryland H2E is a technical assistance and networking initiative that promotes environmental sustainability in healthcare. Participants include hospitals, clinics, nursing homes, and other ancillary health care providers in MD.

Our staff now includes:

- Joan Plisko, PhD, Technical Director, plisko@son.umaryland.edu, 410-706-2107
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Practice Greenhealth Webinars



September 21, 2 pm (Eastern)

Green Operations Series: Improving Processes, Increasing Efficiency and Reducing Waste: The LEAN Model Applied in Healthcare

September 28, 2 pm (Eastern)

Green Design and Construction Series: Sustainable Renovation of Existing Buildings: Case Studies

[Click here to Register and Purchase Webinars.](#)

Access to Practice Greenhealth webinars is a fee-based service, and is one of many member benefits. You can learn more about the fees and benefits of membership by going to the website. See: <http://www.practicegreenhealth.org/community/>