

***To be published in American School and Hospital in
2009***

The Problem That Won't Go Away: IAQ and Floor and Carpet Care

Today's astute facility managers know that effective cleaning has much more to do with health than appearance. Of course, appearance is still important; however, compared to years past, it is no longer the key focus of cleaning.

This is especially true with regards to indoor air quality (IAQ). Although discussing IAQ issues goes in and out of vogue, the problem persists. Poor IAQ still results in illness, absenteeism and a variety of costs for businesses and institutions -- including lawsuits.

The actual health-related problems caused by poor IAQ vary. Approximately 30 to 40 percent of occupants in a building with IAQ problems experience headaches; unusual fatigue or drowsiness; and dry, itching, or otherwise irritated eyes at least once a week, according to one study.

It is estimated that the cost to the U.S. economy of poor IAQ runs as high as \$168 billion per year. A great deal of this cost is attributed to medical care and worker absenteeism. One report calculates that for every 10 workers, poor IAQ causes six absentee workdays per year. Further:

- The American Lung Association says U.S. adults miss approximately 14.5 million workdays a year due to asthma, which is often triggered by poor IAQ.
- The U.S. Centers for Disease Control and Prevention (CDC) estimate that sinus infection sufferers miss an average of four workdays each year; this is another condition often connected with poor IAQ.
- Indoor air pollution consistently ranks among the top five environmental risks to public health.
- The number of lawsuits concerning indoor air pollution increased dramatically between 1970 and 2001.

Educational facilities are certainly not immune to these concerns. It is estimated that half of our nation's approximately 115,000 schools have problems linked to IAQ.

This is affecting as much as 20 percent of the U.S. population--nearly 55 million people--who spend their days in elementary and secondary schools.

There are a variety of reasons why IAQ continues to be a problem. Paint, cleaning supplies, HVAC systems, off-gassing from carpets and upholstery, and even poor cleaning can result in harmful IAQ. In fact, according to Dr. Michael Berry, a research professor at the University of North Carolina and author of the book *Protecting the Built Environment: Cleaning for Health*, inadequate cleaning is one of the chief contributing factors to poor IAQ.

One area that is often overlooked when it comes to tackling the IAQ problem is right beneath our feet. Keeping carpeting and entrance matting clean--and Green--can be one of the most significant steps a facility manager can take in reducing IAQ problems.

Matting and IAQ

“Along with more effective cleaning, the use of environmentally preferable cleaning products can also significantly help improve IAQ,” says Christopher Tricozzi, Vice President of Sales and Marketing for Crown Mats and

Matting, the oldest matting company in the U.S. “This is because they have few, if any, of the volatile organic compounds [VOCs] and other ingredients that can trigger respiratory and other [health] problems.”

However, while Green products are obviously key to any Green cleaning program, many people are surprised to learn that another goal of Green cleaning is to use no cleaning products at all whenever possible. One of the ways facility managers can achieve this goal when it comes to floorcare is through the use of appropriate entrance matting.

As much as 85 percent of all soil entering a building is brought in on the shoe bottoms of people using the facility. Of this, at least 80 percent is dry soil, while the rest is water or oily substances. This soil can be trapped and prevented from entering a facility through the use of high-performance matting systems. Unlike the rental mats that are often used in educational and health-care facilities--products with a very short life span--high-performance matting systems are typically purchased from janitorial distributors and are designed and guaranteed to last for many years.

Many of these matting systems offer bi-level construction, which means soils, contaminants, and moisture—all of which

contribute to poor IAQ—are kept below the walking surface of the mat. “This prevents them from being ‘walked into’ the rest of the facility,” says Tricozzi. “They are trapped beneath the surface until the mat is vacuumed or cleaned.”

To achieve successful soil removal, some experts suggest placing as much as 20 feet of matting at all building’s entrances. This should include scrapper mats, which scrape off large soils; combination scraper/wiper mats, which clean shoe bottoms and remove moisture and soil; and wiper mats, which dry and remove any remaining contaminants from shoe bottoms.

Green Carpet Cleaning Chemicals

Although we know that environmentally preferable cleaning chemicals are safer for both cleaning professionals and building occupants, there has still been some reluctance among facility managers to adopt Green carpet-cleaning products. According to John Hayes, Regional Sales Manager for Enviro-Solutions, a leading manufacturer of Green cleaning products, there are several reasons for this reluctance, including:

- **Cost concerns.** Some managers believe Green products are more costly than their traditional

counterparts. Although this was in fact the case at one time, according to Hayes the added cost of most Green carpet-cleaning chemicals is now considered negligible.

- **Fears regarding performance.** Housekeeping and custodial workers sometimes worry that Green cleaning products will not perform adequately. But according to Hayes, this should no longer be a concern. “New technologies have made the chemicals as effective as traditional chemicals. “In addition, many Green certified products are also certified by CRI (Carpet Rug Institute).” says Hayes.
- **Confusion as to which products are Green.** With at least five different certifying organizations evaluating chemicals, often with different standards and criteria, there has indeed been some confusion regarding what exactly Green means. Hayes advises following the Green guidelines established by GreenSeal® and EcoLogo™ to be certain that products are indeed Green.

“Both health-care and educational facilities are under increased pressure to improve IAQ and, at the same time, transfer to environmentally preferable cleaning systems,” says Hayes. “In addition to selecting [Green] products from a

reputable certifying organization, cleaning professionals should test products from different manufactures on different carpets. Setting up a cleaning 'challenge' in your own facility is the best way to determine which products work best.”

Low-Moisture/Hot Water Extractor Systems

“Green cleaning experts advise that Green cleaning can not be a piecemeal process,” says Steve Williams, Senior Vice President of Research and Development for U.S. Products, manufacturer of professional portable carpet, floor and restoration equipment. “Eventually, if a building wants to move to Green cleaning, all products used in cleaning must be Green or be recognized as a component of Green cleaning.”

When it comes to Green carpet cleaning, this means that not only must the chemicals be Green, but the equipment must be environmentally responsible as well. This usually means using low-moisture extractors with enhanced moisture recovery and equipment that heats the water and cleaning solution.

In the past, most extractors used several gallons of water per minute to clean carpets. This meant a lot of moisture and a lot of cleaning chemicals were poured into carpet fibers.

Why is this a problem? The concern is that if excess moisture is not adequately removed from carpets, it can result in the growth of mold and mildew, negatively impacting IAQ and too much chemical left behind in the carpet leads to faster re-soiling. “Low-moisture extractors use approximately 0.8 gallons of water per minute, significantly less,” says Williams, “and the vacuum motors today are much more powerful and effective than systems manufactured just a few years ago.”

Low-moisture machines also work effectively with smaller amounts of cleaning chemicals while still producing satisfactory results--a key component of Green cleaning. Chemical use is most likely to be reduced when using cleaning units that heat the water/cleaning solution, according to Williams. This is due to several factors. First, higher temperatures help break down oily residues, which are harder to remove from fibers than dry soils and heat tends to soften and fluff carpet fibers, allowing them to regain some of their original loft and resilience.

As suggested by Williams, we are entering a ‘total package’ era when it comes to Green carpet cleaning. From matting systems that help prevent soiling, the chemicals used in

carpet cleaning, as well as the equipment, the entire carpet-cleaning approach will soon have protecting IAQ, health, and the environment at the top of the list of concerns.

Sidebar:

Greening the Carpet Cleaners

An interesting trend that has been taking root in many industries--including the professional carpet cleaning industry--is that end customers are not satisfied by merely switching to the use of Green cleaning chemicals and products to help protect IAQ and occupant health. They want the businesses they work with to be Green as well.

For carpet cleaners, going Green can be a complicated process. Some of the ways carpet cleaning companies are going Green include:

- **Water conservation:** Even with the use of low-moisture machines, large volumes of water are used in the carpet-cleaning process. End customers will want to ensure that water is used responsibly and that soiled water is disposed of according to current environmental regulations and codes.

- Energy: Carpet-cleaning machines use a lot of energy. A Green carpet cleaning business will use newer equipment, which tends to be more energy efficient.
- Air pollution: Some new truckmount extractors feature enhanced emission controls, which help protect air quality. Some systems use the power of the vehicles motor to drive the unit, releasing no fumes whatsoever.
- Noise: some truckmount systems have features that reduce noise levels, protecting both workers using the equipment as well as those nearby.