How *clean* is your green floor-cleaning?

Today's green scrubbers need to be flexible enough to handle a variety of cleaning situations

By Brian Simmons
Commercial Product Manager
Advance

& David Wood
Research & Development Manager
Advance

"It is imperative that the focus be on 'cleaning green,' that is cleaning first, cleaning for health and hygiene, as well as cleaning in an environmentally preferable manner."

Cleaning Industry Research Institute (CIRI)

This position statement, recently published by CIRI, calls for the cleaning industry to renew its emphasis on the "cleaning" part of green cleaning. According to CIRI Chairman of the Board Jim Harris, "There are times when decisions are made to go 'green' that can have an impact on the actual cleaning process, resulting in a less healthy environment."

The goal of today's green cleaning movement is to minimize impact on the environment, building occupants and cleaning personnel. One result has been a reduction in the use of potentially harmful chemicals when scrubbing hard floors in commercial and institutional settings. Intuitively, it might seem that the "greenest" cleaning is done with no chemicals at all. However, maintenance staffs still need to meet the standard of clean required for their facilities—whether that standard is simply "cleaning for appearance" or a more stringent requirement for disinfection in hospitals and even schools to combat current viral threats such as MRSA and H1N1.

Every floor-cleaning challenge is different, and rarely is there a "one-clean-fits-all" solution. This paper looks at today's myriad requirements for green and for clean, in relation to the hard floors found in schools, healthcare facilities, retail stores, office buildings and similar sites.

WHAT IS "GREEN"?

Green cleaning programs typically employ practices aimed at reducing chemical, water and energy use. Ideally, green cleaning will minimize environmental and human-health impacts, while maintaining or even improving cleaning effectiveness. Adding sustainability goals to green cleaning results in a program that is also designed to help maintain the life of the building so that floor surfaces (and many other components) have the longest possible useful lives—which, in turn, minimizes resource consumption and waste stream contributions.

There are three major components of a green cleaning program:

Chemicals – Green cleaning chemicals are the easiest program component to identify because there are multiple accepted certification programs in the industry, including Green Seal, EcoLogo and the newest program from the Environmental Protection Agency (EPA), Design for the Environment. All of these certifying organizations provide approvals for cleaning products that perform well while protecting human health and minimizing toxic pollution and waste.

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Equipment – The general types of equipment to use in a green cleaning program are described in the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system. The newest version to address cleaning equipment is titled, "LEED 2009 for Existing Buildings: Operations & Maintenance Rating System." This version says, "Automated scrubbing machines are equipped with variable-speed feed pumps and onboard chemical metering to optimize the use of cleaning fluids." The requirements also specify environmentally preferable gel batteries, ergonomic machine design and machine bumpers or other safeguards to reduce potential damage to building surfaces.

Processes and procedures – Green chemicals and equipment should be part of a cleaning program that specifies when and

how cleaning tasks are to be performed. Requirements for both building service contractors (BSCs) and in-house cleaning services are set forth in GS-42, the Green Seal Environmental Standard for Cleaning Services. The purpose of GS-42 is to provide objective guidance for building owners and facility managers interested in developing green cleaning programs. Among other things, the standard calls for use of certified green cleaning products and efficient use of cleaning chemicals to minimize waste and exposure. Another source of information for developing green cleaning procedures is the ASTM International document E1971-05, entitled "Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings."

Studies show that green cleaning ranks high among the priorities of building owners and facility managers, second only to improving staff performance/cleaning times. The interest in green cleaning is due in part to the beneficial effects on people and the environment. But there's more to the story than altruistic motives: Green cleaning is good for business. Jerry Yudelson, a sustainability consultant, cites several reasons for the positive impact on business, including reduced energy use and increased satisfaction among tenants and employees in buildings where green cleaning methods are employed.

Green cleaning is good for business.

In addition to businesses, government entities at all levels are now mandating the use of green cleaning products. With demand on the rise among both public- and private-sector clients, many BSCs view green cleaning as an important feature of their businesses. In one survey, more than 80 percent of BSCs reported that they use green cleaning products.

WHAT IS "CLEAN"?

While new standards and certifications clearly define green cleaning, it's less clear what constitutes effective cleaning. There are no laws or regulations that establish required cleaning outcomes to guide those who own and maintain buildings.

However, industry organizations are beginning to address the need to define "clean." As an example, the International Sanitary Supply Association (ISSA) and CIRI are currently partnering on a research project to produce a "scientific-based, pragmatic standard" for measuring surface cleanliness in K-12 educational facilities. This effort is just the beginning of defining "clean," so until complete standards are developed, the definitions below can serve as a starting point for discussing floor maintenance:

Cleaning – removing dirt, grease, debris and many germs by scrubbing with detergent and water. In buildings, floors are cleaned to improve their appearance and make them safer by reducing the likelihood of slip-and-fall accidents.

Sanitizing – reducing the number of disease-causing germs to what is considered a "safe level." One definition of hard-surface sanitizers states that these chemical agents must be capable of killing 99.9% of the infectious organisms present in a bacterial population within 30 seconds.

Disinfecting – destroying disease-causing bacteria or pathogens (but not spores or all viruses, which would require sterilizing, a process not applied to floors). A disinfectant is a chemical agent capable of reducing the level of pathogenic bacteria by 99.999 percent in a time frame of between 5 and 10 minutes. Recent outbreaks of the MRSA and H1N1 viruses have increased the frequency of disinfecting surfaces, usually with a quaternary disinfectant.

The majority of facilities with hard floors are likely to describe their floor maintenance programs as "cleaning," but even within this category there is a wide range of desired outcomes—from the retailer that demands a high-shine finish to greet shoppers every day to the school that needs its hallways free of dust and dirt and its entryways cleared of tracked-in sand, mud and other outdoor soils.

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Regardless of how a facility defines its desired level of clean, the floor-cleaning process is made up of the same four components: 1) time, 2) temperature, 3) agitation, and 4) cleaning substances (see sidebar).

When one of these components is reduced, one or more of the remaining components must be increased in order to achieve the same level of cleaning.

Most facilities' standards of "clean" for porous floor materials would require that the cleaning solution be able to penetrate the small spaces where soil accumulates. Water alone, because of its surface tension, actually sits on top of porous flooring. Porous floor types—which include grouted tile, terrazzo, vinyl composition tile (VCT), concrete and rubberized track surface—require a cleaning agent called a *surfactant* that breaks the surface tension of the water, allowing it to get into cracks and crevices.

The standard of "clean" for floors in healthcare settings and food processing or preparation areas require that bacteria be reduced to a safe level. This sanitizing level of cleaning requires a chemical disinfectant such as a phenolic or carbolic that gets into cracks and crevices where viruses reside.

Facilities with an emphasis on cleaning for appearance will want to be wary of water-only cleaning if their local water supply delivers mineral-laden hard water. These minerals can leave deposits that make floors look dull over time—even worse, in fact, than they looked before cleaning.

Different flooring types can also impact a facility's definition of clean. Buildings with a wide variety of floor types—concrete, marble, linoleum, VCT, etc.—are likely to require multiple floor-cleaning methods, different for each floor surface and perhaps different for various scheduled maintenance. For example, cleaning with just water can be adequate for some floor surfaces or for

Components of the floor-cleaning process:

1. Time

A floor-scrubbing machine can be slowed down in order to spend more time on a soiled area. Another approach is to "double-scrub" problem areas, but this is not a labor-efficient practice and can be unsafe.

2. Temperature

As the temperature of a cleaning solution is increased, the time required for chemicals to react with dirt is cut in half; conversely, as temperature decreases, reaction time increases.

3. Agitation

More downward pressure (scrub pressure) on the brush means more agitation of detergent and water on dirty floors.

4. Cleaning substances

These include water and the various chemicals in detergents, sanitizers and disinfectants. In some green cleaning systems, the only cleaning substance used is water. Obviously, water-only cleaning eliminates the negative environmental and health impacts of chemical production, usage and disposal.

routine maintenance, but not sufficient for other floor types or for weekly deep scrubbing. In addition, cleaning personnel must contend with different amounts of soil on hard floors throughout the facilities they maintain. Dirty entryways, lobbies and the like may require intensive cleaning that is beyond the capabilities of a neutral cleaner or a water-only floor scrubber. Or perhaps the cleaner or water-only machine can do the job, but only when operators give heavily soiled areas a time-consuming double or triple scrub. All of these varying floor-cleaning challenges point to the fact that floor-cleaning practices need to be matched to the surface, the soil and the facility's own standards of clean.

THE NEED FOR CLEANING FLEXIBILITY

Today's hard-floor machines need to be both environmentally preferred and flexible enough to capably handle a wide variety of cleaning situations. Fortunately for cleaning professionals and building managers, such machines are now on the market. These new automatic scrubbers allow cleaning flexibility in a variety of ways:

Machines that are designed to use a proprietary cleaning fluid only or water only are not conducive to the variable cleaning practices used in many buildings today.

Ability to use multiple types of cleaners and water only. Ideally, a "green and clean" scrubber will enable facilities to use any type of detergent or cleaning fluid—including green-certified cleaners. Machines that are designed to use a proprietary cleaning fluid only or water only are not conducive to the variable cleaning practices used in many buildings today. For example, a facility may choose a neutral cleaner for routine daily cleaning, but prefer to scrub with a stronger detergent for deeper cleaning weekly or monthly. Or a facility might use water-only cleaning interspersed with detergent-cleaning to gain the benefits of each; detergent-based cleaning gets into pores and removes more soil, while the intermittent water-only cleaning washes residual detergent out of surface pores to improve floor appearance. (Once detergent is washed out of the pores, the water-only process no longer provides the same cleaning benefit.) For porous floors, a good practice may be to alternate cleaning methods (detergent and no detergent) to keep floors looking their best.

When evaluating green cleaning machines, look for those that can be adjusted to the soil content on the floor for maximum cleaning performance and efficiency. The EcoFlex System, available on the Advance Advenger rider-scrubber, provides flexibility for cleaning green – without compromising the "clean."

Some of today's new scrubbers allow operators to temporarily increase cleaning aggressiveness for specific problem areas.

Ability to change detergents while scrubbing. Scrubbers that provide separate onboard tanks for water and detergent eliminate the task of premixing solution and the need to "dump" unused solution. This saves water and chemicals, while also minimizing waste-stream contribution. The refillable cleaning-fluid cartridges used with the Advance EcoFlex™ System allow a user to easily swap one detergent for another or to clean with water only, no matter where the machine is in the facility.

Ability to change detergent dilution ratio. Today's floor chemicals are usually diluted at a ratio of 128:1 (128 parts water to 1 part detergent), a ratio that is suitable for cleaning heavily soiled floors but can be excessive for routine cleaning applications. To minimize chemical use, some new floor machines include an ultra-low detergent mode suitable for normal cleaning. For example, the EcoFlex System, available on the Advenger® rider-scrubber from Advance, can dispense detergent at a 400:1 ratio for routine cleaning of moderately soiled floors, which is just enough to enhance the natural cleaning power of water and break surface tension. In addition to being green, this mode saves at least 50 percent in detergent costs and leaves behind a light, just-cleaned scent (that water alone does not). State-of-the-art floor-scrubbing machines also feature onboard detergent-metering systems like the one included in EcoFlex. Users of this system fill a cartridge with a cleaning product, set a selector to match the manufacturer's suggested dilution ratio, and insert the cartridge into the scrubber. The system eliminates operator guesswork and ensures that detergent is dispensed at the proper dilution ratio.

Ability to clean with warm water. Every 18°F (10°C) increase in the temperature of water used in cleaning doubles the cleaning effectiveness of a cleaning agent. Equipment that accepts water at temperatures above 100°F can significantly reduce the amount of time required for a cleaning agent to take action.

Ability to increase cleaning performance for specific areas. It's well known that high-traffic areas such as entryways and

lobbies get particularly dirty. Some of today's new scrubbers allow operators to temporarily increase cleaning aggressiveness for specific problem areas. For instance, the EcoFlex System on Advance's Advenger rider-scrubber includes a "burst of power" button that automatically increases detergent, solution flow and brush pressure for 60 seconds—or as long as desired—in order to deliver greater scrubbing power for heavily soiled areas. This machine feature eliminates time- and labor-intensive double-scrubbing that can be required if using a single-mode (low-flow only or water-only) scrubber.

Green cleaning is a trend that's here to stay, but in-house cleaners and BSCs alike need to ensure that "clean" is not sacrificed in the name of "green." The ideal cleaning approach for today's facilities will be easy on the environment and solve a wide variety of floor-cleaning problems. This means that the ideal floor machine is a scrubber that minimizes water and chemical usage while offering the versatility and power to handle the most demanding cleaning jobs. Used along with green-certified cleaning fluids and well-documented cleaning processes, today's advanced scrubbers can deliver cleaning programs that keep the "clean" in green cleaning.

ecoflex™ system

The EcoFlex System, available on select scrubbers from Advance, gives maintenance personnel more cleaning flexibility than other environmentally friendly hard-floor cleaning systems. Scrubbers with EcoFlex allow an operator to match the machine's performance to the soil on the floor. Features include onboard detergent dispensing, automatic detergent metering, and a unique "burst of power" button for an immediate but temporary increase in detergent dilution ratio, solution flow and brush pressure. Plus the machine's ultra-low-flow dispensing cuts water usage by up to 70 percent compared to conventional scrubbing. EcoFlex means there is no need to choose between green cleaning and clean floors because it provides the flexibility for both.

To learn more about the EcoFlex System, visit www.ecoflexsystem.com or call 800-214-7700.

14600 21st Avenue North
Plymouth, MN 55447-3408
www.advance-us.com
Phone 900-850-5559
Fax 800-989-6566

240 Superior Boulevard
Mississauga, Ontario, Canada L5T 2L2
www.nilfisk.ca
Phone 905-564-1149 or 800-668-8400
Fax 905-564-1030 or 800-263-5111

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