

The greenest thing you can do is to clean properly.



Green White Paper

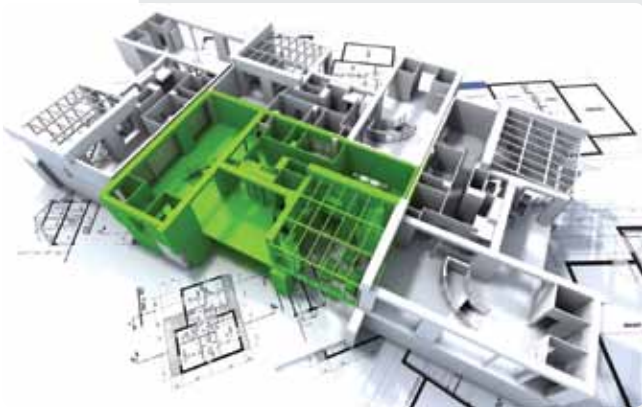
Has all the “Green” messaging that you hear today left you feeling “green-washed”? Today it seems that every conceivable product is claiming that it is “green”, and that is generating confusion in the marketplace. In fact, this important goal is getting lost in the messaging and is quickly becoming not much more than “white noise” in the cleaning industry.

So, what is “Green”? How do you implement a program that is “Green”, allows you to stay on budget, and clean your facility to acceptable levels for both health and appearance? Who are the authorities when it comes to cleaning green? This paper will answer those questions.

To begin this process we must understand *what* “green cleaning” is and how we define the goal of cleaning. The IICRC (Institute of Inspection, Cleaning and Restoration Certification) defines cleaning green like this:

“Cleaning green is comprised of an *environmentally responsible application of methods and systems. It is achieved by integrating cleaning products, policies, operational procedures, methods or systems intended to minimize harmful environmental impact and maximize sustainability of the built environment.*”

So, how do we implement this while still meeting our cleaning objectives? The first step is to look at environments. Our definition mentions two environments that we live in, the indoor environment and the outdoor environment. It is important to understand that we live in both environments. Indoor environments are buildings, buses, cars, and homes, while the outdoor environment is, well, everything outside of those.



To begin to grasp a true green cleaning program, you must understand what is in each of those environments. Outside you have bodies of water, air, and soil. This is what we commonly think of when thinking of the outdoors. These are the resources that a green cleaning program seeks to protect, as disposing of harsh chemicals and building by-products certainly can harm these precious resources. You very well may be able to recall a message, either video or print, that promoted the protection of these resources. The protection of these resources is certainly one of the goals of cleaning green.

But one of the things that people don't generally consider in regards to the **outdoor environment** is its effect on the **indoor environment**. Because in addition to the things we are seeking to protect - the water, air, and soil - the outdoor environment contains pollutants and damaging soil. These existing hazards can cause significant damage to the indoor environment.

The **indoor environment** contains all the assets of a facility, such as flooring and carpeting, as well as the people who live and work inside a facility. For businesses,

the people who work inside the facility are their most precious and valuable resource. Therefore, providing a safe and healthy place for them to work is paramount. However, most facilities never consider the impact of the indoor environment on their most costly assets. Consider these facts about the indoor environment:

- We spend 90% of our time indoors.
- The EPA has found the average air inside a building to be 2 to 5 times more polluted than the outside air.
- The EPA has seen readings of over 100 times more polluted air inside a building.
- The EPA Science Advisory Board has consistently listed Indoor Air Quality as one of its top 5 health concerns.
- The EPA has estimated that the U.S. economy loses up to \$60 billion per year in lost productivity and increased sick leave time as a result of indoor air quality related illnesses.
- 1 in 13 school children has a breathing related illness such as asthma.
- The American College of Allergists reports that 50% of all illnesses are caused by polluted indoor air. According to the College, reducing the presence of particulate contaminants can prevent many common ailments like runny noses, sneezing, itchy eyes, sore throats, headaches and other symptoms triggered by allergens.
- Healthy work environments have been shown to raise employee productivity by approximately 10% through a reduction in sick days and improved employee attitudes.

When considered in light of these facts, a green cleaning program will not *cost* a company money, it will *save* a company money. A study reported by the American Hospital Association showed that for all of the approximately 134,000,000 workers in the United States, asthma alone cost US employers 125,209,000 lost work days at a cost of just over \$23 billion dollars!

So, how does this all factor into a green cleaning program?

When discussing green, many in the cleaning industry are looking at green chemicals, recycled toilet paper, and even cleaning *without* chemicals. But does this approach truly meet the goal of cleaning green, which is to both minimize the harmful environmental impact of cleaning and sustain the built, or indoor, environment?

At Windsor, we believe that the studies and science of cleaning point to one irrefutable fact: **The greenest thing you can do is to clean properly.** Certainly green chemicals and other products that have a reduced impact on the environment are an integral component in constructing a green cleaning program. However, they are too far “upstream” in the process of maintaining a facility.

We believe that a green cleaning program is made up of three components:

- **The right processes**
- **Utilizing the right equipment**
- **Dispensing the right chemicals**

As we stated, the greenest thing you can do is to clean properly. Therefore, by constructing a cleaning program that incorporates process, equipment, and chemical, you end up with a program that achieves the true objectives of green cleaning.

In beginning to construct a program of maintenance for your facility that meets the goals of cleaning green, begin by asking the obvious question:

“Why do we even have to use a chemical to clean in the first place?”

With a proper understanding of the environments that we live in, the indoor environment and the outdoor environment, the answer is obvious:

People enter your building and bring abrasive soils from the outside environment into the inside environment.

One of the challenges facing facility managers today is that their facilities are constructed so that they retain the indoor air. Buildings today are essentially insulated and wrapped so that air inside the facility will not readily escape to the outside and vice-versa. This helps to lower heating and cooling costs, but creates a potential environmental hazard for the occupants.

Particulates brought into the facility through foot traffic can become trapped in a facility and have the potential to become airborne and cause breathing issues. An even bigger issue is that this tracked-in soil drives the maintenance of your floors. Think about it this way - if you put in new carpet, stripped and finished your floors, and then locked the doors so that no one could enter the facility, when is the next time you have to maintain the floors? The answer is - never!

The people entering your facility are what cause your floors to need maintenance. Here are some statistics to consider regarding soils entering your facility:

- Industry studies show that 80 to 94% of the soil in any facility was brought in through foot traffic.
- A study by the ISSA (International Sanitary Supply Association) showed the following:
 - 1000 people in 20 days can track in 24 pounds of soil.
 - It costs on average approximately \$700 to remove one pound of soil from your facility.
 - Based on those figures, it costs you 84¢ every time someone enters your facility, to remove the soil they brought in with them.



- The average grain of sand has 32 abrasive edges.
- Soils tracked into a facility grind at the surfaces they contact with the equivalency of 120 grit sand paper.
- Industry studies have also shown that as few as 1500 people entering a facility can remove up to 42% of the floor finish within the first 6 feet of an entrance that has no matting.

So, how does this soil that is being tracked in drive your maintenance procedures, chemical usage, budget, and cleaning program?

On carpet, soils that are allowed to accumulate in the fibers scratch and de-luster the fibers, resulting in permanent damage. Carpet that is not on a routine maintenance program requires a lot of chemical and water to deep clean to an acceptable level. Carpet that cannot be cleaned to an acceptable appearance level is thrown away and replaced. The EPA estimates that we throw away 4.7 billion pounds of carpet every year, which, since it is 98% synthetic, takes 1000 years to degrade in a landfill.

On hard surfaces, soils scratch and wear at the finish creating the need for scrubbing, burnishing, top scrubbing & re-coating, and stripping & finishing. Dust-mopping and burnishing affect indoor air quality by stirring up soils that have settled on the floor out of the respirable air if they are not captured adequately. Furthermore, top-scrubbing & re-coating as well as stripping & finishing are both water and chemical-intensive procedures. The chemicals and pads used in these processes must be disposed of and usually end up in a landfill.

Once you have a clear understanding of what is driving your need for cleaning, it becomes apparent that utilizing green chemicals and even processes that use no chemicals is simply addressing the symptom, not the problem. It may make you feel better for a while, but the problem is still there. The solution for the problem is to take an “outside-in” approach to your cleaning program, since that is where the soils that drive your need to clean are coming from.

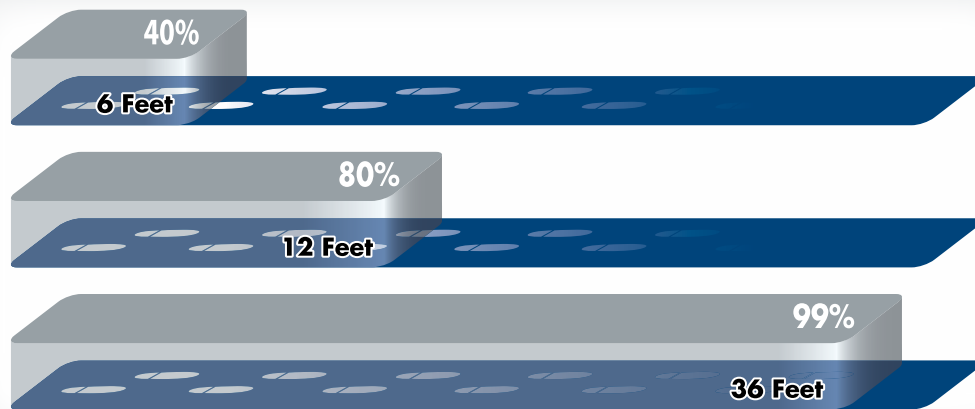
There are four phases of maintenance in a proper cleaning program that you will need to implement:

- **Preventative maintenance:** stopping the soils from entering the facility through removal or containment.
- **Daily maintenance:** removing soils daily to minimize their damage to the indoor environment.
- **Interim maintenance:** maintaining a high level of appearance with minimal labor, chemical, and water.
- **Restorative maintenance:** intensive cleaning designed to restore the surface as close as possible to its original state. Uses a high level of labor, chemical, and water.

Let's begin by looking at each process, the equipment that it utilizes, and the chemicals involved.

Preventative maintenance is far, the most important step in a green cleaning program is preventing the soils that damage your floors from entering your facility. Accomplished through the use of sweepers and matting, this is a critical step. We just discussed, it is the abrasive soils that enter your facility that drive the cleaning and maintenance programs that you have in place. The more soil that enters your facility, the more your finished floors and carpet need maintenance.

For preventative maintenance, many facilities focus solely on matting to stop the soils from entering the facility, but in many cases this does not provide an adequate barrier. Industry studies have yielded this information:



You may look at that information and think that many facilities do not have enough matting, and you are correct. However, virtually every facility that you walk into has 36 feet of textile surface, which is really what we are talking about. If you do not have adequate matting, then your carpets become the “matting”. The challenge is that while you can easily replace a mat, carpet is entirely different.

What about lobbies that are tile before stepping onto carpet? Hard surfaces will remove a small amount of soil from shoes, however, carpet’s textured surface allows it to trap and hold soils much more effectively than a hard surface. Consequently, the carpet off of a lobby will become heavily soiled without proper matting.

Another important part of a preventative maintenance program is sweeping. Since soils being carried into the facility are picked up as people walk towards an entrance, keeping the sidewalks and entry ways cleaned and swept will help to reduce the amount of soil occupants track in with them. Additionally, pressure-washing parking lots on a periodic basis will help to reduce the amount of oils being tracked into a facility.

What effect does sweeping have on the amount of soil being tracked into a facility? A recent study conducted by Windsor found that a proper sweeping program (walkways and entry areas swept daily and the parking lot swept twice a week eighty feet from the entrance) with no matting in place **reduced the amount of soil entering a facility by 66%**. With sweeping being that effective on its own, coupling a sweeping program with a matting program will provide you with the most effective program possible for stopping soil.

Why this emphasis on preventing soils from entering your facility? Because the more soil you stop from entering your facility, the less you have to spend to remove it (at \$700 per pound) once it is inside. These soils not only drive the cost of cleaning your facility, but they cause wear to both your hard floors and carpet fibers. If you are interested in saving money on your floor care supplies, then invest in matting and sweepers, since they can reduce the amount of soil entering your facility and reduce the amount of chemicals that you need to maintain your floors.

Daily maintenance is the process of removing the soils that get into your facility on a regular basis so that the amount of damage that they cause is reduced. On hard floors, this means sweeping the dry soils and scrubbing the sticky, oily soils from the floors. On carpet, this means frequently vacuuming the dry soils from the carpet so that they cause as little damage to the carpet fibers as possible.

Dry soils that accumulate on hard floors will be picked up by shoes, wheels, and other objects that they come in contact with and will grind at the floor or the floor finish. This scratching dulls the shine on the floor, necessitating further procedures to maintain the gloss. Sticky, oily soils that accumulate on finished floors can react with the finish and cause the finish to turn yellow or brown over time. This will create the need to strip the entire floor.

On carpeted surfaces, dry soils that are allowed to accumulate will scratch and deluster the fibers, creating a traffic lane. What we commonly see as a traffic lane through a door, hallway, or other funnel point is actually an area where the carpet has gotten scratched and dulled by the continuous grinding of soils. The resulting damage is not something that can be cleaned, it is just that: damage.

For a better visual representation of what this damage looks like, imagine if you replace the carpet in an area like this with plexi-glass and left it down for 3, 6, or even 12 months. Even after you cleaned it, what would that piece of plexi-glass, which is made out of the same stuff your carpet is - plastic, look like? It would be clean, but still scratched and dulled. The same goes for your carpet.

Many do not consider the impact that these two processes have on their budget and the environment. Paying attention to these processes where the soil first enters your facility will pay off big in the long-run. Remember, typical floor care costs are tied up in procedures that are high in labor, water usage, and chemical usage. All of these have a dramatic impact on your budget.

By focusing on steps that stop soils from entering your facility and quickly removing the soils that do enter, you reduce the amount of cleaning and restoring that needs to be done. By reducing the amount of cleaning and restoring that needs to be done, you use less chemical and water, thus conserving resources while lowering your costs at the same time!

This focus also impacts the amount of chemicals you dispose of through the cleaning process. And let's be clear, you can take the chemicals that you are already using, change up your processes, and have a dramatic impact on the environment **without switching chemicals**. Using a "green" chemical will only further enhance your environmental stewardship if you construct and implement a cleaning program that is also focused on process, equipment, and then chemical.

One of the most stunning statistics in regards to the impact of carpeting on the environment is that in the United States, we throw away **4.7 billion pounds of carpet per year**. Now, truly, some of that carpet is legitimately worn out. However, a good portion of that carpet is simply discarded because it “uglies-out”, meaning that it is damaged from dry soils and no longer has the desired appearance level. Because 98% of all carpet produced is synthetic, the vast majority of that carpet will take over 1000 years to degrade in a landfill.

A good carpet care program **does** have a dramatic effect on the environment.

One last item in regards to carpet and your budget. When putting together a carpet care program, many tend to forget that they have invested good money in carpet and that they need to look at a carpet care program as a way to protect that investment. Similar to routine maintenance and oil changes on a new car. Most commercial carpets should last 8 years or so with proper care.

If you spend \$400,000 on carpet, with proper care and an 8 year life span, that carpet should cost you \$50,000 per year. However, if you do not put a proper program in place, the carpet “uglies-out” prematurely and you only get 4 years of life out of it, then your per-year investment is \$100,000. That is an additional \$50,000 per year investment and a significant cost increase!

Yes, the old adage certainly holds true, “an ounce of prevention is worth a pound of cure.”

The next step, **interim maintenance**, focuses on maintaining a consistent and high appearance level of the floor with reduced water, chemical, and labor usage when compared to the final step, restorative maintenance.

On hard floors, these processes can include burnishing, mopping or scrubbing a “restorer” product onto the floor that cleans, softens the existing finish, and introduces a small amount of new finish. Once the floor is cleaned with a product like this, the floor’s appearance is dull and hazy and will need to be burnished to restore the shine. Another effective interim maintenance process on finished floors is top scrubbing and re-coating.

Top scrubbing and re-coating is the process of removing 1 to 2 coats of finish with an aggressive pad and neutral cleaner, then rinsing the floor and re-applying 1 to 2 coats of finish. Since the standard stripping and finishing procedures are not used for a top scrub and re-coat, labor, chemical, and water are conserved. It is a safer procedure to perform and can help maintain a consistent appearance for years in a facility.

Done properly, this process can take the place of regular stripping and finishing. Literally, there are facilities that have been 10, 12, even 15 years since their last floor stripping job through the implementation of the processes that we have described. Sure, they invest money in matting, scrubbers, and interim maintenance products. However, the money they invest over the years pales in comparison to the money that they save by not having to strip and finish on a regular basis.

On carpet, interim maintenance consists of encapsulation. In this process an encapsulating chemical is brushed through the carpet after it is thoroughly vacuumed. The chemical comes in contact with the oily, sticky soils that are adhered to the carpet fibers with a sticky, fluid bond. The encapsulant surrounds the soils, pulls them from the fiber, and dries to a flaky, non-sticky crystal around the soil. Essentially, the process turns an oily soil that cannot be vacuumed into a dry, flaky crystal that can be removed by vacuuming.

The beauty of this process is that it uses far less labor, water, and chemical than extraction, and it is dry in 20 minutes! The encapsulation process will help you lower your costs while maintaining a consistent appearance.

Restorative maintenance is the process of restoring the flooring as close as possible to its original appearance. For hard floors, this is the process of stripping and finishing. In this process, all of the existing finish is removed from the floor and new layers of finish are re-applied. This process is time, labor, chemical, and water-intensive. Furthermore, there is an issue of safety when working around finish, as it can be extremely slippery when it is being removed. Also, old finish and the stripping chemical must be disposed of.

For carpets, the restorative process is extraction. This process is high in chemical usage, labor, water, and dry time. When you are extracting - or for that matter anytime you put water into the carpet - one of the most important steps is to **vacuum first**. No water extractor is meant to remove dry soil in a wet state.

In summary, the entire green cleaning process is best understood on a continuum with each of the phases of maintenance. When viewed in this light it is easy to see that it is restorative maintenance that **drives** your chemical usage, labor, waste, and overall costs.

By constructing a program that focuses on **preventative** and **daily maintenance** you will reduce dependence on restorative programs to maintain the appearance of the flooring, thereby reducing the amount of resources needed. Furthermore, it will allow you to implement a green program without having to spend more money, since in most cases all that is needed is a simple re-allocation of existing budget and resources.

That is an environmentally-friendly approach that is also budget-conscious.

	Preventative	Daily	Interim	Restorative
Process:	Stopping the soils from entering the facility through removal or containment.	Removing soils daily to minimize their damage to carpet and hard floor finish.	Maintaining a high level of appearance with minimal labor, chemical and water.	Intensive cleaning designed to restore the carpet or finish as close as possible to its original state.
Typical	↔	\$\$\$	↔	\$\$\$\$\$\$ 100%
Recommended	\$\$	\$\$\$\$	\$\$	\$ 90%

Floorcare Maintenance Budget Allocation
(Labor, Equipment, Chemicals)



Understanding USGBC LEEDS Program

Today, when people talk about a “green building”, they are generally referring to a building that has already achieved certification or is going through certification for the USGBC LEEDS Program. While there are a variety of programs currently available through the USGBC, the most popular is the “Existing Building” or EB Program.

The program offers points in 7 categories that a building can accrue to reach certification. Each category will have prerequisites that must be achieved for any points to be accrued and then credits that can be earned. The categories are:

- **Sustainable Sites:** addresses environmental concerns related to building landscape, hardscape, and exterior building management practices.
- **Water Efficiency:** addresses environmental concerns related to building water usage and disposal.
- **Energy & Atmosphere:** promotes the monitoring and improving of a buildings energy performance, eliminating CFC's (chloroflourocarbons), and the use of renewable energy.
- **Materials & Resources:** addresses the environmental concerns related to materials selection, sustainable purchasing, waste reduction, and waste disposal.
- **Indoor Environmental Quality:** addresses environmental concerns related to indoor air quality; occupants health, safety, and comfort; air change effectiveness; energy consumption; and air containment management.
- **Innovation in operations:** the purpose of this category is to recognize that improvements are occurring rapidly that affect building performance and the environment. Buildings with innovative or exemplary features are recognized here.
- **Regional Priority:** these credits allow for important regional issues to be addressed. In essence, additional credits are earned for specific issues being addressed.

There are 110 possible credits that can be achieved by any facility. The points breakdown is as follows:

- 100 base points
- 6 Innovation points
- 4 Regional Priority points

The Certification levels that can be achieved by acquiring points are as follows:

- Certified = 40 to 49 points
- Silver = 50 to 59 points
- Gold = 60 to 79 points
- Platinum = 80 points and above

It would seem that with 110 total credits possible, equipment and janitorial supplies could play a huge role in achieving them. However, this is not the case. In regards to



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