sustain

Health issue 2013 - Fall

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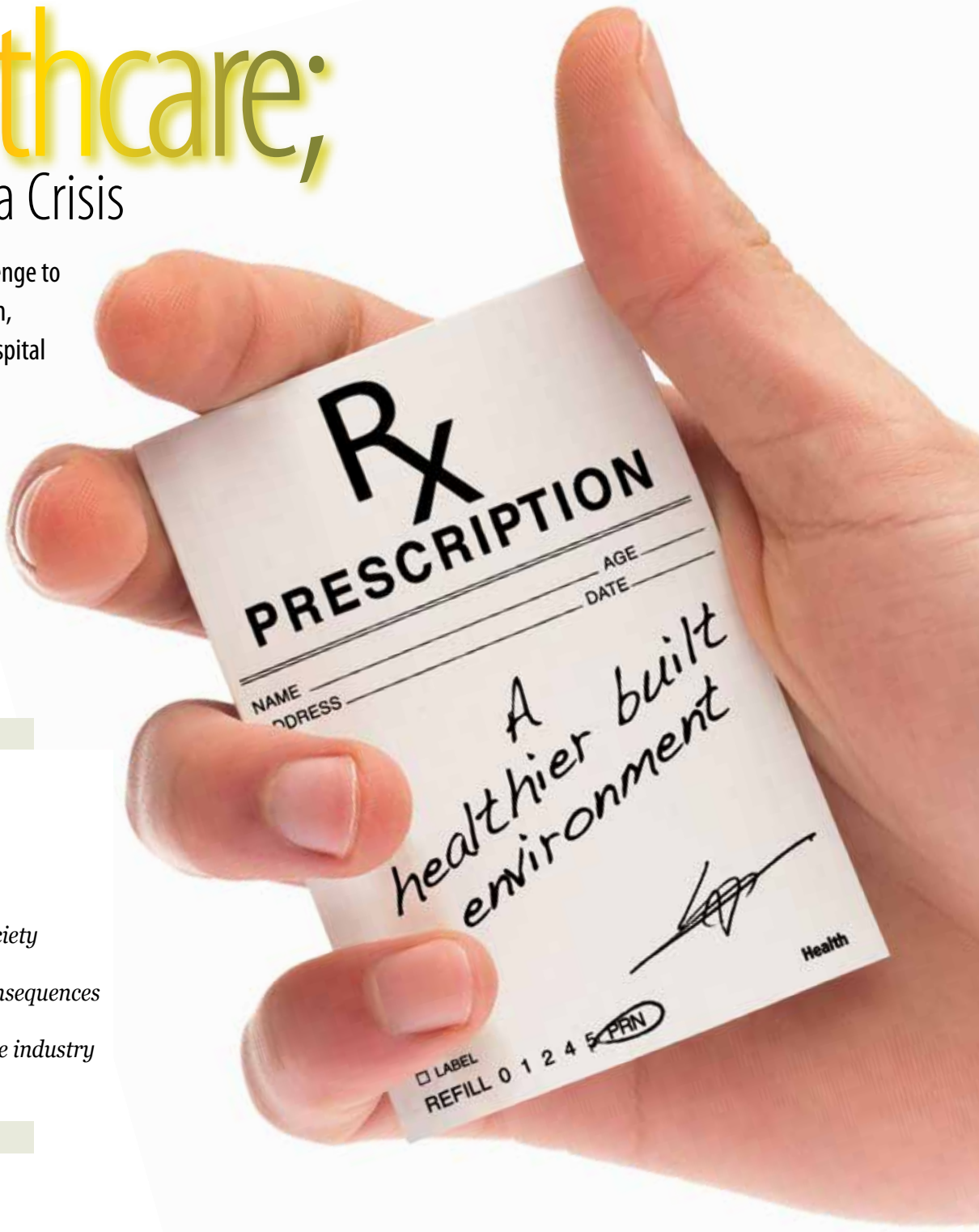
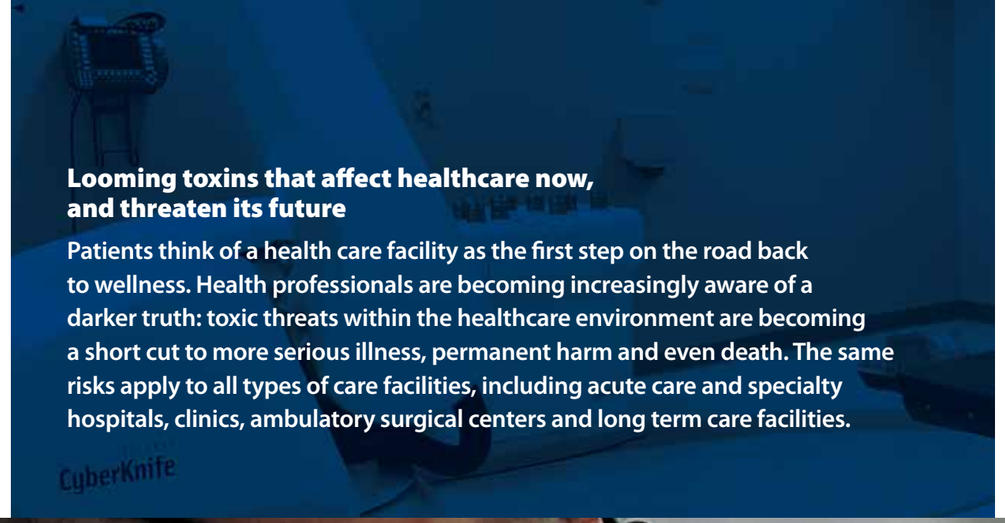
creating better environments

healthcare;
Cure for a Crisis

The coming challenge to our nation's health, starting at the hospital doorstep





Looming toxins that affect healthcare now, and threaten its future

Patients think of a health care facility as the first step on the road back to wellness. Health professionals are becoming increasingly aware of a darker truth: toxic threats within the healthcare environment are becoming a short cut to more serious illness, permanent harm and even death. The same risks apply to all types of care facilities, including acute care and specialty hospitals, clinics, ambulatory surgical centers and long term care facilities.

Today: deadly infections. Hospital acquired infections (HAI's) are among the most common causes of accidental death in the United States. One in twenty patients will contract a HAI sometime during a hospital stay. Four in every hundred will die...more than the number of Americans killed in car accidents, fires and drowning combined.

Tomorrow: toxic workplaces. In addition to enduring the use of aggressive disinfectants that are commonly used to fight HAIs, health care professionals are forced to function in an indoor environment filled with toxic chemicals that are bound to impact patients and caregivers alike. The danger is imminent...so much so that the European Union put a set of restrictive new rules on the use of biocides in place in 2012.[1]

Coming soon: a chronic epidemic. A growing wave of chronic diseases are already hitting hospitals, clinics and care centers nationwide, caused by known chemical contaminants in indoor environments that largely go unidentified by designers, building owners and maintenance professionals.[2,3]

Dying for a Cure

Hospital acquired infections (HAI's) are among the most common causes of accidental death in the United States.

In response to these serious concerns, health care professionals worldwide are becoming increasingly focused on creating environments that fulfill the fundamental tenet at the heart of every physician's Hippocratic Oath: *Primum Non Nocere* – first, do no harm.

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The Second Sting: Pesticides/Biocides

While it's tempting to turn to products, fabrics and flooring treated with antimicrobial agents that prevent bacterial growth, this solution creates more problems than it solves. Unfortunately the chemicals used to make these products anti-microbial are commonly classified as pesticides/biocides.

SuperBug

Breeding ground

Powerful new antibacterial compounds are developed to fight bacteria, which mutate to resist them.

The SuperBug Stings Twice

Healthcare infections, and the cure that creates new diseases

Healthcare professionals already know about SuperBugs. They are painfully aware of new strains of SuperBug bacteria that are free to run wild in hospitals and long term care settings, thanks to their immunity to standard disinfectants.

The Superbugs won't be crawling away anytime soon, due to a situation akin to a microscopic nuclear arms race. Powerful new antibacterial compounds are developed to fight bacteria, which mutate to resist them. Still newer disinfectants are then created, causing the bacteria to mutate again and escalate the warfare further. In addition to the toxicity this adds to the healthcare environment, the skyrocketing cost of infection control is an escalating burden on already overtaxed health care budgets. Research recently released by JAMA Internal Medicine reported that HAIs cost $9.8 billion every year. This report has received an enormous amount of attention in an era where health care cost savings are constantly in the news.

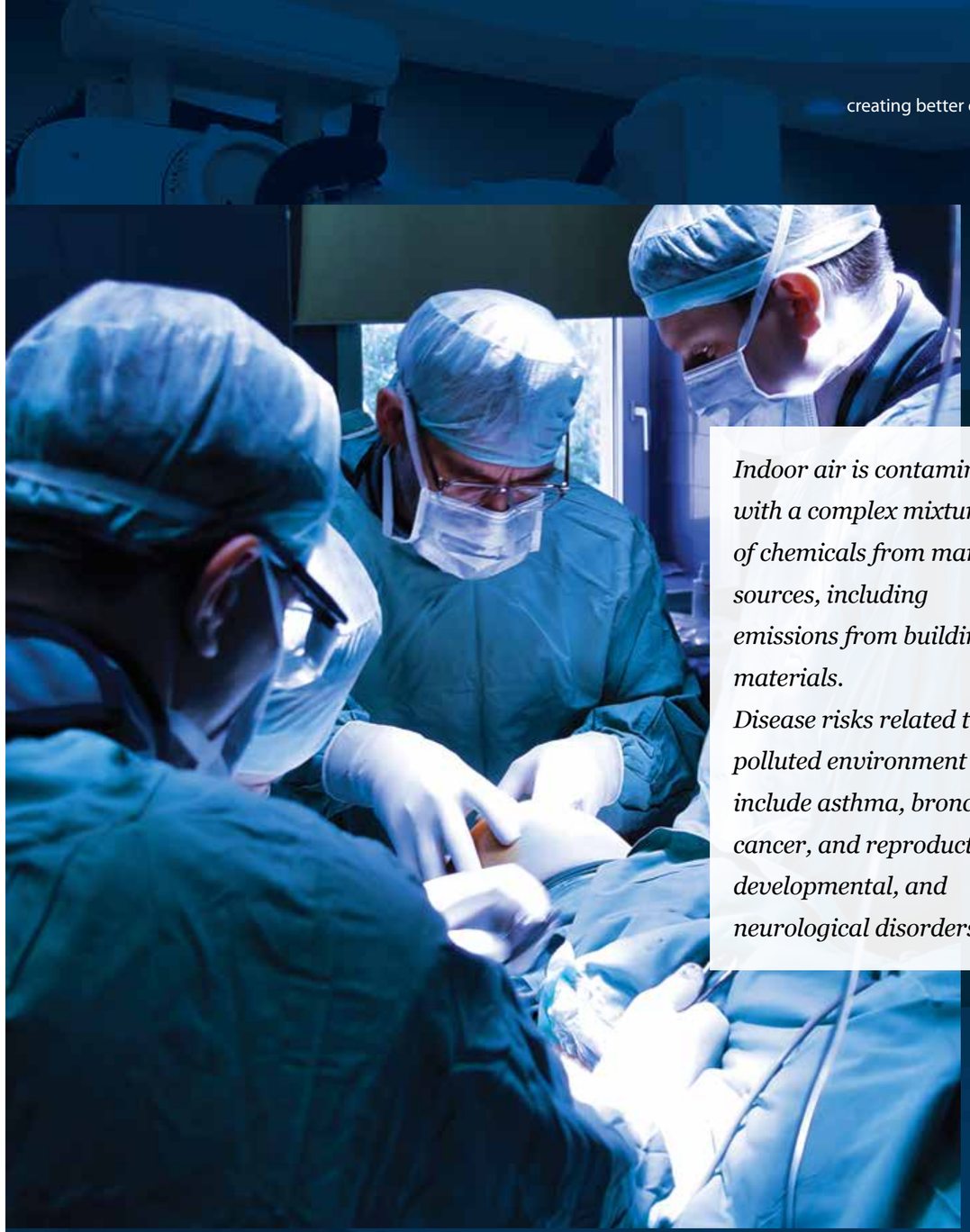
New hazards, plus perennial perils

First, the good news. Healthcare workers are beginning to make progress against MRSA and C. difficile, the two best known resistant bacteria. Government data from Public Health England reported that better control of MRSA and C. difficile led to a nationwide decrease in the prevalence of HAIs from 8.2% in 2006 to 6.4% in 2011.

The bad news comes on two fronts. The most threatening is a new wave of resistant bacteria now emerging, including Carbapenem-Resistant Enterobacteriaceae (CRE) and multidrug resistant Acinetobacter. The new bacteria combine a high mortality rate with resistance to nearly all contemporary antibiotics. Paradoxically, infection control professionals are also seeing a rise in the incidence of hospital-based infection from more common bacteria, from coliforms like salmonella and E. coli to treatment-resistant strains of tuberculosis.

A half century of experience with the environmental impact of pesticides teaches us that indiscriminate and/or excessive pesticide use can threaten more than just pests. Because of the bio-accumulative nature of pesticides, scientists are investigating the causal links between pesticides and the increased incidence of several types of diseases, including:

- Rapid growth in the incidence of asthma and other respiratory diseases
- A sudden increase in allergies and chemical sensitivities
- The proliferation of other chronic health consequences, including cancer, birth defects, neurological and reproductive disorders



Indoor air is contaminated with a complex mixture of chemicals from many sources, including emissions from building materials.
Disease risks related to this polluted environment can include asthma, bronchitis, cancer, and reproductive, developmental, and neurological disorders.

Antimicrobial

Chemically or Naturally?

IPM kills SuperBugs dead

The federal Environmental Protection Agency (EPA) recommends Integrated Pest Management (IPM) to fight the SuperBug scourge. The IPM approach balances the need for effective control of hazards with a more global concern for the healthiness of everyone impacted, from patients and caregivers to beneficial microbes and bacteria.

Many products that tout themselves as antimicrobial are actual impregnated with chemical pesticides.

Three key steps are commonly part of an IPM program:

1. Prevention rather than poisoning	2. A focus on natural alternatives	3. Setting an action threshold
The EPA's approach focuses on investing time and effort to minimize risk, rather than reacting to preventable threats after they arise. The goal is to avoid surfaces that promote bacterial growth, to disinfect surfaces more frequently with milder cleaners, and to encourage activities (like hand washing and cough etiquette) that reduce the likelihood of transmitting infection.	Many products that tout themselves as antimicrobial are actually impregnated with chemical pesticides or biocides that can jeopardize the health of a vulnerable healthcare population. The use of natural materials (like Marmoleum flooring, which naturally inhibits bacterial growth without additives) can achieve the same result without exposing patients and healthcare givers to the risks of pesticides and their bio-accumulative toxicity.	It is virtually impossible to totally eliminate bio-based risks, so the wiser strategy is to set an acceptable level of sanitation and maintain it consistently. This allows facility managers to sustain a healthful environment without expending vast resources to achieve a marginally negligible improvement.

A Chicago Tribune undercover investigation[4] found that nearly three-quarters of deadly hospital acquired infections were preventable. Statistics like these naturally spur us to action. We have learned, however, that we need to make sure our natural impulse to act doesn't lead to an unnaturally harsh response as a result.

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Caregivers in a Chemical Society

The long-term hazards in healthcare interiors are becoming a curse to caregivers.

While patients may be the focus of a healthcare environment, doctors, nurses, and other medical professionals are equally essential. Surprisingly, very little has been done to protect U.S. health professionals from exposure to hazardous chemicals in their indoor environment.

State parties to the Stockholm Convention as of May 2012

The creation of a "chemical society" has been a long term concern of governments worldwide. In 1995, the United Nations called for global action to remove persistent organic pollutants (POPs) from our environment. The worldwide Stockholm Convention created an international treaty aiming to eliminate POPs from production and use. Unfortunately, due to the strength of the chemical industry lobbying of U.S. lawmakers, the United States is one of only seven nations worldwide that has failed to ratify the treaty.

Professionals in the U.S. healthcare industry are becoming increasingly concerned about the lack of control over chemical exposure. In the view of Healthcare Without Harm, a global coalition of hospitals and health care systems (www.noharm.org), "by using excess energy, polluting the environment with phthalates, mercury and other toxic chemicals, and producing waste which is burned rather than recycled, healthcare is ultimately compromising public health and damaging the ability of future generations to meet their needs."

If you are familiar with the smell of a new car interior, you have personally experienced the bodily intake of phthalates.

Fortunately, many organizations like Healthcare Without Harm are cooperating with healthcare providers on improvements to hospital, clinic, specialty care and long term care interior environments. One bright spot is the elimination of PBT phthalates, a class of chemicals used to make polyvinyl (PVC) plastics flexible. Phthalates pose two threats to occupants of healthcare environments:

- **Hospital patients,** especially newborn infants, can be harmed by phthalate exposure in the hospital setting. Studies point to the possibility of retarded sexual development among babies with high blood phthalate levels.[5]
- **Health care workers,** often experience heightened phthalate exposure over many years, leading to the potential for allergies, cancers (especially breast cancer) and endocrine disruption, plus a host of other risks from obesity and diabetes to liver disease and infertility.[6]

The good news about phthalates is that they are no longer an essential part of the health care environment. Some products, including Marmoleum floor coverings, have never contained them.

The products to solve the problem are already in the marketplace. All we need is the willingness of building designers, facility owners and maintenance professionals to put them to use.

Rubber: compounding the problem

Many well-meaning design professionals consider substituting rubber alternatives for PVC-based products, believing rubber to be a more natural product. In truth, the vast majority of rubber products are synthetic products with little to no natural rubber content. While they do not emit phthalates, they contain other Chemicals of Concern in significant amounts. For example, studies done by the European Resilient Flooring Manufacturer's Institute (ERFMI) indicate the overall environmental impact of rubber flooring is substantially worse than that of PVC. If you want to avoid toxic chemicals, combat global warming, ans save scarce resources, PVC is a poor choice. Rubber can be an absolutely disastrous one.[7]

Chemicals of Concern: the EPA hit list

In 2009, the United States Environmental Protection Agency identified four categories of chemicals that pose the greatest threat to human health and environmental harm:

- **Phthalates** found as plasticizers in vinyl floor tile and other PVC plastic products
- **Short-chain chlorinated paraffins** present in paints, coatings, adhesives and caulks
- **Polybrominated diphenyl ethers** (PBDE) used as flame retardants in building materials
- **Perfouorinated chemicals** released by food packaging, pesticides, carpets and personal care products

All four are routinely present in materials common to healthcare interior environments.

A Tsunami of Consequences

A wave of chronic disease coming to inundate tomorrow's caregivers

In the last half of the twentieth century, according to the United Nations' Millennium Ecosystem Assessment, humans have changed their ecosystem more rapidly and extensively than in any comparable time in human history. We are now beginning to see the consequences in skyrocketing rates of chronic disease triggered by this ecological change. The jump is particularly pronounced in diseases that have suspected links to hazardous chemicals present in vinyl flooring, wallpaper and other PVC-based building materials:

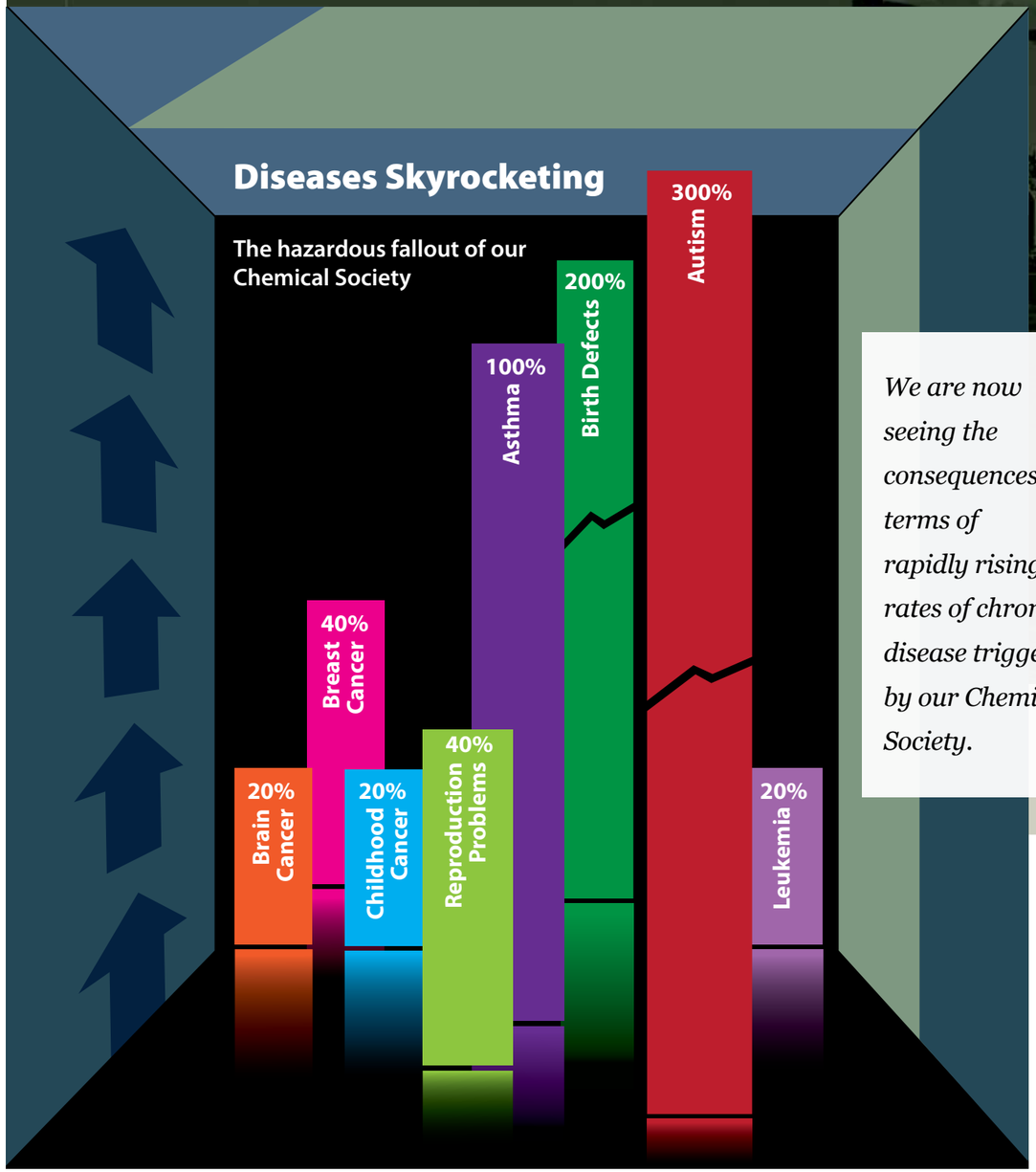
Dangerous Results

The need is becoming more profound as we create indoor environments that are more airtight in the name of energy efficiency.

- Childhood leukemia, brain cancer, and other childhood cancers have increased by more than 20% since 1975.[8]
- Breast cancer rates increased by 40% between 1973 and 1998.[9,10]
- Asthma was twice as common in 1995 as it was in 1980.[11,12]
- 40% more women had difficulty conceiving a child in 2002 than in 1982, with a particularly sharp increase in reproductive difficulty among younger women ages 18–25.[13,14,15]
- The birth of males with undescended testicles has increased 200% between 1970 and 1993.[16]
- Autism spectrum disorders have become ten times more frequent today than in the 1990s.[17,18]

The facts are becoming increasingly difficult to ignore. Levels of bio-accumulative phthalates, dioxins, mercury, lead and cadmium from our built environment must be addressed. The need is becoming more profound as we create indoor environments that are more airtight in the name of energy efficiency. This trend is especially significant in healthcare environments, which are filled with patients whose diseases could be aggravated by environmental toxins

Why wait for these problems to become overwhelming, when today is the best possible day to search for workable and healthy solutions?



We are now seeing the consequences in terms of rapidly rising rates of chronic disease triggered by our Chemical Society.

For further information and references on disease trends, see page 16 of this issue

Marmoleum has a significantly longer service life than vinyl or rubber alternatives. The overall superior performance is good for the health of patients and workers, and even better for the health of overburdened facility budgets.

One big steps forward:

Marmoleum

While the larger problems of bacterial infestation and indoor environmental health may not lend themselves to quick, easy solutions, some steps can create an immediate improvement. A good first move is to replace products that add to the problem with ones that reduce the risk naturally, without the need for toxic chemical additives or expensive installation or maintenance procedures.

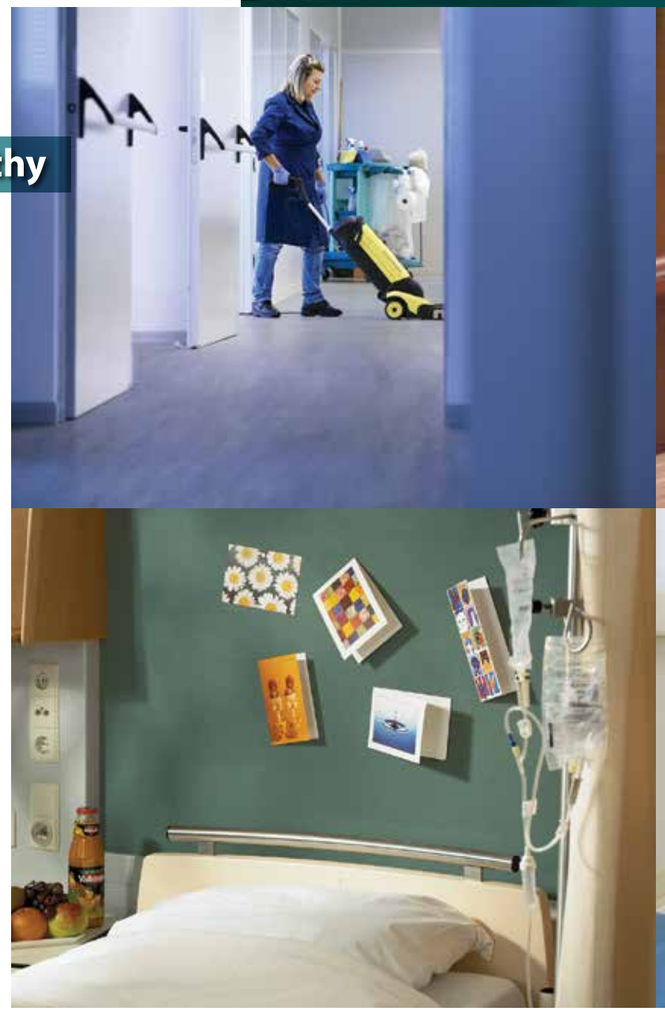
Naturally Healthy

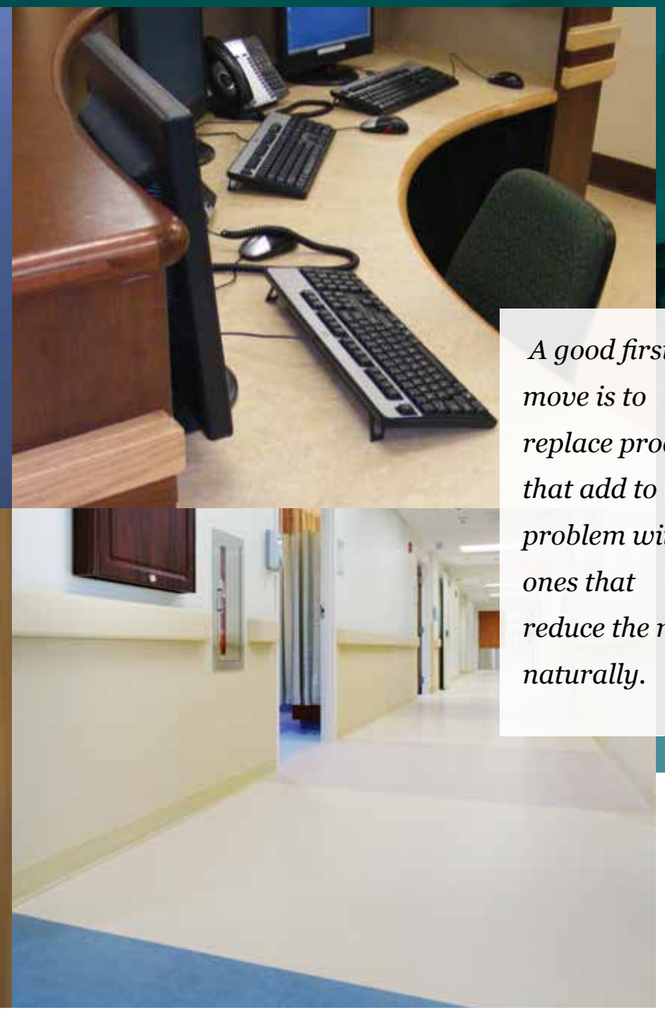
Marmoleum sheet and tile floor coverings are naturally antimicrobial, and contain no pesticides whatsoever:

- **Fights SuperBugs.** The dreaded CRE bacterium won't spread effectively on a Marmoleum surface. Nor will MRSA, C. dif and the other new SuperBugs. The garden variety bacteria that cause stains and odors won't grow on Marmoleum either.
- **Healthier for occupants.** Thanks to a formulation that is free of the environmental toxins emitted by vinyl and rubber flooring, Marmoleum minimizes threats to current human health and the genetic wellbeing of future generations.
- **Biocide free.** Marmoleum is made of natural ingredients that resist microbial growth by their very nature. There's no need for added biocides, so Marmoleum doesn't require a BPR biocide label for use in the European Union.
- **Seam welding not required.** By eliminating the cracks between seams that serve as bacterial breeding grounds in vinyl floors. Marmoleum fights infections while saving time and cost in installation. Marmoleum also outperforms vinyl and rubber in dimensional stability, hygienic protection (when properly installed with net fit seams) and resistance to topical moisture.
- **100% BioBased and biodegradable.** Independent life-cycle assessments (LCA) prove that Marmoleum is far less harmful to the environment than vinyl and rubber.
- **Cost savings.** Marmoleum is occupancy-ready at installation and half as expensive to maintain, freeing maintenance staff to create a cleaner, more hospitable hospital. The 30-year system service life of Marmoleum far outperforms the durability of vinyl or rubber.

Go beyond the floor.
Marmoleum can be used very effectively beyond flooring applications:

- **Furniture Surfaces.** Marmoleum is commonly used as a furniture surface material on nurse's stations, desks, carts, and other permanent surfaces where naturally anti-microbial, anti-static, and easy to clean properties are desired.
- **Wall Protection.** Marmoleum can be used as a cost-effective, highly durable and repairable wall covering or wainscoting for corridors and other areas needing protection.
- **Bulletin Boards.** Forbo Bulletin Board surfacing material has a multitude of applications. Made from the same natural ingredients as Marmoleum, it is ideally suited for use as a notice board or as a functional finish to walls, furniture, door panels and cupboards.





A good first move is to replace products that add to the problem with ones that reduce the risk naturally.

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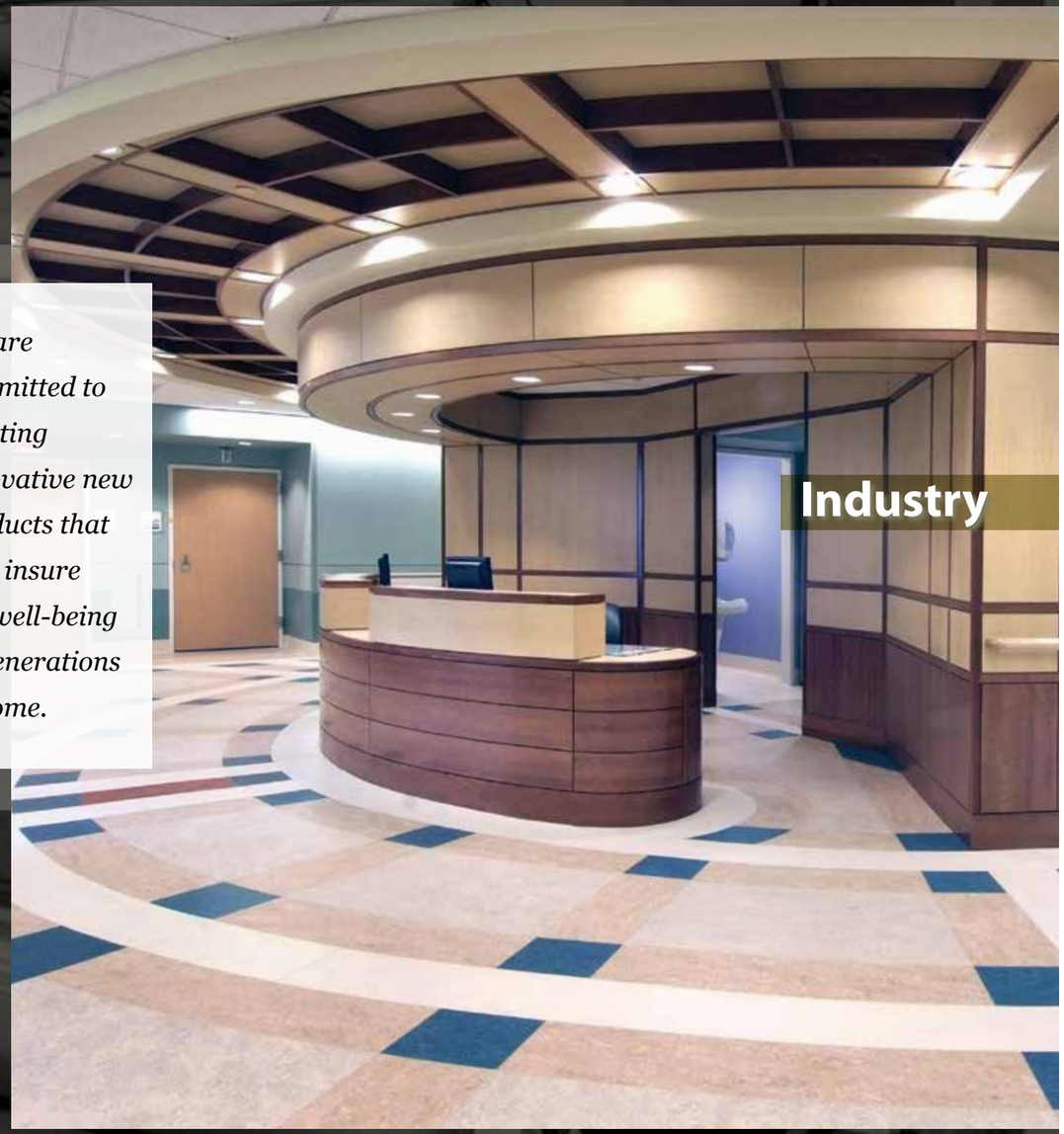

We are committed to creating innovative new products that help insure the well-being of generations to come.

Industry

What to do: an industry perspective:

One manufacturer's viewpoint on the health of future generations

As a company that has served healthcare customers for over a century, we at Forbo can understand and sympathize with the challenges that hospitals, clinics, specialty healthcare providers and long term care facilities face. On one hand, it is perfectly natural to strive to create the healthiest possible environment for both patients and caregivers. At the same time, creating a provision system with excessive costs runs the risk of placing care beyond the reach of deserving people who need it.

There are no simple answers, but there are solutions that work. The challenge is finding them, then gathering the organizational, political and philosophical will power to put them into practice. As a company with an extensive track record for working at the forefront of environmental sustainability and human health, we've had the privilege of working with many organizations who have made it happen. We've watched healthcare providers who have taken the risk and reaped the rewards.

Perspective

Where will the solutions come from? It's difficult to tell the answer, but it's relatively easy to determine the directions that are most likely to be fruitful.

1. Examine the alternatives with a critical eye. Don't be too quick to embrace a new technology as a magic bullet until the long term environmental effects are known. The same caveat applies to some well-established solutions like rubber floor tile, that masquerade as environmentally sustainable when they are actually synthetic products that release lead, mercury and a host of other carcinogens into the environment.

2. Look for the natural payoff. It is important to look at both the short term cost of installation and the long term cost of ownership when considering an environmentally friendly solution. The best option is a material like Marmoleum, which provides both the lowest occupancy-ready cost today, while also delivering the added benefit of low-toxicity, bio-based and biodegradable performance in the future.

3. Don't miss the easy opportunities. Some of the best ideas for improving infection control are also among the simplest. Wash your hands. Make sure staff members wear personal protective equipment and are trained in infection control. Eliminate areas where harmful bacteria are likely to breed, like the cracks that develop between tiles in a vinyl floor.

The people of Forbo certainly have a professional interest in issues of indoor toxicity and infection control. More importantly, our interest as parents, personal caregivers and concerned members of our community is also a deeply personal one. This means we are doubly dedicated to using our industry expertise to keep healthcare decision makers aware of the issues that affect their industry and our nation's health. We are equally committed to creating innovative new products that help insure the well-being of our children and grandchildren for generations to come.

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Forbo Flooring Systems is the global market leader in commercial floor covering solutions. Marmoleum, our flagship brand is the global leader in the linoleum market, while Flotex is the industry leader in the rapidly growing flocked textile market. In addition to linoleum-based products, Forbo develops, manufactures and markets a diversity of high quality vinyl and textile floor coverings, as well as Coral & Nuway entrance system solutions.

Health Product Declaration Collaborative

GSA Schedule Contract GS-03F-0113X

USDA CERTIFIED BIOBASED PRODUCT

SMART certified | Transparent. Quantified. Global.

marmoleum®

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