

Material Planning: Supplies and Equipment



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In this chapter we continue our examination of material planning by the executive housekeeper. We now turn our attention to housekeeping supplies and equipment.

Housekeeping Chemicals

Traditionally, housekeeping's use of chemicals has constituted a balancing act. We have used chemicals that were effective for their intended purpose, but if they were misused, they could present a real and immediate hazard to the employee using them and to others (e.g., staff and guests) who came into direct contact with the substances. Little or no thought was given to the impact on health resulting from long-term exposure to these chemicals. There was also little or no thought given to what happens to the environment resulting from the creation, use, or disposal of these chemicals. As long as they made our brass banisters brighter, our floors glossier, or our sheets whiter, that was all that mattered.

Times have changed. The first priority is now health—health of our employees, our guests, our children, the planet, and the unborn generations that will follow us. The good news is that we are rapidly approaching the day when we can protect our environment, remove unwanted soil from our buildings, kill **pathogenic organisms**, and preserve, protect, and beautify the property. However, we have to make dramatic changes in how we clean, and we have to educate our people in these new techniques and substances. At the same time, we have to bury several myths associated with cleaning.

CHAPTER OBJECTIVES

After studying the chapter, students should be able to:

1. Categorize chemicals used in the housekeeping department and state their intended uses.
2. Describe recent trends in chemical use and their impact on guests, staff, and, specifically, the housekeeping department.
3. Describe the intended purposes of chemicals used in the housekeeping department and define common chemical terms presented.
4. Identify common cleaning supplies and equipment used in the housekeeping department.
5. Describe recent innovations in cleaning supplies and equipment.
6. Describe common guest supplies.
7. Describe recent innovations in guest bath amenities.

Unfortunately, earlier editions of this text perpetuated some of those myths by recommending chemicals that did more harm than good. These can now be replaced by chemicals that are far more environmentally benign, yet are up to the task.

The astute housekeeper knows the intended purpose of every chemical in the department's inventory. The housekeeper is also ultimately responsible for the correct handling and storage of each chemical so that it does not adversely affect either the user, the public, or the environment.

Chemical Terminology

When attempting to select the proper chemical for a particular housekeeping application, the executive housekeeper is often at the mercy of the sales staff of the local chemical supply firm because he or she is not familiar with basic chemical terminology and the chemistry of cleaning.

Chapter 13 has an entire section devoted to the chemistry of cleaning; the purpose of this section, however, is to acquaint the reader with a few basic terms that will aid in the proper selection and use of these chemicals.

Although there are a number of chemicals in the housekeeping department that are used to protect and beautify floors, walls, and furniture, the majority of housekeeping chemicals are intended to clean, disinfect, and sanitize the environment.

The intended use of **detergents** is to remove soil from a surface through a chemical action. Detergents dissolve solid soils and hold the soils in a suspension away from the environmental surface, thus allowing them to be easily removed from that surface. Most detergents used in housekeeping have been synthetic and were derived from a number of basic minerals, primarily sulfonated hydrocarbons. Now there are a number of green clean-

ing chemicals emerging that are based on soybeans, milk, citrus fruits, and hydrogen peroxide. However, executive housekeepers need to be aware of overinflated claims. There are very few recognized standards for green chemicals. Terms such as "biodegradable," "safe for the environment," "environmentally benign," and even "nontoxic" are ambiguous.

There simply are no universally accepted standards for green cleaning. However, there is Green Seal. According to its website:

Green Seal is an independent, non-profit organization that strives to achieve a healthier and cleaner environment by identifying and promoting products and services that cause less toxic pollution and waste, conserve resources and habitats, and minimize global warming and ozone depletion. Green Seal has no financial interest in the products that it certifies or recommends, or in any manufacturer or company. Green Seal's evaluations are based on state-of-the-art science and information using internationally recognized methods and procedures. Thus, Green Seal provides credible, objective, and unbiased information whose only purpose is to direct the purchaser to environmentally responsible products and services.¹

Green Seal is a 13-year-old nonprofit environmental labeling organization. Green Seal operates under ISO 14020 and 14024, which are the environmental standards for ecolabeling set by the International Organization for Standardization (ISO), and is the U.S. member of the Global Ecolabeling Network (GEN), the coordinating body of the world's 27 leading ecolabeling programs, including Germany's Blue Angel and Scandinavia's Nordic Swan.

Green Seal has developed a standard for industrial and institutional cleaners (GS-37). It is very safe to assume that any cleaning product having the Green Seal logo meets the highest available standards. (see Figure 6.1)



Figure 6-1 Green Seal logo. (Courtesy of Green Seal, Washington, D.C.)

EnviroX's H₂Orange₂ Concentrate 117 has not only been tested and authorized to carry the Green Seal mark, but is also an EPA-registered sanitizer-virucide that has been approved for use on food preparation surfaces. H₂Orange₂ has also received National Sanitation Foundation (NSF) approval as a sanitizer on all surfaces in and around food-processing areas. These ratings require that a potable water rinse of cleaned surfaces in and around food processing areas be performed after using the product.

Other chemical manufacturers, such as Coastwide Laboratories of Wilsonville, Oregon, have sought out other independent third parties for the certification of their green chemicals. Coastwide developed the Sustainable Earth™ product line and submitted it to Coffey Laboratories for independent review against the Sustainable Earth2 standard—the entire line passed. The standard was based on a three-part process. First a set of mandatory pass/fail criteria were established, and each chemical was compared with the criteria. Each chemical had to pass all of the criteria or be instantly rejected. The second part of the process evaluated specific environmental health and worker safety characteristics of each product. Point values were assigned to each criterion that was reflective of health and safety priorities. If a product scored more than an established threshold value, it was rejected. The third part used a reliable measurement method that established a hazard value for chemicals developed at Purdue University, entitled the Indiana Relative Chemical Hazard Score (IRCHS). A chemical product that exceeds an IRCHS threshold value is rejected as a green cleaning product.

Many detergents have a neutral pH, which means that they are neither an acid nor an alkaline compound. The degree of alkalinity or acidity is indicated on the pH scale. The scale runs from 0 to 14. Zero through 6 on the scale indicates acidity. Position 8 through 14 on the scale

indicates alkalinity. Seven indicates a neutral compound. Alkalies are often used to enhance the cleaning power of synthetic detergents. Strong alkaline detergent cleaners should not be used on certain surfaces. (For more information on this topic, see Chapter 5.)

Disinfectants are chemical agents that have been tested by the federal government and have been proven to destroy pathogenic microorganisms on inanimate surfaces. It is important to understand that there are no instantaneous disinfectants. Disinfectants need **dwell time** on a surface. They must remain for a prescribed number of minutes so the chemical can kill the bacteria and viruses that are present. They are said to have a bacteriostatic effect. A **bacteriostat** prevents microbes from multiplying on a surface. Disinfectants are not intended to be used directly on humans or animals. Other similar terms used to describe specific disinfectants are *bactericides*, *fungicides*, *germicides*, and *virucides*. There are different degrees or levels of cleaning, according to Michael A. Berry. In his landmark work *Protecting the Built Environment*, he lists three different levels of cleaning: sterilization, disinfection, and sanitation. Sterilized, says Berry, means that a surface is 100 percent free from contamination, disinfected means the vast majority of pathogens have been removed, and sanitary means that a surface has some contamination, but is clean to the point that it protects health in general.² The purpose of disinfectants is not to remove soils from surfaces, but there are a number of products on the market that combine a synthetic detergent with a disinfectant so that a surface can be cleaned and disinfected at the same time. The use of a disinfectant alone on a soiled surface is ineffective, as the soil serves to protect the bacteria from the germicidal action of the disinfectant. Combined detergent-disinfectant chemicals are quite effective if they are used according to directions. In certain instances, however, particularly in a hospital environment, it is necessary to first apply a detergent to remove soil buildup and then apply a disinfectant solution after the surface has been cleaned. In most hotel applications, it is perfectly acceptable to use combined detergent-disinfectants. The great advantage to using detergent-disinfectant solutions rather than separate solutions is the labor saved by not having to wash the surface twice.

Common disinfectants include **quatary ammonium compounds**, **idophors**, **hypochlorites**, **hydrogen peroxide**, and **phenolic compounds**. These compounds are discussed in greater detail in Chapter 13.

It should be noted here that a few hotel housekeepers might fail to see the relevance of disinfectants to hotel housekeeping. This attitude is based on a common misconception that only hospitals need to worry about the control of pathenogenic microorganisms. Unfortunately, hotels and restaurants provide a superb environment for the breeding and transmission of disease. For example, according to the Centers for Disease Control, 77 percent

of all cases of foodborne illness originate in commercial food service establishments. It is also estimated that hepatitis A is transmitted to thousands of restaurant customers annually from infected workers.³ Who can forget that the dreaded Legionnaires' disease originated in the air-conditioning system of a hotel? Now we have SARS (severe acute respiratory syndrome). There are indications that not only can this dread disease be transmitted through direct contact, but that the virus can survive for 24 hours on a surface and perhaps even longer if it is contained in fecal matter.

Bathroom fixtures in particular need to be disinfected, starting with toilets and urinals; but other areas that need special attention include door handles, soap and towel dispensers, faucets, flooring around urinals and toilets, partitions around toilets and urinals, levers to flush toilets, telephones, water fountains, and floor drains. Places where people have vomited, or where there are any human fluids to be found, should also be disinfected. Proper training and protective gear for the housekeeping staff must be available. According to Beth Risinger, C.E.O. of the International Executive Housekeepers Association, handwashing by cleaners is critical every time they change environments or move from guestroom to guestroom.

In many areas of a hotel, the intention is not to maintain totally disinfected surfaces, as is required in a hospital environment, but merely to maintain sanitized surfaces. A **sanitizer** is a chemical that kills microorganisms to an accepted, or what is generally regarded as a safe, level. Sanitizers are not intended to provide a bacteriostatic surface. Sanitizers may be specially formulated chemicals, or they may be disinfectants that have been diluted to serve as sanitizers. Sanitizers are used on such surfaces as carpets, walls, and floors, and may also be used in conjunction with room deodorizers to sanitize the air. At the very least, the lodging industry needs to establish clearly defined standards for cleanliness in all areas of an operation. Until such standards are established, operators should develop their own high standards and follow them.

Potentially dangerous chemical reactions can take place in the housekeeper's mop bucket as well as in the chemist's laboratory. One of the most dangerous occurs when an ammoniated product is mixed with a hypochlorite (such as bleach) or when a bleach is mixed with an acid-based cleaner. In both cases, potentially deadly chlorine gases are released.

Selection Considerations

A number of variables must be considered to ensure that the most appropriate chemical product is chosen. One crucial factor is the relative hardness of the water at the site. Water hardness refers to the amount of calcium and magnesium found in the water. Most disinfectants

and sanitizers that are quaternary-based are negatively affected by water hardness. Look on the product label for claims of effectiveness in hard water.

A second concern is the particular type of soil that is to be removed from the environment. Grease and oils may call for solvent cleaners that normally have a petroleum base, whereas scale and lime deposits on bathroom fixtures may require an acid-based cleaner. In the next section of this chapter, we shall explore the merits of using all-purpose cleaners.

A third consideration is the initial cost of the product. Since different chemicals are diluted to different concentrations, always base your calculations on the cost per usable gallon of solution.

A fourth factor is the cost of labor and equipment. Some chemicals are much more "labor intensive" than others; that is, they require a greater degree of physical force in their application in order to be effective. That force requirement can translate into expensive equipment and more man-hours to effectively do the job.

A fifth factor is the relative availability of the product. Is the distributor always ready, willing, and able to provide the product? Or have there been numerous instances of **stock-outs**? If the chemical is not always available when you need it, you should seriously think of changing brands or distributors.

Sixth, does the distributor give good service? Is the vendor willing to demonstrate the proper use of the product? Is the vendor willing to conduct comparison tests of chemicals at your site? Is the company also willing to help train your staff in the proper use of the product? Also, if the product fails to meet expectations, will the distributor take back the unused product and issue a credit memo? Good service certainly adds value to the product. Sometimes this value more than compensates for an extra penny or two in cost per usable gallon. Finally, is the chemical the most environmentally sound chemical that can be obtained? Is there third-party certification to support that claim? Does that green chemical meet your needs without becoming "overkill?" As Jimmy Palmer, Executive Housekeeper at the Four Seasons-Las Vegas, remarked, "At the Four Seasons, we do not need a hydrochloric acid bowl cleaner to remove lime and soil buildup, because we clean our toilets every day."

All of these variables must be carefully weighed when purchasing chemical supplies.

All-Purpose Cleaners

One innovation in housekeeping chemical use has been the increasing use of **all-purpose cleaners**. Most all-purpose cleaners are pH-neutral, so they are safe for most surfaces that can be cleaned with a water-based product. All-purpose cleaners normally do not need to be rinsed, they do not leave a haze, and they do not

Change Agent

Roger McFadden

VICE PRESIDENT, TECHNICAL SERVICES
COASTWIDE LABORATORIES

Roger McFadden is Vice President of Technical Services and Product Development for Coastwide Laboratories, a position he has held since 1988. McFadden is one of five individuals in the United States appointed by Underwriters Laboratories (UL) to serve on the Industry Advisory Council on Slip Resistance Standards and has recently been appointed to a Standards Technical Panel by UL and the American National Standards Institute (ANSI). He is a member of the ASTM D-21 Floor Polish Standards Committee and a member of the Hard Surface Inspection Task Force for the Institute of Inspection Cleaning and Restoration Certification (IICRC). McFadden is on the faculty of the Cleaning Management Institute (CMI), the chairman of Oregon governor Kitzhaber's Community Sustainability Council Workgroup for Cleaning and Coatings, and a charter member of the Unified Green Cleaning Alliance.

Holding a master's degree in chemistry, McFadden is a frequent speaker for health care organizations, educational institutions, public agencies, and private corporations. He speaks on a variety of environmental, safety, and health topics. He has been published in several trade publications, including *Cleaning and Maintenance Management*.

He also led development of the Sustainable Earth evaluation standard and the Sustainable Earth product line at Coastwide Laboratories. "Though Sustainable Earth products met all the criteria of the leading national environmental standards, our customers were asking us to raise the bar," McFadden said. "We basically had to create a more comprehensive standard than any that has existed to date." David DiFiore, project manager for the U.S. Environmental Protection Agency's Design for the Environment program, says McFadden has been "a major change leader." DiFiore says Coastwide Laboratories worked with the Zero Waste Alliance of Portland to form the Unified Green Cleaning Alliance, a group of Pacific Northwest businesses working to raise standards for sustainable cleaning products. "The work he's done outlining all the ingredients used in formulations, and trying to understand the environmental and health implications of those ingredients, that's just outstanding," says DiFiore.



Figure 6-2 H₂Orange₂ 117 Concentrate is a unique all-purpose chemical that is a highly effective sanitizer-
virucide and cleaner. It can be used in kitchens and
bathrooms and has a multitude of other applications. In
different dilutions, it performs various tasks, from
window cleaning to mopping floors. The concentrate has
three proprietary dispensing options (*lower left to right*):
Bucket Buddy, Spray Buddy, Blend Buddy. It is also Green
Seal certified. (Photo courtesy of EnvirOx, L.L.C. Danville, Illinois.)

streak. The relative cleaning effectiveness of an all-purpose cleaner is normally determined by its dilution strength, which can be set for different jobs. An example of an all-purpose cleaner can be seen in Figure 6.2.

Using an all-purpose cleaner, is an effective way to reduce product inventory, and reducing inventory usually means bringing more dollars to the bottom line. Using an all-purpose cleaner can also translate to quantity buying, which can mean greater savings.

However, there are disadvantages to all-purpose cleaners. Perhaps the greatest disadvantage is that an all-purpose cleaner is inadequate for certain cleaning tasks. One example would be in the cleaning of bathroom equipment where a disinfectant is needed. Most all-purpose cleaners do not contain disinfectants. Another concern is whether employees are properly diluting the all-purpose cleaner for the specific task at hand. Far too often, employees will assume the attitude that “more is better” and will fail to properly dilute the detergent. This action inevitably drives up costs.

Single-Purpose Cleaners

There are numerous instances in which an all-purpose cleaner is inadequate. In this section, we will examine the relative merits of a variety of single-purpose cleaners.

Abrasive Cleaners

Abrasive cleaners normally contain a detergent combined with a bleach and an abrasive (usually silica, a quartz dust that can scratch glass). The abrasiveness of the cleaner is determined by the percentage of abrasive in the cleanser. Abrasive cleansers can be found in either powder or paste form. The paste is preferred because it will cling to vertical surfaces. Under no circumstances should abrasive cleaners be used on fiberglass tub and shower enclosures; furthermore, abrasives are not recommended for porcelain fixtures.

Degreasers

Degreasers or emulsifiers are usually found in most commercial kitchens. They are concentrated detergents that are formulated to remove heavy grease buildup. Figure 6.3 shows the soy-based product Soy Green 1000™, from Soy Technologies, Inc., which can remove heavy kitchen grease but is nonflammable, nontoxic, and noncarcinogenic. Petroleum solvents have degreasing properties, but because of their flammability and toxicity they are rarely used on kitchen surfaces.

Deodorizers

Deodorizers, if properly used, can improve a facility’s public image and improve employee morale. Some deodorizers counteract stale odors, leaving a clean, air-freshened effect through the principle of **odor-pair neutralization**. These deodorizers leave no trace of perfume cover-up. This approach is preferred in restrooms, guestrooms, and public areas. Most guests react negatively to cheap cover-up deodorant perfumes in hotel lobbies or guestrooms.

However, where there are particularly strong odors, such as at a garbage dumpster or a pet kennel, a deodorant formula that contains fragrances may be appropriate. Methods of deodorant application include aerosol sprays, “stick-up” applicators, timed-release systems, liquids, powders, and hand pump sprays (see Figure 6.4).

Drain Cleaners

Drain cleaners contain harmful acids and lyes and should not be applied by the regular housekeeping staff. They should be used only by management or by staff who have been specially trained in their application. Drain cleaners are hazardous and can corrode pipes; consequently, many properties have banned their use in favor of pressurized gases or drain-cleaning augers. There is even a plastic throwaway drain auger that effectively cleans out sink drains clogged with hair.

Furniture Cleaners and Polishes

Furniture cleaners and polishes are normally wax- or oil-based products that contain antistatic compounds. The best polishes contain lemon oil, which serves to replenish the moisture that is lost from the wood.

Hand Soaps and Detergents

Handwashing is an important component of personal hygiene for all employees. One of the biggest preventatives of **nosocomial infection** in hospitals is the practice of handwashing.⁴ Unfortunately, many employees do



Figure 6-3 Pictured in the middle is Soy Technologies, Inc.’s Soy Green (SG) 1000, a nonflammable degreaser. (Photo courtesy of Soy Technologies, Inc. Delray Beach, Florida.)



Figure 6-4 Coastwide Laboratories' Sustainable Earth Odor Eliminator safely neutralizes odors and is designed for a pump spray container. It eliminates water- and oil-based odors. (Photo courtesy of Coastwide Laboratories, Wilsonville, Oregon.)

not wash their hands often enough because they believe that repeated handwashing will cause skin dryness and cracking. Since the housekeeping department is often in charge of purchasing hand soaps, the housekeeper should stock only disinfectant lotion soaps that prevent dryness and cracking. An excellent waterless hand cleaner and conditioner is Soy Derm,TM pictured in Figure 6.3. It contains natural oils, vitamin E, aloe, and tea tree oil. It cuts through the worse grease, oils, inks, paints, and tars. It leaves hands softer than they were before application.

Laundry Chemicals

Laundry chemicals include synthetic detergents, concentrated bleaches, **antichlors**, **sours**, and fabric softeners. The detergents are often **nonionic detergents** that contain fabric brighteners and antiredeposition agents. The active ingredient in most laundry bleaches is sodium hypochlorite. Antichlors are added to remove excess chlorine from the fabric. Sours are added to lower the pH and may also contain bluing and whiteners. Suitable sours include ammonium silicofluoride, sodium silicofluoride, zinc silicofluoride, and acetic acid. Excessive use of sours may result in a sour odor remaining on the clothes. Softeners are usually **cationic** products that contain antistatic and bacteriostatic agents. Their purpose is to leave the laundered product fresh, soft, and with no static cling. When bacteriostatic agents are present, they

help to reduce the growth of pathenogenic organisms on the fabric. Smart laundry managers are studying the addition of ozone to the laundry process. It increases the effectiveness of chemicals, shortens wash time, and allows for a lowering of water temperatures (saving energy and money). An article from the April 2003 edition of *Executive Housekeeping Today* on ozone in the laundry appears in Appendix E.

Metal Cleaners and Polishes

Metal cleaners and polishes are usually paste-type cleaners that contain mild acidic solutions. Some contain protective coatings that inhibit tarnishing.

Solvent Cleaners

Solvent cleaners are used to clean surfaces that are badly soiled by grease, tar, or oil. Solvents are made from pine oils, kerosene, alcohols, and now, soy. Soy Green 5000, pictured in Figure 6.3, is such a strong biosolvent that it can safely remove graffiti, paint, and varnish (see Figure 6.5). Some types of solvents will not adversely affect paint, acrylics, and metals. Carbon tetrachloride and other halogenated hydrocarbons are extremely toxic and carcinogenic and should be avoided at all costs. Some **petroleum naphtha solvents** have a high **flash point**. The higher the flash point, the less chance a cleaner will ignite. The best choice for a solvent is one that will do the job and is preferably a biosolvent, versus a petroleum solvent, which is a **volatile organic compound (VOC)** that will diminish **indoor air quality (IAQ)**.

Bathroom Cleaners

To clean away lime encrustations on washroom fixtures, remove rust stains, and remove organic soils, the chemical industry has produced cleaners that meet these unique needs. The emulsion toilet bowl cleaner normally contains acid, which is necessary to remove rust and corrosion, and detergents that remove fecal material, urine, and bacterial colonies. Hydrochloric acid has been the acid of choice in these cleaners, but has been replaced by the milder phosphoric acid and oxalic acid. All are corrosive and should not come into contact with metal fixtures, especially chrome—let alone people. They should also not be used on walls or floors. Now we have alternatives, such as Coastwide Laboratories' Sustainable Earth Toilet & Urinal Cleaner that effectively removes soils and mineral deposits without acids (see Figure 6.6).

Jetted Hot Tub Cleaners

There are now an estimated 2 million jetted hot tubs in lodging properties and hospitals. Cleaning of the tub has been, until now, similar to the cleaning of an ordinary bathtub. However, many guests have noticed that once the jets were turned on, black specs appeared in the water. These specs have, in many cases, turned out to be algae. Up to a pint of bath water remains in the pipes and

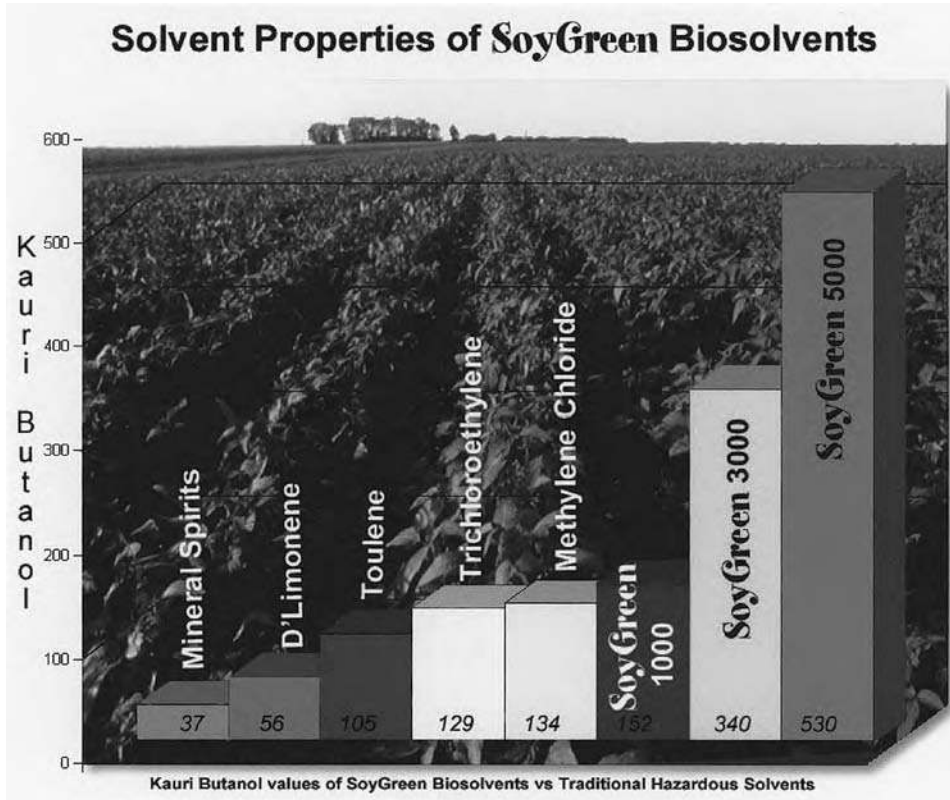


Figure 6-5 The Kauri Butanol scale measures the power of solvents. SG 5000 is far more powerful than traditional solvents that are toxic and often carcinogenic. (Photo courtesy of Soy Technologies, Inc., Delray Beach, Florida.)



Figure 6-6 This cleaner is formulated without fragrances and has surfactants made from rapidly renewable resources. (Photo courtesy of Coastwide Laboratories, Wilsonville, Oregon.)

pump housing when the tub is drained. Combined with lime deposits and scale in a light-free environment, this water provides an excellent medium for the growth of algae, bacteria, and viruses. A biofilm eventually forms inside the pipes, making it extremely difficult to kill these pathogens. Organisms such as *pseudomonas*, *E. coli*, and *Legionella* have been found growing in these tubs. The housekeeping staff, and certainly the next guests to use these tubs, risk infection. Plainly stated, the guest who soaks in one of these tubs is soaking in some of the same water that was used by the previous guests who used the tub. Fortunately, some companies are now making chemicals designed for these tubs that will destroy the algae and pathogens that may be found in them (see Figure 6.7).

Carpet Cleaners

Carpet-cleaning chemicals, whether they are sprays, foams, dry powders, or shampoos, contain essentially the same types of chemicals in slightly different forms. Common chemicals include neutral water-soluble solvents, emulsifiers, **defoamers**, optical brighteners, and deodorizers. Many also contain sanitizers; however, some of these may have an adverse effect on fourth- and



Figure 6-7 Purge Tech™ has four products used to clean whirlpool tubs (clockwise from upper left), Oxyflush,™ a cleaner and deodorizer for a whirlpool plumbing system; Aqua Polorizer,™ a hydromagnetic suspension system for minerals in the water; ThoroPurge,™ a disinfectant for the whirlpool plumbing system; and the ThoroPurge Machine,™ which flushes the ThoroPurge chemical through the whirlpool's piping system and down the drain. These four components constitute the Jet Tub System.™ (Courtesy of Purge-Tech, Inc.)

fifth-generation nylon carpets. Soil and stain repellents may also be included in the cleaners. When selecting a particular brand, do a comparison test between your current brand and the proposed alternatives. If the greener product works as well, consider using it (see Figure 6.8).

Floor Care Products

The chemical formulation of a floor care product is dependent on the product's function.

Strippers

Strippers are used to remove the worn finish from floors. They may have an ammoniated base or may be nonammoniated products. Nonammoniated strippers may not be as effective in removing **metal cross-linked polymer**

finishes, but they do not have the harsh odor associated with the ammoniated products (see Figure 6.3). A neutralizing rinse is often applied after the stripper. These rinses neutralize alkaline residues left from the stripping solution that may affect the performance of the new finish.

Floor Cleaners

Floor cleaners are mild detergents that work in cool water to remove soils without affecting the existing floor finish. Many floor finishes are **thermoplastic**; hot water tends to soften the finish. Most floor cleaners also have a neutral pH and many require no additional rinsing.

Sealers and Finishes

Sealers and finishes are applied to most floor surfaces to protect the flooring material from wear, cleaners, and



Figure 6-8 Coastwide's Sustainable Earth Carpet Cleaner is biodegradable, contains no phosphates, and is safe on all generations of carpet. (Photo courtesy of Coastwide Laboratories, Wilsonville, Oregon.)

liquid spills. The chemical composition of the sealer or finish will vary according to the type of flooring material for which it is intended. The preferred product for most resilient floors and some stone floor applications has been the metal cross-linked floor finishes (particularly zinc cross-linked polymers) because of their ability to give floors the popular “wet look.” Recently, the use of these heavy metal finishes has fallen into disfavor because of environmental concerns. A number of states have prohibited their sale because of the perceived danger resulting from emptying these heavy metals into the sewer when the finishes are stripped from the floors.

Many of the same concerns are being voiced about wood sealers and finishes that have solvent bases. A water-based finish for wood is now available that is considered by many experts to be environmentally safe.

Pesticides

Pesticide applications should be left to the expert. Housekeeping departments are advised to seek the services of a reliable pest control company rather than attempting to control pests themselves. If there is a perceived need to keep pesticides in inventory, it is strongly suggested that only natural pyrethrins be used, if at all possible, or that you employ an integrated pest management system that encompasses predator insects. For roaches, the single best way to control them in a building is to starve them to death. Keep kitchens, storerooms,

Green Tips

We pour millions of tons of cleaning products down our drains every month in this country. These products often contain toxic chemicals that find their way into our lakes and streams and can end up in our food and water. Don't believe they can get back to you? Just ask the residents of Las Vegas. A Kerr McGee plant poured perchlorate (a jet fuel additive) into the ground near its plant in Henderson, Nevada. That chemical worked its way into Lake Mead and the Colorado River. Not only are the citizens of Las Vegas drinking some of it in their water, but it is also coming back to their tables in the form of contaminated lettuce from California's Imperial Valley, which uses water from the Colorado to grow its crops.

So, take action—do your research and build environmentalism into your chemical purchasing specifications.

Remember, there is no “upstream” on this planet; we are all “downstream.”

guestrooms, and offices scrupulously clean, and you will not have a roach problem.

Handling and Storage of Chemicals

Manufacturer guidelines should be strictly adhered to when storing and handling chemicals. All chemicals should be routinely kept under lock and key. A system of inventory control should be established and followed. Chemicals are expensive, and employees should be held accountable for their misuse. If bulk chemicals are used, employees should be taught how to properly dilute them.

Chemical Packaging

Bulk Chemicals

Bulk chemicals offer the housekeeping department the greatest potential for savings, but the executive housekeeper should beware of overbuying chemicals. One problem is that large quantities of chemicals cannot always be stored properly. The cost of storing large quantities of chemicals may offset any potential cost savings from bulk purchases. Chemicals may deteriorate while in storage. The expiration dates that appear on some chemical supplies should be noted. The executive housekeeper should also compare the cost savings of bulk buying with the potential interest that would be generated if a minimal amount of chemical were purchased, and the cost difference between the minimal amount

and the bulk amount invested. If the savings from buying in bulk would be greater than the amount of interest that would be generated, then the bulk purchase is a wise investment. But if the interest generated would be greater than the cost savings from buying in bulk, then the wise choice is to buy the lesser amount and invest the difference.

Another problem with bulk chemicals occurs when employees do not dilute the chemical to its appropriate level. If the dilution process is not rigorously monitored, the tendency of most employees is to use too much chemical, which drives up cost. An alternative to this costly practice is the use of the new in-house chemical mixing stations, as pictured in Figure 6.9. These systems automatically mix bulk chemicals, thus eliminating guesswork and improper dilution levels.

Premeasured Chemicals

Many chemical and detergent manufacturers produce premeasured (packaged) products in filament containers that dissolve when placed in a prescribed amount of water, yielding the proper amount of chemical in solution.⁵ Although these products are higher in unit price, the use of such premeasured products provides a high

degree of cost control, better inventory procedures, and better quality in cleaning. In addition, housekeeping managers and hospital administrators desiring documentation on cleaning costs are more likely to accept cost documentation when premeasured chemicals and detergents are used, since exact quantities may be determined.

Aerosols

Aerosol chemicals have received considerable negative press in recent years from a variety of sources. Housekeeping managers often react negatively because of the higher net product cost associated with aerosols. Packaging and propellants drive up the cost of the product.

Environmentalists have reacted negatively to the use of aerosols for years. In the 1970s, the issue was the widespread use of chlorofluorocarbons (CFCs), which were linked to ozone depletion and global warming. Although CFCs are not used anymore, substitutes have been accused of contributing to acid rain and smog formation; and in one case, the propellant (methylene chloride) was suspected of being a carcinogen.⁶ Aerosols also break the chemical into an extremely fine mist, making it much more respirable. Aerosols are a major contributor to

Figure 6-9 A close-up of a chemical mixing station in a satellite linen and storage room. (Courtesy of Bellagio MGM Mirage, Las Vegas, Nevada.)





Figure 6-10 Coastwide Laboratories' Sustainable Earth products are formulated to be compatible. (Photo courtesy of Coastwide Laboratories Wilsonville, Oregon.)

poor indoor air quality (IAQ). It is wise to eliminate them from your inventory.

Compatibility in Chemical Product Design

One reason why housekeeping managers consider the purchase of only one brand of housekeeping chemical products is chemical compatibility (see Figure 6.10). Chemical manufacturers often formulate their chemicals to perform better with other chemicals in their product line than with the chemical products made by competitors. One example of this is a floor stripper that works best in removing a floor finish made by the same manufacturer.

When selecting any new chemical, a housekeeper should ask to have the vendor demonstrate the product at the site where it will be used so that comparisons between brands can be drawn.

OSHA's Hazard Communication Standard

Since 1988, hotels have been required to comply with the Occupational Safety and Health Administration's (OSHA) Hazard Communication (**HazComm**) Standard, which applies to the handling and storage of hazardous chemical materials. Hazardous chemicals include, but are not limited to, aerosols, detergents, floor chemicals, carpet chemicals, flammable chemicals, cleaners, polishes, laundry chemicals, bathroom cleaners, and pesticides.

To be in full compliance, management must read the HazComm Standard. OSHA maintains a website, <http://www.osha.gov>, that provides extensive information on what an employer should know to be in compliance with the law. Visit this website and, using the search tools, you can find yourself at the guidelines for employers on how to set up a hazard communications program.

The hotel must also inventory and list all hazardous chemicals on the property. The company must then get **material safety data sheets** (MSDSs) from the chemical manufacturers. These MSDSs should explain the chemicals' characteristics, recommended handling use and

storage, information on flammability, ingredients, health hazards, first-aid procedures, and what to do in case of a fire or explosion. This information must be disseminated to employees and should be made available to them at all times.

The hotel must also formulate a HazComm program for the property and establish a training program for all employees who use or come in contact with hazardous chemicals. Finally, the property must provide all necessary protective equipment to its employees.⁷

A Final Word on Green Chemicals

As the demand for green chemicals is growing meteorically, led by demands of the federal and state governments, closely followed by the health care profession, more and more chemical manufacturers are getting on the bandwagon. When choosing a green company, try to choose one that "walks the walk" as well as "talks the talk." See Figure 6.11, a statement of EnvirOx's "Corporate Environmental Commitment," for an example of a program that should be emulated throughout the entire cleaning chemical industry.

Another example is Coastwide Laboratories' recent award from the city of Portland, Oregon, for its Sustainable Earth commercial cleaning product line. The award entitled, "BEST (Businesses for an Environmentally Sustainable Tomorrow) Business Award for Environmental Product Development" was presented to Roger McFadden, Vice President of Technical Services for Coastwide Laboratories. David DiFore, project manager for the U.S. Environmental Protection Agency's Design for the Environment program, called McFadden, "a major change leader" in a press release.

Other companies of note include Oxy Company Ltd., Worx Environmental Products, Ipax Cleanogel Inc., Rochester Midland Corporation, Hillyard Industries, and 3M, as well as the previously mentioned EnvirOx. All of these firms have cleaning products certified by Green Seal.



Corporate Environmental Commitment

EnviroX has been implementing a program to improve our “corporate footprint profile” since January of 2002. This program has included the following completed projects:

Operations:

- 1) Installation of a system to eliminate all waste from our production process. In order to complete this system we have:
 - a) All returned liquids are returned to the process.
 - b) Installed equipment and procedures to recycle 100% of all liquids collected from blow-downs, transfers, and system clean-outs. All liquids are collected and returned to the next production batch. Even cleaning solutions produced while calibrating dispensers are recycled. All floor drains are plugged and no pipelines or hoses are preeminently or temporarily connected from the production process to sewer lines.
 - c) All waste cardboard is bailed and recycled.
 - d) All wasted bottles are bailed and recycled.
- 2) All lighting fixtures in the building have been replaced with new, high efficiency units.
- 3) All heating and cooling units in the building have been replaced with new high efficiency units.

Community:

EnviroX considers support for our community an integral component of the “Corporate Footprint profile”. Along with the more conventional support of local United Way initiatives, we are actively involved in supporting the local Boys and Girls Club with contributions to their building fund, participation on the Board of Directors and regular, monthly contributions to operating funds. As our company grows we remain committed to increase this support of what we consider a foundation service to our community.

M. Rebecca Melikyan, Exec. Vice President

Taylor Stewart, Vice President of Sales

Patrick Stewart, President

Figure 6-11 Nothing goes down the sewer from the production processes at EnviroX. (Document courtesy of EnviroX, L.L.C. Danville, Illinois)

P.O. Box 2327 • 1938 E. Fairchild St. • Danville, IL 61832-2327 • 800-281-9604 • 217-442-8596 • Fax 217-442-2568

Cleaning Supplies and Equipment

Chemicals are only part of the housekeeping department’s arsenal of weapons in its war against dirt. The professional housekeeper must develop standards for the equipment and supplies used by the property and must incorporate those standards into written purchase specifications. The following section is intended to aid the housekeeper in formulating those specifications.

Cleaning Supplies

Nonchemical cleaning supplies include brushes, brooms, buckets, mops, pads, rags, and wringers. Although these supplies look fairly simple and straightforward, there are a number of features to look for when selecting them.

Brooms and Brushes

Common varieties of brooms include push brooms, corn brooms, and whisk brooms. The role of a broom is to remove large particles of soil from hard and resilient floors. Good push brooms will have two rows of bristles. The front row will have heavy-duty bristles designed to remove stubborn, large particles of dirt and debris. The second row will have fine, split-tip bristles designed to remove fine particles of dirt and debris. Many good push brooms have a steel brush hood that allows the operator to change worn brushes. One company even has a built-in shock absorber between the brush hood and the handle to prevent broken wooden handles.

The better scrub brushes have U-joints so that they can be used at any angle. This is particularly helpful when cleaning baseboards. Some models have rubber blades for drying surfaces.

Mop Buckets

Buckets are made of three basic materials: galvanized steel, stainless steel, and structural foamed plastic. Plastic buckets do not rust and are the most inexpensive to make, but they scratch, and dirt builds up in the scratches, making them permanently “grungy.” Stainless steel buckets are typically the most expensive. The “Cadillac” of mop buckets has to be the KaiMotion SUV.™ This ergonomic microfiber mopping system can be used to apply floor finishes, strippers, and degreasers, to damp mop floors, and to clean walls (see Figure 6.12).

Another innovative system incorporates the bucket into the mop handle. The Bucketless Mop™ from Newport Marketing Group, Inc. (see Figure 6.13) is a win-win for guestroom attendants (GRAs). This system can easily attach to a housekeeper’s cart. No longer would housekeepers have to clean the bathroom floor on their hands and knees with rags, thus avoiding stress injuries and saving time and money. The microfiber mop heads can be quickly changed out to avoid cross contamination of hospital rooms. A quick sweep with a corn broom, be-



Figure 6-12 This bucket has an easy-lift handle that lightens the 10-gallon load by 2/3; with its flat mop system, you no longer have to empty dirty mop water.



Figure 6-13 The Bucketless Mop with its flat microfiber mop head is a labor-saving device that eliminates the chore of hauling a bucket upstairs. It can also serve as a dust mop or a floor finish applicator with only a quick change of pads.

fore mopping, to gather up hair and large particles of soil is still recommended.

Wringers

Mop wringers squeeze in one of two directions—side-ways or downward. Downward wringers are better, but more expensive. Wringers are made of either steel or plastic. Plastic is less expensive, but it wears out much faster than the metal wringers. Wringers can be purchased by size or in a “one-size-fits-all” size.⁸

Wet Mops

The flat microfiber mop head is destined to make all other wet mop heads obsolete. The fibers have a diameter of .01–.02 denier, which is much thinner than a human hair (see Figure 6.14). The fabric is a blend of polyester (70–80 percent) and polyimide (20–30 percent), which is a by-product of nylon. Appendix I contains an article originally published in the February 2003 issue of *Executive Housekeeping Today*, describing a study of microfiber flat-mop systems at the University of California Davis Medical Center.

Wash wet mops after each use and do not apply bleach to the mop; bleach will speed the disintegration of the fibers. Wet mops can be purchased in a variety of

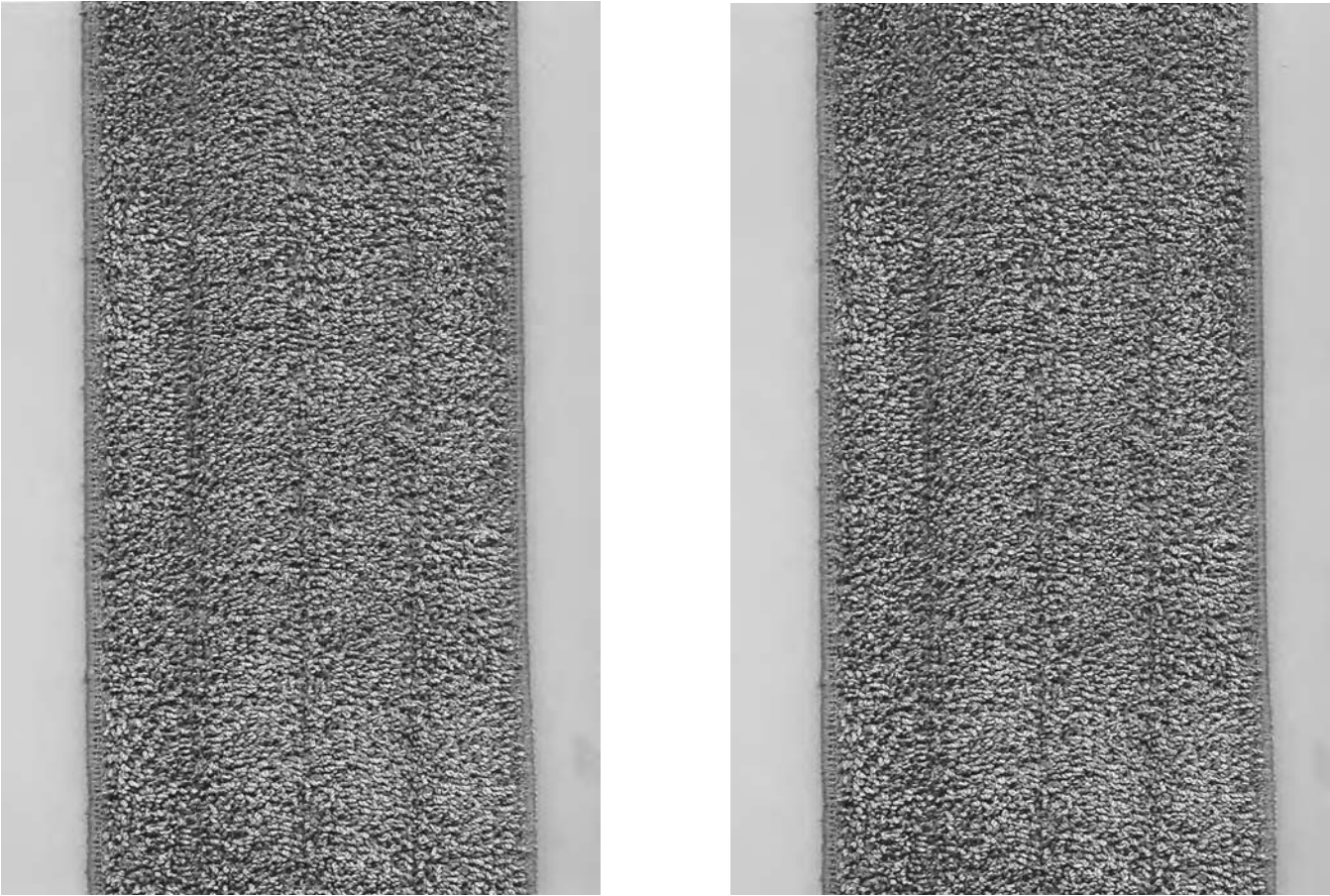


Figure 6-14 Microfiber mop heads can be designed for wet mopping (*photo on left*) or for dusting (*photo on right*). (Photos courtesy of Newport Marketing Group, Inc., Costa Mesa, California.)

colors for color-coding purposes. Microfiber mops can be easily changed out in a hospital setting to avoid cross contamination. Cross contamination is the transportation of germs from one area to another through such activities as mopping floors.

Mop Handles

Mop handles can be made from wood, metal, and plastic and come with a variety of features. Quick-change clamps are one welcome option. Handles are available in 54-inch, 60-inch, and 63-inch lengths.⁹ Another is the telescoping mop handle, which can also be used to dust walls and ceilings.

Dust Mops and Dust Cloths

The traditional dust mop, feather duster, and lamb's wool duster are all destined for extinction. They will all be replaced by microfiber technology. Microfiber does not push the dust around; it picks it up and holds it until it is released by washing in soap and hot water. Figure 6.15 is a cross-section photograph of a single microfiber thread, and Figure 6.16 is an illustration of how mi-

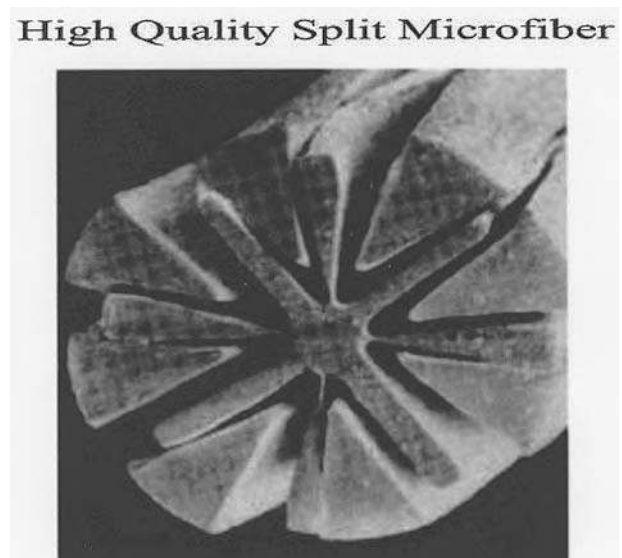


Figure 6-15 Microfiber will increase worker productivity and reduce chemical costs. Note how the microscopic thread is split to enhance pickup. (Photo courtesy of Newport Marketing Group, Inc., Costa Mesa, California.)

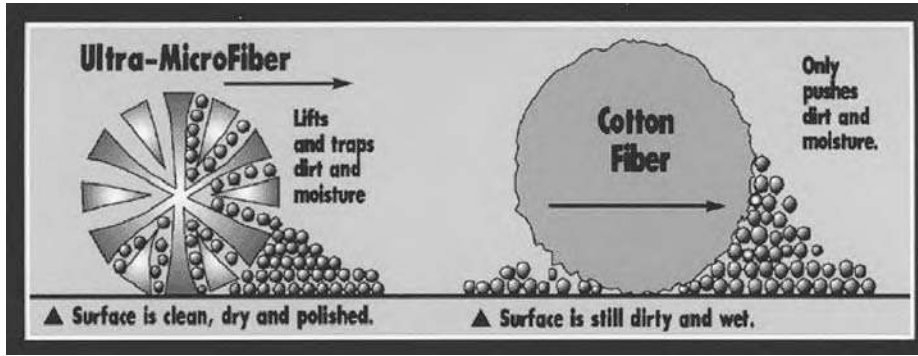


Figure 6-16 The split microfiber is far more effective than ordinary cotton at picking up soil. (Photo courtesy of Newport Marketing Group, Inc., Costa Mesa, California.)

crofiber cloths absorb soil. Microfiber not only picks up dust, it will also pick up 97 to more than 99 percent of all bacteria on a surface. Appendix I contains an excellent introductory article on microfiber and a companion piece that describes the maintenance of microfiber cloths. Both appeared in the February 2003 issue of *Executive Housekeeping Today*. Microfiber cloths are designed to perform specific tasks such as window and mirror cleaning, dusting, and the cleaning of bathroom fixtures. They also come in different colors so that guestroom attendants can be trained to avoid cross contamination (see Figure 6.17).



Figure 6-17 Not only do microfiber cloths come in different colors, but they also can be made into dusting gloves. (Photos courtesy of Newport Marketing Group, Inc., Costa Mesa, California.)

Dust mops are meant to be used daily to remove dust and small particles of soil from the floor. Daily dusting helps to protect the floor’s finish by removing small abrasive particles that erode the finish. Dust mops range in size from 12-inch to 60-inch widths.

Squeegees

There are two types of squeegees: floor and window. Floor squeegees have a much heavier rubber than the window variety. Window squeegees come with a number of attractive features, from telescoping handles that enable a worker to clean a third-story exterior window without the aid of scaffolding or a ladder, to U-joints that allow a worker to squeegee a window at an angle.

Pads, Bonnets, and Brushes

Floor machines and burnishers use floor pads, bonnets, and brushes. Pads are made from either natural or synthetic fibers. Floor pads have a universal color code so that users can tell at a glance if they are using the right pad for a particular application (see Chapter 5). Bonnets are made of yarn and are intended to be used on a floor machine to spray clean carpets. Floor machine brushes are used to shampoo carpets. The fibers are synthetic.

Ultraviolet Lamps

Ultraviolet lamps or black lights constitute just one more small, but important, weapon in the executive housekeeper’s war against dirt. In a dark room, an ultraviolet light will cause certain materials to fluoresce, that

Green Tip

Here is a chemical to avoid if at all possible: ethylene glycol monobutyl ether (EGBE). It is often used in water-based cleaners, degreasers, wax, and finish strippers. In tests it has had negative effects on the central nervous system, kidneys, blood, hematopoietic tissues, and the liver, and it may cause lasting effects after just one exposure.

is, to glow in the dark. Among the substances that have been found to glow are flavins; the riboflavin vitamin B is the most well known. Other examples include soap scum and urine. Bacteria often accumulate where there are high concentrations of flavins. Hence, glowing spots in the guestroom and bathroom are considered to be unclean areas.

Housekeepers should not use these lights to play “gotcha” with the staff, but as an aid to correcting problem areas. Staff can be trained to use these black lights to see where they should concentrate their efforts.

Many sophisticated travelers also carry these lights to inspect their rooms for soil and bacteria. They are often for sale in the consumer catalogs found in the pockets of airline seats.

Cleaning Equipment

When purchasing housekeeping equipment, it should be remembered that there are many products that will seem to fulfill a requirement but will fall short of lasting needs. The challenge is to find the right piece of equipment, one that is of a quality that will withstand continuous use with limited maintenance, and that will be the most cost-effective in the use of resources.

The decision as to what equipment best meets the needs of the department is usually made as job descriptions are being written. Quality, however, becomes another issue. Some managements stress price of purchase rather than quality of product and do not consider the overall value of more substantial equipment. Other managements will demand a high quality of equipment for employees and will then expect the highest standards of cleanliness. The executive housekeeper should presume that management desires the highest level of cleanliness possible and expect that workers be supplied with the wherewithal to accomplish the task.

Many product suppliers also act as equipment representatives. When new hotels open, suppliers will seek appointments to present their products and equipment lines. A manufacturer’s representative who can be depended on is an asset worth considering when purchasing equipment.

The executive housekeeper should have the final say regarding the type, quantity, and quality of equipment required for cleaning the guestrooms and public areas of the rooms department. Equipment purchases will be substantial and will therefore require the utmost care and consideration in selection. An analysis of the various items of equipment listed in Table 4.1 is appropriate for a hotel the size of our hypothetical model. General information about this equipment follows.

Housekeeper’s Cart

The housekeeper’s cart is a most significant piece of equipment. There should be one cart for each section of rooms. This cart must be large enough to carry *all* of the

supplies that the GRA might readily be expected to use in the workday. (Repeated trips to the main or satellite linen room for two extra sheets or three more glasses is distracting and will decrease work efficiency.) Since the cart is large and may be heavily loaded, it must be maneuverable and capable of being pushed by someone weighing less than 100 pounds. Surprisingly, such carts do exist. Quality housekeepers’ carts are maneuverable, with fixed wheels at one end and casted wheels at the opposite end. The solution lies in quality caster and ball-bearing wheels.

Carts should have three deep shelves, facilities to handle soiled linen sacks and rubbish sacks that are detachable, storage for a maid’s vacuum, and a top that is partitioned for small items. Figure 6.18 shows a three-shelf housekeeper’s cart that, when fully loaded, will service 20 guestrooms (30 beds). Notice the neoprene bumper guard that surrounds the cart and protects corridor walls and door casings. These bumper guards should not leave unsightly marks if they come in contact with walls. The cart in Figure 6.18 weighs over 500 pounds when fully loaded. Figure 6.19 shows a cart-top basket used with a housekeeper’s cart and various small, high-cost guest supply items needed during the workday at a hotel.

The partitioning of the top of the cart is best accomplished on a local basis when the specific items to be carried are available for sizing. The hotel carpenter should be able to make the appropriate partitions.

At the Bellagio, the housekeepers’ carts are decorated with the same design used in the wall coverings. One of the hallmarks of a world-class property is the obsessive attention to detail (see Figure 6.20).

Small service carriers are also available to support the work of lobby and public area housekeepers.

Housekeeper’s Vacuum

There are many ways to provide vacuums for cleaning guestrooms. Some hotels have tank-type vacuums for guestroom attendants. Others have tank-type vacuums installed on the housekeeper’s carts, with 24-foot vacuum hoses that will reach from the hotel corridor through the entire room. The main concern about tank vacuums being permanently installed on the housekeepers’ carts, however, is the noise that permeates the hallway when one or more vacuums are in use. The vacuum most readily seen in hotel operations remains the upright vacuum with bag and belt-driven beater brush. Figure 6.21 is a photograph of such a vacuum cleaner.

An improved variation of the single-motor upright vacuum pictured in Figure 6.21 is the dual-motor vacuum shown in Figure 6.22. One motor drives the beater brush, and a second motor provides the suction. These dual-motor varieties often have a convenient built-in hose for cleaning corners and upholstery.

Recent studies have called into question the need for beater brushes or beater bars and upright vacuum cleaners. A very interesting study by Robert Woellner,

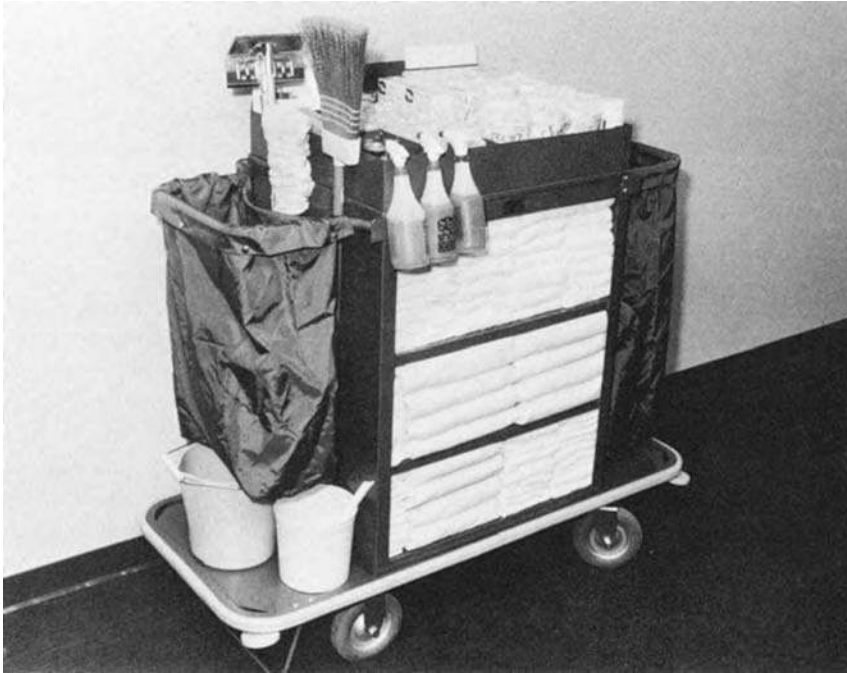


Figure 6-18 GRA's cart loaded with enough linen to service 20 guestrooms. Note the three deep shelves and trash and soiled linen containers. Carts should be of high quality with good casters and neoprene bumpers. (Photo used with permission of Forbes Industries.)

Senior Scientist for Quality Environmental Services and Technologies, Inc. of Denver, Colorado, appears in Appendix J.

When shopping for a commercial-grade vacuum, consideration should be given to the rated volume of airflow in cubic feet per minute (cfm). The higher the cfm, the better. There is also the term *water lift* or *static lift*. This is a measure of the vacuum's force. It is the force applied that can lift a column of water x number of inches. Again, the higher the number, the better. The third measure of performance is filtration efficiency. Little is ac-

complished if a vacuum with high airflow and tremendous force is spewing the dust and particles out the other end, ultimately resoiling the carpet and degrading the IAQ. There are vacuums on the market that have "high-efficiency particulate air" (HEPA) filters that can effectively stop 99.8 percent of all particulates 0.3 microns or larger from passing through the filter. HEPA filters are enormously expensive, but reasonably priced filtration systems on vacuums are available with only a slightly reduced filtration capability. Other criteria are price, maintenance, and noise levels.

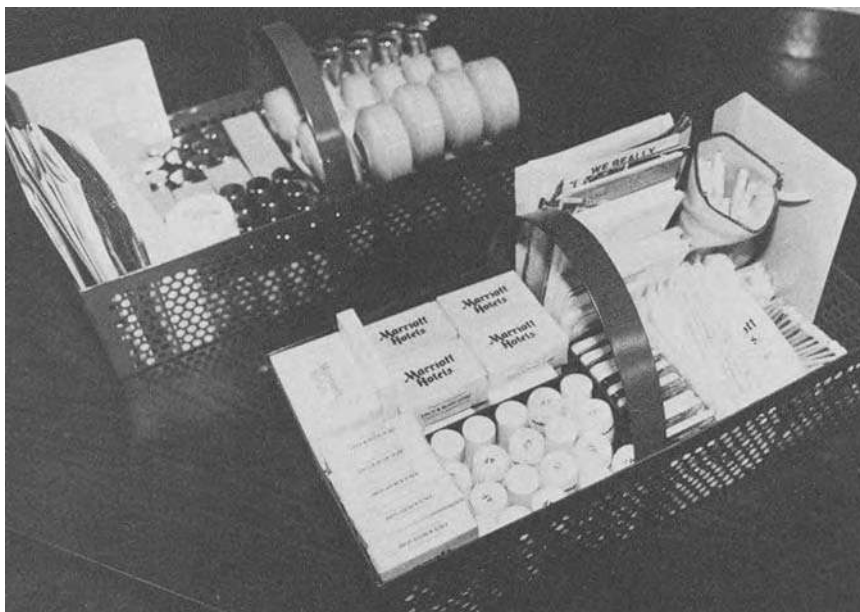


Figure 6-19 A cart-top basket used in conjunction with a housekeeper's cart. (Photo courtesy of Los Angeles Airport Marriott Hotel.)



Figure 6-20 The Bellagio's carts are not only functional, but aesthetically appealing. Notice the neoprene bumper. (Photo courtesy of Bellagio, MGM Mirage, Las Vegas, Nevada.)

The Carpet and Rug Institute (CRI) now evaluates and certifies vacuums. The CRI certification carried by a vacuum assures the user that the machine will remove dirt, will protect the operator and others nearby from particulate emissions, and will not harm the carpet. An article by Jennifer C. Jones in Appendix J, entitled, "Raising the Bar for Vacuum Effectiveness" explains in greater detail the CRI's certification program. There are also two articles written by the president of ProTeam, Larry Shideler, in Appendix J. One of them is entitled

"What Your Customers Need to Know about Vacuum Filtration" and the other is entitled, "The Science of Suction." These articles are all groundbreaking works on the science of vacuums and vacuuming.

Traditionally, there should be one vacuum cleaner for each GRA, one for each public area housekeeper, and a 10 percent complement of spare vacuums. However, there has been considerable speculation about how to reduce vacuum cleaner expenditures and, at the same time, increase the productivity of guestroom cleaning.

Figure 6-21 The Sensor XP® from Windsor Industries, Inc. is a single-motor vacuum with attached wand and on-board accessories, which carries CRI certification. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)





Figure 6-22 The Versamatic® is a dual-motor unit from Windsor, with crevice tools and an attached wand. It too carries CRI certification. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

Backpack vacuums are recognized as being much faster to use than the traditional push-pull varieties, but performing other functions, such as making the bed, while wearing a backpack vacuum would be too cumbersome. Perhaps one or two members of a housekeeping team, such as the housekeeping aide, could perform all of the vacuuming. Time-and-motion studies would have to be done, but there may be an opportunity to cut back on vacuum expenditures, increase productivity, and actually reduce some of the stress and strain associated with housekeeping activities, all at the same time.

Corridor Vacuum

Housekeeping teams have section housekeeping aides whose responsibilities include vacuuming extensive sections of hotel corridors. Such areas have open expanses of carpet that require an efficient form of vacuuming. The section housekeeping aide should have a vacuum that can do this heavy and time-consuming task. A motor-driven vacuum with an 18-inch to 28-inch foot, shown in Figure 6.23 is appropriate for this type of work.



Figure 6-23 The CRI-certified Wave® vacuum has an on-board wand and accessories, two 802-watt motors, a four-stage filtration system, and a 28-inch brush. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

All manufacturers of commercial equipment make models of this type and size, and each should be investigated and compared before purchase.

Space Sweepers and Vacuums

Space vacuums and sweepers (Figure 6.24) look like lawn mowers. Vacuum/sweepers can be used on carpets and hard floors. Approximately 30 inches (76.2 centimeters) wide, motor-driven, and capable of picking up large items of debris, space vacuums are best suited for vacuuming the large expanses of carpet found in ballrooms, meeting rooms, and corridors. In a hotel the size of our model, both the banquet and housekeeping departments need space vacuums. On occasion, one space vacuum can substitute for the other if one is out of commission. There will be times when the catering department will need to use both space vacuums.

Pile Lifter

Pile lifting, as the term implies, means lifting carpet pile that has become packed. This process usually occurs in conjunction with shampooing.

A pile lifter used before shampooing assists in cleaning the carpet and, if used after shampooing, assists in drying the carpet. Pile lifters are another form of vacuum cleaner, having a very heavy vacuum and large rotary brush that is operated by pulling the machine across



Figure 6-24 The Radius34™ is a self-propelled (gas or battery) sweeper that can be used on carpet or hard floors—indoors or out—and has a 34-inch cleaning path. (Photo courtesy of Windsor industries, a Castle Rock Company, Englewood, Colorado.)

the carpet. One pile lifter is usually found in the arsenal of equipment of every hotel with more than 300 rooms.

Wet Vacuums

Wet vacuums (Figure 6.25) are an absolute necessity in hotel operations. Even though wet vacuums can be used for both wet and dry vacuuming, they are usually maintained in their wet configuration and are therefore ready for any spill emergency. There should be two wet vacuums on the property, one in the banquet department and one in housekeeping, both clean and ready for use. Wet vacuums are also required when large areas of noncarpeted floor are being stripped and cleaned. They greatly aid in water removal, making such operations more efficient.

Backpack Vacuums

Backpack vacuums (Figure 6.26) are very efficient for all types of cleaning, including floors, drapes, ceiling corners, furniture, and walls. The weight of the units has shrunk considerably, making them ergonomically viable. An excellent article on backpack vacuums by Chris Murray, entitled “Ergonomics and Backpack Vacs,” appears in Appendix J. Backpacks are particularly effective on stairs and in public areas (e.g., lobbies, hallways, restaurants, and meeting rooms).



Figure 6-25 The Titan™ Wet Dry vacuums come in 8-, 16-, and 20-gallon models with attachments. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)



Figure 6-26 The Super CoachVac™ from ProTeam is ideal for hotel lobbies, meeting rooms, restaurants, and all other high-traffic areas. It has an impressive 150 cfm airflow and a 10-quart capacity, but weighs only 10 pounds. The unit also has CRI certification. (Photo courtesy of ProTeam, Boise, Idaho.)

Electric Brooms

Electric brooms are very lightweight vacuums that have no motor-driven beater brush. Electric brooms are used primarily for very light vacuuming and are sometimes used in place of the housekeeper's vacuum. Electric brooms are excellent for quick touch-ups on carpet and hard floors or for sand and spills when full vacuuming is not required. They should not be relied upon to replace the housekeeper's vacuum.

Single-Disc Floor Machines

The single-disc floor machine, also known as the buffer or scrubber, is the most versatile item of equipment in the housekeeper's inventory. This machine can scrub floors, strip floor finishes, spray buff floors, sand wood floors, polish floors, and shampoo carpets. Machines are available in 17-, 18-, 19-, 20-, and 21-inch models. These machines will accommodate pads, brushes, and bonnets. As has been noted already, different pads are designed for different jobs, from stripping to buffing (see Figure 6.27).

Brushes are used to scrub floors and shampoo carpets, and bonnets are used to "bonnet clean" carpets (described in Chapter 5). When selecting a standard single-disc scrubber, do not select too small a scrubber. A larger machine will cover an area faster, thus reducing labor costs. Depending on the model, a single-disc floor machine will operate between 175 rpm and 350 rpm.



Figure 6-27 The Merit™ Dual Speed Floor Machine has a 175 rpm speed for scrubbing and stripping, and a 300 rpm speed for spray buffing. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

Burnishers

Burnishers or ultrahigh-speed (UHS) buffers resemble single-disc floor machines, but they operate at between 350 rpm and 2500 rpm. They were developed to polish the new harder floor finishes that were introduced into the market. Unlike the pads of single-disc floor machines, the pad of a UHS buffer does not rest entirely upon the floor. Only the front part of the pad comes in contact with the floor; the rest of the weight is distributed to the wheels. Many models have caster wheels in the front of the machine to distribute the weight. UHS buffers operate in a straight line, whereas traditional scrubbers operate from side to side. There are battery and propane models that enable the operator to cover vast areas without the need for troublesome electric cords. Propane models are noisy, they create noxious fumes, and they present a possible fire hazard. They are illegal in some municipalities.

Recent IAQ studies have shown burnishers to be a significant source of indoor air pollution. As they grind the floor finish to a high gloss, they blow the floor finish particulates into the air. The individual at greatest risk for lung problems is the operator of the equipment, but others in the vicinity are also exposed. Only a few units come with dust control systems. The astute housekeeper should purchase only those units that have these systems. Pictured in Figure 6.28 is an ultra-high-speed buffer with such a system.

Automatic Scrubbers

The purpose of the automatic scrubber is to scrub or strip hard and resilient floors. The units apply a cleaning or stripping solution, scrub the floor, and vacuum up the dirty floor solution in one continuous operation. Most units are self-propelled. Some have attachments that turn them into wet/dry vacuums, and others can also be used to buff dry floors. In addition to AC electric-cord models, there are battery-driven models. The better battery-driven models are preferred because the constant plugging and unplugging of electric cords is an inconvenience and reduces employee productivity. Automatic scrubbers come in a wide variety of sizes, from a width of 17 inches to widths more than 4 feet.

When purchasing a machine to clean halls and aisles, consider the number of passes necessary to clean a hall. If a machine cleans aisles in the same number of passes as a smaller machine, then there is no benefit in paying the additional cost for the larger machine. Figure 6.29 shows an automatic scrubber in action.

Wet-Extraction Systems

Wet-extraction machines are sometimes referred to as “steam” or hot water carpet machines. These terms are actually misnomers, for steam is never produced by these machines and hot water is not often used because of the shrinkage and fading risk.



Figure 6-28 The Merit 2000 burnisher has a 2000 rpm speed and a “smart handle” that eliminates the need for a front wheel. It also contains a dust control system. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

There has been some recent research on wet extraction, confirming the experiences operators have had: the more water discharged and picked up, the more dirt extracted from the carpet. Most truck-mounted extraction units and the John Downey Company’s™ Steamin Demon have a flow rate of more than three gallons per minute. Tank machines typically discharge only a half gallon per minute.

However, a number of self-contained tank units have motorized beater brushes that help to dislodge dirt. The self-contained tank machines may be electric-cord or battery-powered. Figure 6.30 is an example of a self-contained unit, the Voyager™ E from Windsor, and Figure 6.31 is an illustration of the John Downey Company’s Steamin Demon. Fans are often employed to help



Figure 6-29 The Sabre Cutter™ with Squeeze Play has a cleaning path of 36 inches, which can be reduced to 26 inches for narrow aisles. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

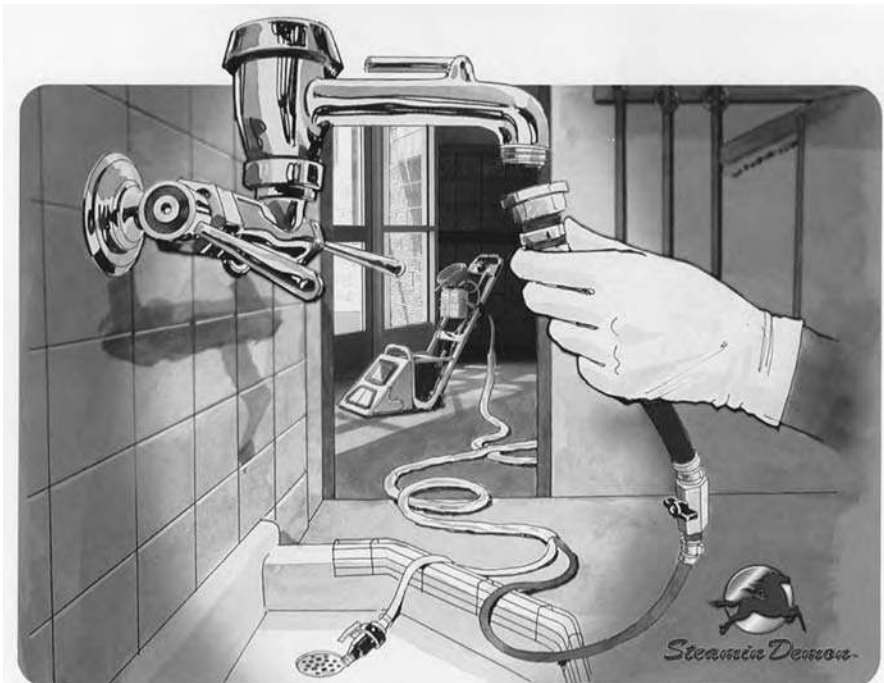
dry the carpet. A carpet should not be used, and nothing should be placed on the carpet, until it is perfectly dry. This requires taking the carpet out of commission for two to four hours. A carpet that is not properly dried may support mold growth, and if put back into use wet,



Figure 6-30 The Voyager E from Windsor® features a 40-gallon solution tank that can clean 8100 square feet of carpet per hour. (Photo courtesy of Windsor Industries, a Castle Rock Company, Englewood, Colorado.)

will become soiled very quickly. The inconvenience of wet-extraction is offset by its benefits. There is no better way to extract soil from a carpet.

Dry foam carpet cleaners brush a low-moisture foam into the carpet that is vacuumed up after it has been allowed to briefly dry. It does leave a residual amount of foam in the carpet. Units come in a variety of width sizes, from 12 inches to more than 28 inches. Many have attachments for upholstery.



"The Steamin Demon's Secret Is In Your Service Closet."

Figure 6-31 The Steamin Demon™ by the John Downey Company is a tankless high-flow extractor that utilizes the operator's own water supply and discharge into the sewer. The unit comes with 250 feet of supply/discharge hose on the single-pump model. The company also makes a dual-pump model with 400 feet of hose. (Illustration courtesy of the John Downey Company, Granville, Ohio.)

Dry Powder Systems

Dry powder systems normally use three pieces of equipment. First, the dry powder is laid down on the carpet with an applicator. Then a brush unit works the powder into the carpet; this dislodges the soil from the carpet fibers. The powder is then vacuumed up using a standard vacuum cleaner. Pictured in Figure 6.32 is the Host Dry Extraction Carpet Cleaning System. As mentioned in Chapter 5, this system allows the carpet to be walked on immediately following cleaning.

Convertible Mobile Shelving

Convertible mobile shelving is unique in its versatility and construction. (A typical convertible mobile shelving unit, shown in Figure 15.28, is discussed further in Chapter 15.)

A shelving unit in a satellite linen room, with shelves adjusted to receive soiled linen, acts as a storage hamper for used linen. At the end of the day the soiled linen is moved to the laundry in its own conveyor. In the mean-

time, another unit, with shelves adjusted to receive clean linen being processed in the laundry, may be moved to the satellite linen room so GRAs can load their housekeepers' carts for the next day's operation. Once emptied, the shelves are repositioned for a repeat of the cycle the next day. Mobile convertible shelving not only removes the need for permanent shelving in the laundry and satellite linen rooms, it reduces the three-step task of moving linen from shelf to conveyor to shelf to a one-step loading process. There should be at least two units for each satellite linen room.

Trash-Handling Equipment

Another piece of equipment used by the section housekeeping aide is some form of conveyor, whereby rubbish and other materials may be moved from various sections of the hotel to a disposal area.

A conveyor (Figure 6.33), known as a hopper, is recommended. The hopper may be used to remove soiled linen several times each day from housekeepers' carts to

Figure 6-32 The Host Dry Extraction Carpet Cleaning System. (Photo courtesy of Racine Industries, Inc.)





Figure 6-33 A housekeeping aide with his hopper making a run. (Photo courtesy of Bellagio, Las Vegas.)

the satellite linen room, or it may be used to carry rubbish sacks from maid's carts for emptying. A great deal of moving of material supplies and rubbish occurs each day in each section of the hotel. Each housekeeping team (section housekeeping aide) will therefore need a conveyor for moving material.

Sewing Machines

A sewing machine of commercial quality is useful in the main linen room. This sewing machine will be used to repair drapes and bedspreads and may be used to make certain fabric items. The machine must be of commercial quality, because one item requiring repair will be heavy blackout drapes. No automatic or multiple-stitch machines are required.

Glass Washers

Depending on whether guestroom drinking glasses will be made of plastic or glass, and depending on the availability of the hotel dish room dishwasher, the housekeeping department may need its own glass washer. In hotels of major size (1000 rooms) a properly equipped linen room should have a glass washer to prevent using labor to move 15 or 20 cases of glasses to the kitchen each night.

Glass washers are expensive and are major items of equipment. The use of real glasses as opposed to plastic ones is a matter of quality as well as economics, and the

multiple uses of glasses justify the expense of a glass washer.

Guest Supplies

A guest supply is any item that is conducive to the guest's material comfort and convenience. The term **amenity** is commonly used to identify luxury items that a hotel gives away to its guests at no extra charge, although the cost of those items is often hidden in the room rate.

There are also those guest supplies that are expected to be used up by the guest that cannot be classified as luxuries even at the most spartan budget property. We shall categorize those items as **guest expendables**.

Then there are items essential to the guestroom that are not normally used up or taken away by the guest. These items shall be referred to as **guest essentials**.

Guest loan items are those guest supplies that are not normally found in the guestroom, but are commonly available to the guest when requested.

These categories of guest supplies are fairly arbitrary, but they represent an attempt to distinguish those items that are necessary in every room from those items that are discretionary purchases.

Quite often the rate to be charged for each guestroom will have a bearing on the quantity and quality of these guest supplies. Although the guest supplies are not particularly expensive if considered on an item-by-item basis, their aggregate can add substantially to a hotel's costs. Today, many budget properties are scaling back on their amenity packages. Yet luxury hotels can ill afford to reduce their amenity packages. Many think that a reduction in the amenity package would seriously reduce the perceived value of many luxury hotel rooms.¹⁰

Guest supplies are a major storage and security concern. Some items such as guest pens, stationery, and envelopes appear in such great quantity and appear to be of such little significance that employees who are not well trained may feel that their use at home is quite acceptable. Other items of higher value (such as portion packages of guest laundry detergents and bleaches) may require even greater security in storage. In such cases, locked-cage storage (inside storage rooms) is in order. If not properly controlled, the indiscriminate use and negligent storage of guest supplies can become a costly expense.

Amenity Packages

Although amenities extend well beyond the guestroom (free breakfasts, recreation facilities, and so on), our discussion encompasses only those amenities that are found in the guestroom.

TABLE 6.1 Bathroom Amenity Items

Aftershave	Hair conditioner
Bath gel	Hand lotion
Bath salts	Loofa sponges
Body oils	Mouthwash
Body powder	Nail clippers
Bubble bath	Perfumes
Colognes	Razors
Cosmetics	Scissors
Deodorants	Sewing kit
Deodorant soap	Shampoo
Emery boards	Shaving cream
Fabric wash	Shoehorn
Face lotions	Shoe mitt
Face soap	Shower cap
Facial mud packs	Tanning lotion
Glycerin soap	



Figure 6-34 There is nothing institutional or pedestrian about the look of these dispensers. These are from the AVIVA™ line by Dispenser Amenities Inc. (Photos courtesy of Dispenser Amenities Inc., London, Ontario.)

Bath Amenities

When members of the general public think of guestroom amenities, they typically think of bathroom amenity packages. Table 6.1 contains a listing of common amenity items.

There are two opposing schools of thought when it comes to bathroom amenities. One believes that the guest appreciates seeing name-brand products on the vanity counter, whereas the other is of the opinion that the products should be “branded” with the hotel’s logo. Fortunately, a number of suppliers can arrange (for a price) to print both.

What should be of even greater concern to the hotel is the cost-benefit relationship of amenities. Far too often the management of a hotel believes that customer loyalty can be won by throwing money into an amenity program. Management would be better served if it first analyzed what is truly important to the guests.

Another major concern in regard to amenities is the waste they create. A number of prestigious hotel chains have switched to bulk dispensers in the room, eliminating all of the thousands of small bottles from the waste stream. At the Saunders Hotels in Boston, the savings generated from buying shampoos and conditioners in bulk is reinvested in the product, giving the guest higher-quality soaps and shampoos. Dispensers need not have an institutional look (see Figure 6.34), and many do have locks preventing anyone from compromising the products.

At some hotels, there is nothing but the best in bath amenities for their guests. Some, like the Bellagio, may even have different tiers of amenities, as shown in the photo in Figure 6.35.

Guestroom Amenities

Guestroom amenities are items that can be found in the guest’s bedroom. Table 6.2 is a list of common guestroom amenities.

Guest Essentials

Guest essentials are intended to remain with the hotel after the guest departs. Unfortunately, this is not always the case. One particularly troublesome area for guests



Figure 6-35 An elegant display of house-branded bath amenities at the Bellagio are shown in the top photo, but in the bottom photo are special bath amenities found only in the “Villa Suites” at Bellagio. If you look very closely, you will see that the label says, “Hermes.” Only the very best will do for the highest of high rollers! (Photos courtesy of Bellagio, MGM Mirage, Las Vegas, Nevada.)

and the hotel is the question of the clothes hanger. Years ago, hotels eliminated the standard wooden hanger because these hangers frequently found their way into the guest’s luggage. They were replaced by the knob-headed hanger, which was not stolen, but it was and continues to be a source of irritation to the guest. Enter the hanger with an undersized hook. This compromise item has a hook that is too small to fit over a standard clothes rack, but it is far easier to use.

A colleague of the author’s, who is a designer by trade and a frequent business traveler, once suggested a guest essential that would warm the heart of any traveler who uses a suit bag: a small but well-anchored hook opposite the clothes rack or closet in a hotel room. These hooks would be placed approximately 6 feet 6 inches from the floor and would serve as hooks for suit bags. Unloading a suit bag from inside the closet or from the bed, contends the designer, is extremely inconvenient. Although

TABLE 6.2 Guest Amenities

Bathrobes	Flowers
Chocolate	Free in-room beverages
Clothes sachets	Free snacks
Coffeemaker	In-room movies
Corkscrews	Luxury stationery
Expensive pens	Quality pens

a few hotels have recognized this need, they are an extremely small minority.

One final note on guest essentials: The hotel logo will often make these items souvenirs and, as such, will cause them to disappear at alarming rates. If it is decided that this is an effective form of “advertising,” then perhaps the cost for these items should be shared with other departments in the hotel, particularly the marketing department.

A list of guest essentials appears in Table 4.2.

Guest Expendables

Guest expendables, those items expected to be used up or taken by the guest, are sometimes supplied by organizations other than the housekeeping department. For example, laundry bags and laundry slips are usually supplied by the cleaning establishment that provides valet service. Many guest expendable items (such as soaps) are not necessarily used up or taken away upon the

guest’s departure but are replenished when the room is made ready for a new guest. All expendable items are normally inventoried and stored by the housekeeping department.

Guest expendables are also listed in Table 4.2.

Guest Loan Items

Guest loan items are not maintained in the guestroom but are available if requested by the guest on a receipted loan basis. Guest loan items are usually stored in the main linen room (housekeeping center of operations) and, when requested, are delivered to the guest with a receipt form. Such receipts should specify when the item may be picked up so as not to convey the idea that they are free for the taking.

Summary

The financial success of any institution is not necessarily the result of a few isolated strategic decisions. It is often accomplished through hundreds of small decisions concerning such minutiae as the selection of the right soap cake for the guestroom, the purchase of the right size of floor machine, and using a bathroom cleaner that will not harm fixtures. The professional housekeeper must stay abreast of technological developments in housekeeping supplies and equipment and must base all purchase and use decisions on objective fact finding, not on the hype of smooth-talking vendors.

KEY TERMS AND CONCEPTS

Pathogenic microorganisms	Stock-outs	Indoor air quality (IAQ)
Detergents	All-purpose cleaners	Defoamers
Disinfectants	Odor-pair neutralization	Metal cross-linked polymer finishes
Dwell time	Nosocomial infection	Thermoplastic
Bacteriostat	Antichlors	HazComm
Quaternary ammonium compounds	Sours	Material safety data sheets
Idophors	Nonionic detergent	Amenity
Hypochlorites	Cationic	Guest expendables
Hydrogen peroxide	Petroleum naptha solvents	Guest essentials
Phenolic compounds	Flash point	Guest loan items
Sanitizer	Volatile organic compound (VOC)	

DISCUSSION AND REVIEW QUESTIONS

1. What amenities would you feature in a budget hotel property? In a mid-sized property? In a luxury property?
2. Explain the advantages and disadvantages of relying primarily on an all-purpose chemical cleaner.
3. In which areas of the hotel should a housekeeper use a disinfectant cleaner? In which areas would a sanitizer be appropriate?
4. List the applications for a single-disc floor machine.
5. Define these terms:
 - disinfectant
 - sanitizer
 - detergent
 - sour
 - antichlor
 - amenity

6. Explain the benefits of using convertible mobile shelving.
7. What constitutes a "green" chemical?

NOTES

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