

## Reduce, Reuse, Reinvent:

*How to Revitalize Your Janitorial Procedures Using Green Cleaning Techniques.*

**A**s building owners and managers examine their overall environmental impact and strive to operate sustainable, high-performance buildings, it makes sense to examine cleaning strategies and implement practices that use less energy and less chemicals considered environmentally unsound. Commercial cleaning operations use about eight billion pounds of cleaning chemicals a year, many of which have a significantly negative impact on our environment.

“Green cleaning” is increasingly becoming a standard best practice for the operation of a sustainable property. But what is green cleaning, and what is the standard?

Green cleaning is defined as a cleaning practice that protects health without harming the environment. It focuses on the reduction of serious health and environmental impacts, while maintaining high sanitary and janitorial practices. While the transition to green cleaning can be a multi-step process involving the support and cooperation of tenants, janitorial staff or contractor and building management, the economic, health and environmental benefits accrued from this process are plentiful.

### Why transition to green cleaning?

Today, many cleaning processes are not energy efficient and many products are still petroleum-based. Petroleum-based products not only strip away floors and walls faster, but also directly drain a limited and non-renewable resource needed elsewhere. According to Stephen Ashkin of The Ashkin Group ([www.theashkingroup.com](http://www.theashkingroup.com)), a consulting firm focused on greening the cleaning process in high-performance buildings, petroleum-based cleaning products account for 8-10 percent of non-vehicular volatile organic compounds (VOCs), which are known to cause smog, toxic pollution and waste, and ozone depletion.

### 10 Easy & Low-Cost Steps for a Greener Office Environment:

1. Change vacuum bags when they are ½ full to cut down on dust distribution.
2. Place recycled fiber entrance matting at doors to prevent soil from entering the building.
3. Implement an immediate spot cleaning policy for accidents and stains to prevent transfer of mess.
4. Switch to a no aerosol/no VOC air freshener in bathrooms and kitchens.
5. Remove environmentally hazardous blocks used in urinals.
6. When possible, do not seal or finish floors to cut down on VOC emission and slippage.
7. Use a vinegar and water mixture to clean finished floors.
8. Replace sponges, scrub pads and other cleaning tools with long-lasting microfiber cloths and mops.
9. Use old maintenance staff uniforms as new cleaning rags.
10. Train employees to turn off equipment and lights when not in use.

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In addition to negative environmental impacts, the VOCs emitted by these petroleum-based cleaning products are a leading cause of unsuitable indoor air quality (IAQ). Once evaporated and inhaled, they can severely impact the health of building maintenance staff and tenants. Ashkin says that inhaling VOCs can cause drowsiness, dizziness, flu-like symptoms, asthma attacks and other respiratory problems. Even worse, sensitive and vulnerable tenants such as pregnant women, children or the elderly are much more susceptible to debilitating and even life-threatening conditions due to weakened immune systems. Thus, any move to environmentally-friendly cleaning products has a direct and positive impact on the health and well being of all building occupants.

In addition to being good for tenant health and the environment, green cleaning can serve as a competitive advantage. Sarah Thurston in her article titled “Making Sense of Green Cleaning” cites Jerry Yudelson, author of *The Insider’s Guide to Marketing Green Buildings*, who says that green cleaning is “good for business.” There are several reasons, including:

### Managed Risk

A study funded by the U.S. Environmental Protection Agency (EPA), focusing on Santa Clara County, Calif., found that the average janitor uses an estimated 28 gallons of chemicals per year, 25 percent of which contain extremely hazardous ingredients. The same study also found that 27,000 janitors in Santa Clara County experience a total of about 1,200 chemical injuries each year. A rough extrapolation of this figure estimates that at the national level, medical expenses and lost time for chemical injuries total about \$75 million per year. A move towards green cleaning practices immediately reduces the risks to maintenance staff and tenants from the use of traditional cleaning chemicals. In return, building owners and managers can expect a reduction in lost time injuries and insurance claims, as well as an increase in productivity.

### Reduced Operating Costs

Green cleaning is commonly misunderstood as an expensive alternative to traditional cleaning methods. However, studies show this is not the case. Environmentally-friendly, citrus-based cleaners have come down in price and are now on par or better than hazardous, petroleum-based chemicals. Most green cleaning products come concentrated in small, recyclable containers, thus reducing moving and storage costs. These concentrated products are mixed with the precise amount of dilutions at mixing stations, cutting down on product costs because, in the absence of a measuring system, workers tend to overuse cleaning materials. This costly overuse quickly strips the surfaces being cleaned and causes a significant increase in dangerous working conditions, as described above. In addition, many BOMA members report that a single green cleaning product will often take the place of multiple traditional products, reducing the need to stock several different cleaning products and educating staff on the appropriate use of each.

In addition, many traditional cleaning programs are energy intensive. A building’s janitorial practices are often ignored when developing energy saving strategies, yet they typically account for almost 25 percent of the weekly lighting use, which is equivalent to approximately seven percent of the total building energy use. By incorporating such janitorial best practices as team cleaning, cleaning during normal business hours and janitorial staff coordination, a building’s energy costs will be reduced.

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## Added Competitive Market Value

In a constantly evolving market such as real estate, green is the new black. Tenants are continually searching for buildings that offer sustainable, high performance options, which include green cleaning operations. Sustainable features offer a significant edge in a market often flooded with options. A recent survey by Jones Lang LaSalle and CoreNet Global supports this contention. It found that sustainability is a critical issue to 47 percent of global corporate occupiers.

Green cleaning operations offer earned points towards certain green certifications. For instance, the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design for Existing Buildings (LEED-EB) rating system offers a maximum of nine credits for green cleaning products and strategies and requires a green cleaning policy as a prerequisite.

## Satisfied Occupants

In the end, a move to green cleaning tells tenants and maintenance staff that you are concerned about their overall health and well-being. Tenants and maintenance staff care that you care for them. In return, tenant retention rates and maintenance staff productivity have the potential to greatly improve.

## Implementing a Green Cleaning Program

### Choosing a Janitorial Service Company

As with any decision impacting commercial office buildings, choosing a janitorial service provider is an extensive process requiring a thorough examination of your tenants' needs. Your company or building may have a standard RFP that lays out the expectations of a contractor. You may look at their level of expertise in similar types of multi-tenant properties, and you may also seek out references from colleagues.

These standard practices should be the basis of your assessment of a janitorial service provider's green cleaning program and overall green strategy. However, as Ashkin states in an article published in *ISSA Today*, green cleaning looks at all products, including chemicals, paper, vacuums and other equipment. A review of a service provider's green practices should examine their overall plan and the types of cleaning products and equipment used in their cleaning program.

Green Seal, a Washington, D.C. based nonprofit organization that develops environmental standards and certifies green cleaning products, has established a standard for green cleaning practices. The Green Seal™ Environmental Standard for Cleaning Services (GS-42) identifies the necessary components that should be incorporated in a janitorial service provider's program. It also provides a building manager with an understanding of a program's technical nuances. (See page 7 for a checklist to evaluate janitorial service companies as well as an existing cleaning program.)

### Types of Cleaning Products

According to Michael McCoy in *Chemical & Engineering News* (1/21/08; Volume 86, Number 3), consumer demand is driving the chemical industry to create more environmentally-friendly cleaning products.

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A variety of green products are currently on the market, including hand soaps, paper products made with recycled paper and microfiber mops and cloths.

Many green cleaning programs employ a system known as a dilution control system. This system produces liquid cleaning products through a controlled process. Exact amounts of a concentrated solution are mixed with water in a controlled environment. The system correctly measures the amount of solution and water used, thus cutting down on wasted product and allowing staff to reuse the bottles.

In his article, McCoy further discusses the lack of a national standardization process for green products. The definition of natural can vary from region to region. With this lack of a national standard, it is important to determine if a third party environmental organization has certified your prospective janitorial service company's cleaning products as green. Third party environmental organizations conduct thorough testing on cleaning products to ensure that they have little or no impact on the environment and tenant health. These organizations include Green Seal ([www.greenseal.org](http://www.greenseal.org)), EcoLogo ([www.ecologo.org](http://www.ecologo.org)) and GreenGuard ([www.greenguard.org](http://www.greenguard.org)). The EPA has also developed the Design for the Environment Program ([www.epa.gov/dfe/](http://www.epa.gov/dfe/)), which recognizes stakeholders that use safer chemicals or non-chemical alternatives in their products.

### Types of Equipment

A building manager should also examine the equipment used by a janitorial service company as green cleaning programs require specific types of equipment. Equipment currently used in your janitorial systems may be contributing to poor indoor air quality in your building. For example, conventional vacuums allow dust particles to escape during use.

According to a white paper produced by UGL Unicco, a facilities maintenance service company, virtually every machine used in building maintenance has an environmentally-preferable equivalent. USGBC's LEED-EB rating system offers guidance in determining the types of cleaning equipment that should be used in a building's green cleaning program.

- Vacuum cleaners certified by the Carpet and Rug Institute "Green Label" Testing Program operate with a sound level of less than 70dBA.
- Carpet extraction equipment certified by the Carpet and Rug Institute's "Seal of Approval" program, which tests the effectiveness of extractors in three categories: soil removal, water removal and texture retention.
- Floor maintenance equipment, including floor buffers and burnishers that operate with a sound level of less than 70dBA.
- Propane-powered floor equipment, which has high-efficiency; low-emissions engines with catalytic converters and mufflers that meet the California Air Resources Board or EPA standards for the specific engine size and operate with a sound level of less than 90dBA.
- Battery-powered equipment that is equipped with environmentally safe gel batteries.

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HEPA (High Energy Particulate Air) filters which specify that 99.97 percent of airborne particulates are removed should also be used in a building's vacuums. Entrance matting systems made from recycled fibers can also be employed to reduce outside soil contaminants from entering the building.

## Training

When a janitorial service provider institutes a green cleaning program, a key component to its success is training. James Piper writes in *Facility Management* that proper training is not just limited to janitorial staff. Building employees and tenants should also participate in the process to understand how and why the program is being implemented.

After a green cleaning program has been instituted in your building, it is essential to retrain janitorial staff to ensure that they are proficient in green cleaning techniques. Piper contends that employees will revert back to old habits unless they are properly trained. It will take time for janitorial staff to become acquainted with these new practices. Supervisors should make a point of walking through the process with staff to observe their cleaning patterns in order to ensure efficiency levels are achieved.

A simple green cleaning strategy involves implementing such best practices as team cleaning and cleaning during the day. Janitorial staff often leave the lights on following their cleaning routine, resulting in a significant energy loss. Simply coordinating with the janitorial staff and communicating clear directions to turn off the lights will have a significant return on your energy bill.

Team cleaning involves the janitorial staff moving through the building as a team floor-by-floor and turning the lighting on/off as they progress. A building may also want to coordinate their janitorial staff with the security crew to walk through the building and turn off equipment that was inadvertently left on by the tenants.

Cleaning during the day is also a component of many green cleaning programs. Traditionally, janitorial service companies clean office buildings after tenants leave, which results in lighting inadvertently being left on throughout the building and HVAC needed during the evening hours. This practice encourages janitors to perform many cleaning tasks, such as dusting, during the day and saving only the more disruptive cleaning functions for after hours. Though tenants may resist this concept for the obvious reasons, many BOMA members who are using some daytime cleaning strategies report that their tenants actually perceive their space as being cleaner, since they can see the cleaning staff at work in their space. This perception of the building's improved cleanliness and their changing attitudes towards energy usage should outweigh any inconveniences. Still other green cleaning practices fall within a classification of cleaning known as periodic cleaning for tasks performed less frequently. For instance, cleaning carpets when visibly dirty cuts down on a building's electricity usage. Spot cleaning, rather than cleaning the entire carpet, prevents spills from being transported throughout the office suite while saving energy.

A tenant education program should be initiated as many of the program's changes will be noticeable. For example, conventional cleaners are laced with fragrances that linger in the air. Once these heavy

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fragrances are removed from a building's cleaning regime, tenants will be left wondering whether or not an area has been cleaned.

### **Incorporating Green Cleaning Into Your Lease**

By including green cleaning language in a lease, building owners and managers can clearly demonstrate that the building is committed to green and sustainable practices and can serve as a tangible benefit to recruit prospective tenants. BOMA International's *Guide to Writing a Commercial Real Estate Lease, Including Green Lease Language* includes specific lease language for green cleaning. To obtain a copy of the BOMA Green Lease Guide, go to the BOMA Bookstore at [www.boma.org](http://www.boma.org).

### **LEASE LANGUAGE FOR BUILDINGS WITH CLEANING SERVICE DURING NORMAL BUSINESS HOURS**

Landlord shall provide janitorial service after 6:00 p.m. on Monday through Friday only (excluding legal holidays). Routine cleaning will be conducted during normal business hours in accordance with Landlord's sustainability practices and will be done in such a way as to minimize disruption.

### **CONTRACTOR RULES AND REGULATIONS (EXHIBIT TO LEASE)**

#### **HOUSEKEEPING PRACTICES**

Contractor agrees to use whole-building cleaning and maintenance practices, using:

- Sustainable cleaning chemicals that meet the Green Seal GS-37 standard
- Use of micro-fiber wipes, dust cloths and dust mops in place of paper wipes (and where paper products are used, use of products that contain at least 30% recycled content and which are recyclable)
- Chemicals for which the GS-37 rating is not applicable, for example, floor finishes and strippers, shall be durable, slip resistant and free of zinc (metal-free) OR GS-40 and/or CCD-147
- Carpet Care Products shall meet the requirements of GS-37 and/or CCD-148
- Proper training of maintenance personnel in the hazards, use, maintenance and disposal of cleaning chemicals, dispensing equipment and packaging
- Use of hand soaps that do not contain antimicrobial agents, except where required by health codes
- Use of cleaning equipment that reduces impacts on IAQ.

Contractor shall provide a copy of a low environmental impact cleaning policy that meets these criteria. Contractor shall provide documentation that this policy has been followed, showing:

- Specifications for chemicals used
- Dates and activities associated with cleaning maintenance
- Dates and outline of cleaning worker training.

## BOMA's Green Janitorial Checklist

Practice	YES	NO	PARTIAL	COST	Comments
<b>Training</b>					
Tenant education policy					
Significant maintenance staff training					
ESL maintenance staff training					
<b>Cleaning Products</b>					
Controlled mixing station					
Ecolabeled cleaning products					
Minimized number of products used					
Minimized aerosol products used					
Cold water used					
<b>Cleaning Tools</b>					
Use of recycled or microfiber mops					
Use of recycled or microfiber wipers					
Use of recycled wood for mop handles					
<b>Vacuum &amp; Carpet Care</b>					
Use of CRI certified, HEPA, or other high-filtration vacuums					
Use of low-moisture carpet cleaning systems					
Regular inspection of filters/equipment					
Use of more environmentally-friendly equipment batteries					
<b>Hard Floors Care</b>					
If needed, ecolabeled floor finisher					
If needed, ecolabeled floor stripper					
Cold water used					
Low water/electrolyzed water use autoscrubbers					
Reduced floor stripping operations					
<b>Restroom Care</b>					
Recycled or biodegradable plastic bags used					
Use of Ecolabeled paper products					
Use of waste-minimization dispensing systems					
Ecolabeled hand soap used					
Limited use of automatic deodorizers					
Limited use of urinal blocks					
<b>Entrance Care</b>					
Recycled fiber entrance matting system					
Frequent vacuuming of entrance areas					

## Case Studies:

### Harvard FMO Green Cleaning Implementation

As Jason Luke, associate director of custodial & support services at Harvard University, will admit, green cleaning has come a long way. "It was initially a niche thing with just a few big product manufacturers behind it. However, once it took off about 5-6 years ago, it became huge." Indeed, it has become an important aspect in the cleaning process at Harvard. What began as a mini-research project has evolved into a significant part of the campus-wide project called the Harvard Green Campus Initiative.

Luke oversees about 40 percent of the campus' building maintenance operations, estimating that about 80 percent is completely green or using some sort of green cleaning procedures. He found that green cleaning training was just as important as changing to green cleaning products. Janitors not only needed to be fully trained, they also needed to understand the positive impact these new procedures had on the facilities within which they worked and on the health of tenants and staff.

Furthermore, Luke stresses the importance of communication and having positive relationships with tenants. "From an appearance standpoint, they notice the difference. It is critical to get people to buy into this before you do it." At the same time, he admits that "sometimes it just depends on what you're coming from. For instance, moving from high quality paper to a brown, recycled paper, you must be able to test and know how your tenants will respond to these changes." Communicating with your tenants and quickly responding to feedback is crucial to a successful green cleaning program.

For more information on Harvard's green cleaning program, visit

[www.greencampus.harvard.edu/greenclean/](http://www.greencampus.harvard.edu/greenclean/).

### Las Colinas Corporate Center II – Irving, Texas

The Las Colinas Corporate Center II, a two-tower office building located in Irving, Texas, has implemented a green cleaning program as part of its overall facilities maintenance plan. Its low impact cleaning policy was designed to eliminate as many adverse cleaning byproducts as possible both to protect the environment and to lower the negative health implications. The plan includes products ranging from entrance matting systems to a variety of eco-friendly cleaning products. While these cleaning products are as effective as those that contain harsher chemicals, they prove to be safer for staff and tenant use. This reduces the risk of lost time injuries and insurance claims, as well as increases overall janitorial productivity. The building reached the regional finals for the 2007/2008 BOMA International Earth Award and, as part of its entry, outlined a green cleaning plan for the two towers.

*Continued on page 9*

## Bibliography

Ashkin, Stephen. (May 2006). *The Impact of Green Cleaning on the Quality of Your Indoor Environment*. Green Cleaning Newsletter. <http://www.facilitiesnet.com/GreenClean/index051806.html>

Ashkin, Stephen. (March/April 2006). *True Green: The Green Cleaning Journey*. ISSA TODAY. <http://ashkingroup.com/issatodayma2006.pdf>

Baron, Thomas et al. (December 1999). *How to Select and Use Safe Janitorial Chemicals*. U.S. EPA Region 9 Janitorial Pollution Prevention Project. <http://www.wrppn.org/Janitorial/05%20Report.pdf>

BOMA International. (2008). *Foundations of Real Estate Management*. <http://www.boma.org/TrainingAndEducation/Foundations>

BOMA International. (2008). *BOMA's Guide to Writing a Commercial Real Estate Lease, Including Green Lease Language*. <http://shop.boma.org>

*H2E 10 Step Guide to Green Cleaning Implementation*. (October 2006). *Hospitals for a Healthy Environment*. <http://www.h2e-online.org/docs/h2e10stepgreenclean-r5.pdf>

Jones Lang LaSalle IP, INC. (2007). *Global Trends in Sustainable Real Estate: An Occupier's Perspective*.

Lohnes, George R. *Energy Costs Drive Sustainability*. *Environmental Design and Construction*, February 2008.

McCoy, Michael. (January 2008). *Greener Cleaners*. *Chemical & Engineering News*. Volume 86, Number 3. PP. 15-23.

Piper, James. (March 2008). *Launching a Green Cleaning Program*. *Building Operating Management*. <http://www.facilitiesnet.com/bom/article.asp?id=8382&keywords=green%20cleaning>

Restivo, Charles. *How and Why One Company Opted for Cleaning "Green."* *The Association for Facilities Engineering*, July/August 2004.

Santa Monica Improves Custodial Environmentally Preferable Purchasing. The Ashkin Group, LLC – Case Study. <http://www.ashkingroup.com/pdfs/casestudies/stmonica4.pdf>

Thurston, Sara. *Marking Sense of Green Cleaning: A "Green" White Paper*. *Advance: Commercial Cleaning Bulletin*, #301.

UGL Unicco Green Cleaning Whitepaper. [www.ugl-unicco.com/downloads/who-we-are/library/Green\\_Cleaning.pdf](http://www.ugl-unicco.com/downloads/who-we-are/library/Green_Cleaning.pdf)

### Green Cleaning Products

EcoLab cleaning products, including its Green Seal certified all purpose general cleaner, bathroom cleaner and glass cleaner are used by the day and night janitorial teams. These products are procured through EcoLab's ECOLOGIC Environmentally Responsible Cleaning Program. The products have numerous positive effects on janitorial health and the environment. When diluted, they are noncorrosive to the skin and eyes and are free from known carcinogens and reproductive health hazards. Many Las Colinas janitorial employees have commented on the new products less noxious fumes. They are also noncombustible and biodegradable, contain less than one percent VOCs and are chlorine free and safe for aquatic life. To further protect janitorial and tenant health, Green Seal certified, touch free hand soap systems were installed in all bathroom sinks.

### Recycled Paper Products/Micro-Fiber Cloths

Las Colinas Corporate Center uses AFFEX toilet paper which contains 100 percent recycled fibers and a minimum of 60 percent post-consumer material, and meets or exceeds the EPA guidelines for post-consumer content. The building uses paper towels from Georgia-Pacific that contain at least 40 percent post consumer recycled fiber, which meet the EPA's guidelines as an environmentally responsible recycled paper product.

Janitorial staff employs micro-fiber cloths to clean all surfaces within the building. Not only are these cloths more proficient; they have saved the building from using hundreds of paper towels a day. The cloths are washed once a week with a low-sudsing, eco-friendly detergent and are re-used until they are no longer functional.

### Janitorial Best Practices

Las Colinas Corporate Center supplements its green cleaning program with janitorial best practices designed to decrease the building's energy costs. Day porters are an integral part of the building's overall green cleaning strategy. These individuals clean restrooms, entrance glass and common areas throughout the day, reducing the amount of time required to clean the building after hours. Janitors are required to lock doors and turn off all lights after they leave in the evening. Security staff also monitors the suites to ensure the lights have not been inadvertently left on.

### Entryways/Pedimats

Las Colinas Corporate Center places entry mats at all entrance doors, including a 10' x 20' mat at the main entrance. Since most people do not wipe their feet, the large mats are long enough to remove a majority of the dirt brought into the building from foot traffic. In addition to reducing the amount of dirt, dust and pollen that enter the building, this size mat qualifies as a point for LEED-EB certification. Mats are vacuumed daily by the porter and nightly by the cleaning crew. They are also shampooed quarterly.

### Tenant Involvement/Communication

Prior to implementing its green cleaning program, Las Colinas Corporate Center sought buy-in from its tenants through educating them on the program's benefits. Staff actively communicated with the building's tenant advisory board, which is comprised of the eight largest tenants. During the changeover, they consistently made themselves available to address tenant concerns, which included cost and the effectiveness of the cleaning products. Las Colinas Corporate Center's switch to green cleaning has not increased the building's cleaning costs' and tenants are pleased with the change.

Founded in 1907, the *Building Owners and Managers Association (BOMA International)* is an international federation of more than 100 local associations and affiliated organizations. The 18,000-plus members of BOMA International own or manage more than 9 billion square feet of commercial properties in North America and abroad. BOMA's mission is to enhance the human, intellectual and physical assets of the commercial real estate industry through advocacy, education, research, standards and information. On the Web at [www.boma.org](http://www.boma.org).

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