

The Carpet and Rug Institute's



Carpet Maintenance Guidelines

For Commercial Applications

Foreword

Carpet has excellent wear and soiling characteristics, which are unique and totally unlike those inherent to other floor coverings.

This publication is written to assist facilities managers, maintenance supervisors and anyone who buys, sells, specifies, or is responsible for the maintenance of a commercial carpet installation. It is designed to provide information in two very important areas: first, to build awareness of the importance of clean carpet and good indoor air quality; and second, to offer recommendations that will assist in developing a maintenance plan tailored to the commercially carpeted environment.

Written in concise, yet thorough fashion, the information included in the Carpet Maintenance Guidelines is science based and backed up by sound environmental management principles. If utilized, its contents can help foster a healthier indoor environment and extend the life of the carpet.

Where any doubt exists as to the best method of cleaning a carpet, check with the manufacturer of the carpet or seek expert advice from a professional.

Acknowledgements

CRI would like to extend our sincerest thanks to the following people for their direction and input into the *Carpet Maintenance Guidelines*.

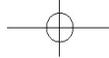
Dr. Michael A. Berry, Ph.D., University of North Carolina, Chapel Hill, NC.

D.T. Bradford, CR, Commercial Carpet Maintenance Chairman, IICRC, Arnold, MD.

Cindy Sayre, Product Maintenance Specialist, Shaw Industries, Inc., Dalton, GA.

Table of Contents

Purpose of Cleaning and Maintenance	1
Maintenance Plan and Schedule – the five elements	2
Carpet Performance	3
Clean and Dry – Improving air quality and environment	4
Developing a Carpet Maintenance Plan	5
VACUUMING – Recommended flooring maintenance	8
Basic Scientific Principles of Effective Restorative Cleaning	9
CLEANING – Recommended flooring maintenance	13
Hard Surfaces Adjoining Carpet Surfaces	14
Spills and Spots and How to Effectively Treat Them	15
Summary of Carpet Cleaning Principles	19
Troubleshooting	20
References	22



Carpet Care Tips for the Commercial Environment

Preventive Measures

- Use *entrance* mats to keep dirt from entering or spreading through the building.
- At least once a month replace *air filters* and inspect air ducts often for build-up of contaminants.

Vacuuming

- *Light-to-medium traffic areas:* Vacuum as needed, but at least every 2-3 days.
- *Heavy-traffic areas:* Vacuum daily - entrances, corridors/hall areas, break areas, elevators, and work/copy rooms.
- **When selecting a vacuum cleaner, choose a CRI Green Label-Approved Vacuum** and follow the manufacturer's recommendations for use. Look for the Green Label on vacuum cleaner packaging and merchandising. A CRI Green logo may also appear on the vacuum cleaner.

Treatment of Spots and Spills

- Check for spots daily and treat immediately.
- Most carpet today has a soil-resistant treatment, making spots easier to remove.
- **Act Quickly!** The longer the delay, higher the probability for a permanent stain.

(see reverse)

Carpet Care Tips for the Commercial Environment

Preventive Measures

- Use *entrance* mats to keep dirt from entering or spreading through the building.
- At least once a month replace *air filters* and inspect air ducts often for build-up of contaminants.

Vacuuming

- *Light-to-medium traffic areas:* Vacuum as needed, but at least every 2-3 days.
- *Heavy-traffic areas:* Vacuum daily - entrances, corridors/hall areas, break areas, elevators, and work/copy rooms.
- **When selecting a vacuum cleaner, choose a CRI Green Label-Approved Vacuum** and follow the manufacturer's recommendations for use. Look for the Green Label on vacuum cleaner packaging and merchandising. A CRI Green logo may also appear on the vacuum cleaner.

Treatment of Spots and Spills

- Check for spots daily and treat immediately.
- Most carpet today has a soil-resistant treatment, making spots easier to remove.
- **Act Quickly!** The longer the delay, higher the probability for a permanent stain.

(see reverse)

Carpet Care Tips for the Commercial Environment

Preventive Measures

- Use *entrance* mats to keep dirt from entering or spreading through the building.
- At least once a month replace *air filters* and inspect air ducts often for build-up of contaminants.

Vacuuming

- *Light-to-medium traffic areas:* Vacuum as needed, but at least every 2-3 days.
- *Heavy-traffic areas:* Vacuum daily - entrances, corridors/hall areas, break areas, elevators, and work/copy rooms.
- **When selecting a vacuum cleaner, choose a CRI Green Label-Approved Vacuum** and follow the manufacturer's recommendations for use. Look for the Green Label on vacuum cleaner packaging and merchandising. A CRI Green logo may also appear on the vacuum cleaner.

Treatment of Spots and Spills

- Check for spots daily and treat immediately.
- Most carpet today has a soil-resistant treatment, making spots easier to remove.
- **Act Quickly!** The longer the delay, higher the probability for a permanent stain.

(see reverse)

Carpet Care Tips for the Commercial Environment

Preventive Measures

- Use *entrance* mats to keep dirt from entering or spreading through the building.
- At least once a month replace *air filters* and inspect air ducts often for build-up of contaminants.

Vacuuming

- *Light-to-medium traffic areas:* Vacuum as needed, but at least every 2-3 days.
- *Heavy-traffic areas:* Vacuum daily - entrances, corridors/hall areas, break areas, elevators, and work/copy rooms.
- **When selecting a vacuum cleaner, choose a CRI Green Label-Approved Vacuum** and follow the manufacturer's recommendations for use. Look for the Green Label on vacuum cleaner packaging and merchandising. A CRI Green logo may also appear on the vacuum cleaner.

Treatment of Spots and Spills

- Check for spots daily and treat immediately.
- Most carpet today has a soil-resistant treatment, making spots easier to remove.
- **Act Quickly!** The longer the delay, higher the probability for a permanent stain.

(see reverse)

Treatment of Spots and Spills continued...

- *Blot liquids* with a dry, white, absorbent cloth or plain white paper towels (without any print design). Do not scrub the area! Continue to blot until the area is essentially dry.
- Gently scrape up semi-solids (modeling clay, finger-paint, etc.) with rounded spoon and vacuum. Do not add moisture.
- Go to www.carpet-rug.com and click on the link at the top of the page, "Care and Cleaning," for specific spot treatment recommendations.

Useful Carpet Maintenance Tips

- When using stain removal cleaners, follow the manufacturer's recommendations for use, including proper ventilation.
- Inspect daily, high-traffic areas and places where spotting is more frequent.
- Carpet must be vacuumed routinely and restorative cleaned at regular intervals. After restorative cleaning, be sure that the carpet is essentially dry before allowing foot traffic.
- Areas of heavier foot traffic should be vacuumed daily.

Questions? 800-882-8846 ext. 2125



© The Carpet and Rug Institute, Inc. All rights reserved.

Treatment of Spots and Spills continued...

- *Blot liquids* with a dry, white, absorbent cloth or plain white paper towels (without any print design). Do not scrub the area! Continue to blot until the area is essentially dry.
- Gently scrape up semi-solids (modeling clay, finger-paint, etc.) with rounded spoon and vacuum. Do not add moisture.
- Go to www.carpet-rug.com and click on the link at the top of the page, "Care and Cleaning," for specific spot treatment recommendations.

Useful Carpet Maintenance Tips

- When using stain removal cleaners, follow the manufacturer's recommendations for use, including proper ventilation.
- Inspect daily, high-traffic areas and places where spotting is more frequent.
- Carpet must be vacuumed routinely and restorative cleaned at regular intervals. After restorative cleaning, be sure that the carpet is essentially dry before allowing foot traffic.
- Areas of heavier foot traffic should be vacuumed daily.

Questions? 800-882-8846 ext. 2125



© The Carpet and Rug Institute, Inc. All rights reserved.

Treatment of Spots and Spills continued...

- *Blot liquids* with a dry, white, absorbent cloth or plain white paper towels (without any print design). Do not scrub the area! Continue to blot until the area is essentially dry.
- Gently scrape up semi-solids (modeling clay, finger-paint, etc.) with rounded spoon and vacuum. Do not add moisture.
- Go to www.carpet-rug.com and click on the link at the top of the page, "Care and Cleaning," for specific spot treatment recommendations.

Useful Carpet Maintenance Tips

- When using stain removal cleaners, follow the manufacturer's recommendations for use, including proper ventilation.
- Inspect daily, high-traffic areas and places where spotting is more frequent.
- Carpet must be vacuumed routinely and restorative cleaned at regular intervals. After restorative cleaning, be sure that the carpet is essentially dry before allowing foot traffic.
- Areas of heavier foot traffic should be vacuumed daily.

Questions? 800-882-8846 ext. 2125



© The Carpet and Rug Institute, Inc. All rights reserved.

Treatment of Spots and Spills continued...

- *Blot liquids* with a dry, white, absorbent cloth or plain white paper towels (without any print design). Do not scrub the area! Continue to blot until the area is essentially dry.
- Gently scrape up semi-solids (modeling clay, finger-paint, etc.) with rounded spoon and vacuum. Do not add moisture.
- Go to www.carpet-rug.com and click on the link at the top of the page, "Care and Cleaning," for specific spot treatment recommendations.

Useful Carpet Maintenance Tips

- When using stain removal cleaners, follow the manufacturer's recommendations for use, including proper ventilation.
- Inspect daily, high-traffic areas and places where spotting is more frequent.
- Carpet must be vacuumed routinely and restorative cleaned at regular intervals. After restorative cleaning, be sure that the carpet is essentially dry before allowing foot traffic.
- Areas of heavier foot traffic should be vacuumed daily.

Questions? 800-882-8846 ext. 2125



© The Carpet and Rug Institute, Inc. All rights reserved.

Purpose of Cleaning and Maintenance

Your commercial carpet installation is a significant investment, both in monetary terms and overall facility image. It is important to implement a maintenance program from the beginning. A consistent and effective carpet maintenance program can maintain the initial facility image and dramatically extend the life of your monetary investment. It is the goal of this publication to assist you in preserving the original appearance of your commercial carpet.

There are many valuable reasons we clean or maintain any object, including carpet. The incentive for an effective cleaning and maintenance program is magnified when we recognize these activities contribute to the following:

- Allows for the healthy reuse of space and materials.
- Maintains the value of property and reduces the rate of depreciation.
- Contributes directly to personal security, comfort, and productivity.
- Accents aesthetics.
- Creates a unique psychology that enhances quality of life.
- Encourages topophilia (affection for place).
- Elevates a sense of well-being, which is the essence of good health.
- Sends caring messages and image.
- Promotes human dignity.
- Manages waste and hazards and contributes to environmental protection.
- Ensures sanitation – reduces adverse exposure levels.
- Serves as a form of insurance that reduces risk and prevents crisis.

The appearance of carpet depends upon several factors – color, pattern, density, fiber, and a viable carpet maintenance program. In order to keep carpet products performing their best, designing and implementing a comprehensive maintenance plan is very important. Great care should be taken when choosing carpet colors, patterns, and textures. These features combined with fiber quality and construction standards engineered to meet performance requirements are important factors.

Maintenance Plan and Schedule – the five elements

A customized comprehensive carpet care program consists of five elements:

1. **Soil Containment** – isolation of soil entering the building using mats at entrances.
2. **Vacuuming** – scheduled frequency for removal of dry soil using a CRI approved “Green Label” vacuum.
3. **Spot and Spill Removal System** - using professional spot removal techniques.
4. **Interim Cleaning** – scheduled frequency appearance cleaning for all traffic areas.
5. **Restorative Cleaning** – scheduled frequency deep cleaning to remove residues and trapped soils.

There are some conditions where appearance change must be expected. In areas where the oily material from asphalt sealers is tracked into the building, carpet and other flooring may become yellowed over time. Check the traffic lanes often for slight dulling of color; this indicates a build up of soil. It is virtually impossible to remove all of this material once it has penetrated the fiber of any carpet. Entrance mats and scheduled cleaning can reduce this phenomenon. Areas where large amounts of sandy soil enter the building may become dull in appearance over time. This is due to abrasion of the fiber surface, affecting the reflection of light. Frequent vacuuming helps to minimize this problem.

A thoughtfully designed and implemented maintenance program performed by qualified personnel, properly equipped and trained, is essential for optimal long-term performance.

If you don't maintain it, you can't
expect it to stay clean.

Carpet Performance

Start with the right carpet choices that lead to the best end-use carpet performance.

1. **Specifications** – Was the carpet properly specified in relation to the intended use of the carpet at its location?
2. **Color Selection** – Was the proper color selected to meet traffic conditions, intensity of sunlight, etc.?
3. **Installation** – Was the carpet installed according to CRI’s Standard for Installation Specification of Commercial Carpet¹? (CRI-104)
4. **Maintenance** – Has a scheduled maintenance plan been designed to serve the needs of the location?

Carpet performance is directly related to specification, installation and proper maintenance. When the right style of carpet is chosen and it is professionally installed, a professionally designed and instituted maintenance program will increase the life expectancy and performance of that carpet. Color selection is critical in long term appearance retention. For example, a light color cut pile is a poor choice in heavy traffic areas; a darker color loop pile will retain its appearance longer and is a better choice in heavy traffic areas. Facility managers and maintenance supervisors who understand this concept can increase the longevity of the carpet and save on future capital replacement cost.

There is a big difference between cleaning carpet and maintaining carpet. Cleaning is the removal of apparent soil. For many commercial carpet owners, cleaning takes place irregularly, on an “as needed” basis. Soiling, however, is a cumulative process which, if allowed to go too far, cannot easily be reversed. Maintenance, in contrast to cleaning, is a scheduled on-going process of soil removal designed to maintain carpet’s daily appearance at a consistent level of cleanliness.

Carpet performance is most effectively enhanced and maintained when the following exist:

- Cleaning is the process of locating, identifying, containing, removing, and properly disposing of unwanted material. This means removing unwanted substances from an environment or environmental compartment. When exposure is reduced, the probability of an adverse effect is also reduced.
- Constant attention to and application of principles of maximum restorative cleaning and minimum residue, especially as they apply to safety, the proper and effective use of chemicals, carpet extraction machines, and vacuum cleaners.
- A recognition that carpet care must take all of the following into account, the management of sources of unwanted substance that can get into the carpet; the

Carpet Maintenance Guidelines

activity levels; design of carpet; the environment in which carpet is installed; and ventilation.

Consistent management program emphasizes:

- Effective cleaning systems directed at maximum restorative cleaning, minimum residue, safety, and ease of use
- Cost effective cleaning strategy, plan, schedule
- Training and recognition of cleaning technicians
- Periodic inspection, assessment and management review of cleaning programs

Clean and Dry – Improving air quality and environment

To promote a healthy environment, Dr. Michael Berry states in his book, *Protecting the Built Environment: Cleaning for Health*:

A clean environment is sanitary. When a sanitary condition exists, an adverse health effect is unlikely. Manufacturers' recommendations for cleaning provide adequate guidelines, calling for frequent vacuuming and periodic professional restorative cleaning that emphasizes removal of foreign substances and minimizing residue. In the long run, these measures protect the carpet and promote environmental health.²

Carpet has a unique, positive “filter-like” or particle trapping feature that tends to hold particles to the floor that might otherwise be airborne. Matter being held by the “filter-like” feature of carpet can be taken out of the building instead of re-circulating in the air continually, by using a high power vacuum cleaner that has the “CRI Green Label”. Refreshing the indoor environment can be as easy as following a regular vacuuming and restorative cleaning schedule.

Keeping the environment dry is a very important process. To prevent the growth of bacteria and mold, one should immediately attend to liquid spills and fix sources of excess moisture and humidity. Air movers, HVAC handling systems and dehumidifiers will assist in the drying process of higher moisture level cleaning processes.

Developing a Carpet Maintenance Plan

There are several considerations when developing a carpet maintenance plan, including building layout, planning for traffic flow, activities, and proper cleaning. Proper cleaning can be divided into three methods: preventive measures, interim measures, and restorative measures.

Preventive measures

Preventative measures consist of minimizing the debris that is tracked in from outside and protecting carpet from moisture and dirt that is already inside the building. This is largely accomplished with the use of mats – outside and inside. Using both types of mats at entrances and other areas helps prevent excessive soiling on carpet.

Outside mats scrape debris off of shoes that have the capability to track in that material. Use soil-removal mats that have a coarse texture, are able to brush soil from shoes, and hold large amounts of soil in their pile.

Inside mats remove smaller particles of dirt as well as oils and other liquids that can be tracked in from outside. Use water absorbent mats to prevent tracked-in moisture from getting to the carpet. Mats that extend for 6 to 15 feet inside the entrance will trap eighty percent of soil and moisture from the first five or six steps. (See **Figure 1**.) Another way to prevent soiling using mats is by placing protective mats around food stations, water coolers, elevators, and stair thresholds to prevent moisture and dirt from becoming ground into carpet.

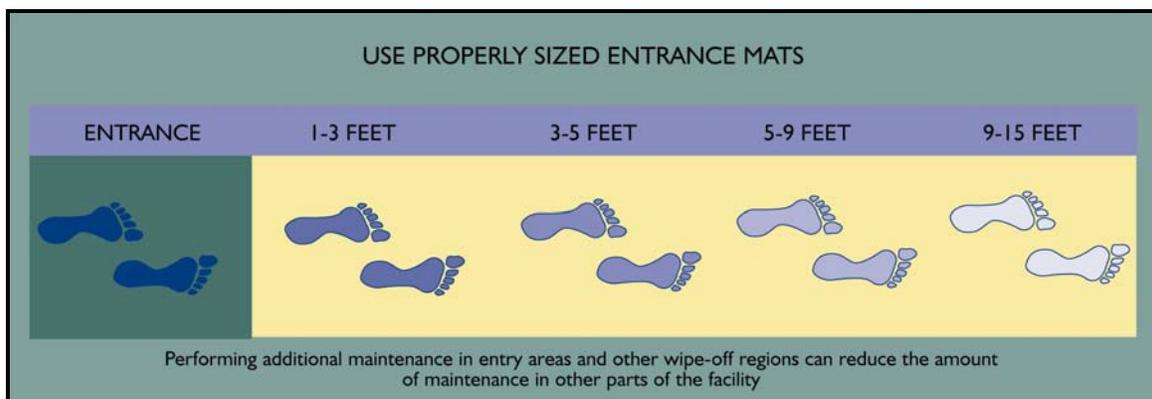


Figure 1

For mats to continue to trap soil, they should be cleaned on a regular basis, more frequently than the carpet. If accumulated soil is not removed, the mat will become overloaded and cannot prevent soil from entering the building.

Other preventive tips include: restricting food and beverage consumption to specific areas, requiring lids on drinks or oversized cups, and placing trashcans in easily

Carpet Maintenance Guidelines

accessible areas. In addition, keeping parking lots, sidewalks, and entrances clean will cut down on the tracking in of debris.

[**Note:** The area underneath a desk should be protected by a chair mat. These areas are sometimes considered low traffic areas; however, the chair rollers can create damage due to the concentration of pressure and wear.]

Interim measures

Interim measures include vacuuming, spot cleaning, and restorative cleaning in high-traffic areas.

Effective, routine vacuuming is a must for good commercial carpet performance, so a proper vacuuming program is essential in a well designed maintenance program. The most important features of your vacuuming maintenance program will be identifying high, medium, and low traffic areas by continually monitoring carpet performance and making any necessary adjustments to the schedule.

Rather than selecting equipment based solely on cost, look for durability in a vacuum cleaner to reduce long-term cost of maintaining or replacing the equipment. Poor quality vacuum cleaners may continue to operate, but cleaning efficiency can deteriorate quickly, and equipment maintenance or replacement costs are high.

Consider efficient filtration. A vacuum cleaner that has an extremely high air flow (suction) has very little value if dust and other contaminants pass through the vacuum bag and become airborne. Efficient vacuum cleaners offer high airflow, high efficiency filtration, and an adjustable rotating brush agitation for more effective soil removal. Always use the manufacturer's recommended bags and accessories. Due to wear on the brush rollers and belts, these should be changed on a regular basis.

Because equipment choice is so important, CRI identifies vacuum cleaners that meet strict standards for soil removal, dust containment within the vacuum filter, and carpet appearance retention with an IAQ "green label." (See **Figure 2**)



Choose vacuums that bear this label for assurance of effective cleaning and good air quality. For complete details on the program and a list of approved vacuum cleaners, go to the CRI website, www.carpet-rug.org.

Figure 2

Carpet Maintenance Guidelines

Once the equipment has been selected, set a schedule for frequency of vacuuming. Using the facility diagram, classify carpet areas into high traffic, moderate traffic, and light traffic areas. Vacuum high traffic areas daily, or more frequently as the need arises. Vacuum moderate traffic areas as needed, but at least two or three days each week. Vacuum light traffic areas as needed, but at least once or twice a week. (See **Figure 3**)

Some vacuum styles are more appropriate to perform a specific function. For example, use a back pack vacuum to remove soil from a textured or grated entrance mat instead of a beater brush vacuum.

- High traffic areas include: entrances, hallways, break rooms, cafeterias, corridors, elevator lobbies, stairways, main aisles, and waiting areas.
- Moderate traffic areas include: secondary aisles, research areas, conference rooms, classrooms, and atriums.
- Light traffic areas include: offices, cubicles*, storage rooms, and executive areas.

[*Cubicles are sometimes considered a low traffic area; however, chair mats should be used to protect against chair rollers and food spills which can decrease the performance of the carpet.]

Remember...routine vacuuming is the most important part of any maintenance program.

Daily removal of spots and spills helps maintain the carpet's appearance. Immediate action against spots and spills also reduces the probability of a permanent stain. It is important to use solutions that are appropriate for the specific type of spot or spill. Refer to **Spots, Spills and Removal** for the specific type of spot or spill removal.

The purpose of restorative cleaning is to take up the soil that vacuuming does not remove and to improve the visible appearance of the carpet. Cleaning methods will vary, but the goal remains the same. Refer to **Restorative Measures** for more in-depth information on restorative cleaning.

Restorative measures

Restorative measures consist of deep cleaning. Restorative cleaning is effective at removing embedded abrasive soil.

Restorative cleaning should be implemented before the soil in the carpet is easily visible. **In order to preserve carpet finishes and life, as well as any applicable warranties, use the manufacturer's recommendation for a cleaning system.**

Figure 3

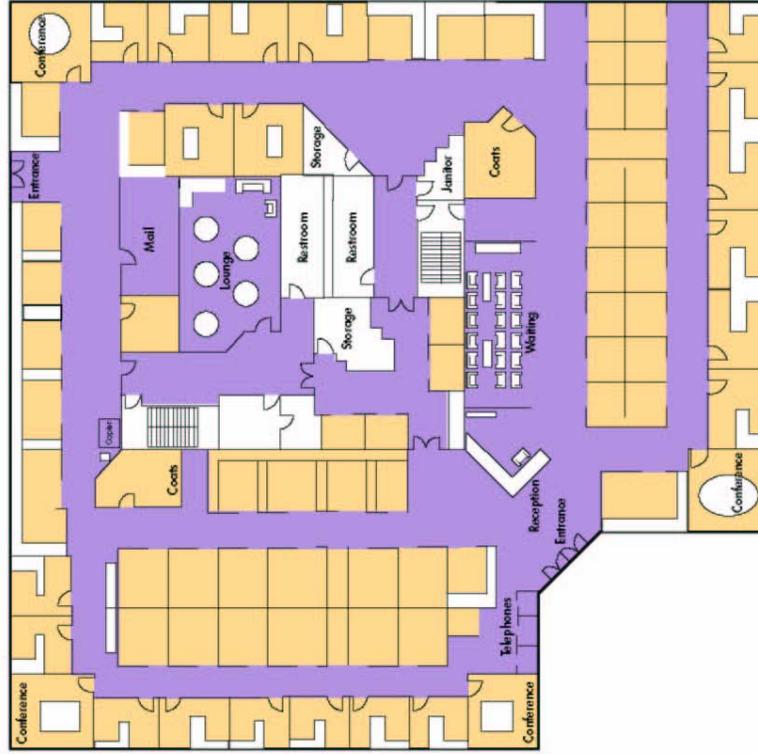
VACUUMING

Recommended flooring maintenance

Traffic Level	Vacuum
Light/Medium	As needed, but at least every 2-3 days
Heavy	Daily

Light/Medium Traffic - Private offices, cubicles, shared offices and conference rooms

Heavy Traffic - Entrances, elevators, main hallways, break rooms, work/copy rooms, mail rooms and interior hallways



Carpet Maintenance Guidelines

Understanding the science-based principles of effective restorative carpet cleaning will aid immensely in enhancing the long-term performance of carpet. The appreciation of the power of these principles begins by understanding the purpose and objectives of cleaning (Bishop, 2003).

Cleaning is the traditional activity of removing contaminants, pollutants, and undesired substances from an environment or surface to reduce damage or harm to human health or valuable materials. Carpet cleaning is the process of locating, identifying, containing, removing, and properly disposing of unwanted substances from a fibrous surface or material. A primary objective of carpet cleaning is to maximize the removal of unwanted or foreign matter from the carpet and to minimize residues in the carpet. (See **Figure 4**)

Basic Scientific Principles of Effective Restorative Cleaning

The basic scientific principles of effective restorative cleaning can be divided into five major steps: **dry soil removal, soil suspension, soil extraction, pile setting (finishing or grooming), and drying.**

Principle 1: Dry Soil Removal (Dry Vacuuming) - Dry soil removal is accomplished in phases:

- Pile preparation (using grooming tools) is employed to untangle the fiber of high-pile carpet, and must precede dry vacuuming.
- Overall vacuuming with a CRI “Green Label” vacuum cleaner.
- Concentrated entry area vacuuming (removal of the destructive build-up of abrasive soil).
- Vacuuming the perimeter of the room to remove fine dust and soils that can settle in the crevices around the room, causing filtration soiling.*

Principle 2: Soil Suspension – Once dry soil has been removed from the carpet, soil suspension (pre-conditioning) procedures begin. Soil suspension and removal are the most critical steps in effective carpet cleaning. The goal of soil suspension is to separate soil from fiber surfaces. Soil suspension is accomplished by the combination of four things: chemical action, elevated temperature (heat), agitation, and time.

*Filtration Soiling is a term used to describe dark, grayish lines that may appear around baseboards, under doors, along the edges of stairs, and possibly away from walls where plywood sub-flooring materials have been joined. A technical bulletin can be obtained at www.carpet-rug.com.

Carpet Maintenance Guidelines

Chemical action is employed in two phases of the cleaning process.

- In the first phase, chemicals are used to prepare the carpet for cleaning by reducing surface tension and dissolving various soils. This step, called pre-conditioning, is essential. It is unreasonable to suggest that soils, which have been ground into carpet, along with oils that have had years to oxidize or dry out, could be suspended adequately in the few seconds that elapse between the application and removal phase employed with restorative cleaning method. Therefore, remember that pre-conditioning takes time.
- The second phase of chemical activity occurs when chemicals are mixed or metered into rinse solutions to suspend light soils that accumulate in non-traffic areas, along baseboards, or under furniture. Chemicals properly formulated, mixed and applied during pre-conditioning are essential for effective cleaning.

Elevated Temperature (Heat) – Heat reduces the surface tension of water and enables faster, more efficient cleaning than cold water. It is merely a matter of thermodynamics: heat accelerates the molecular activity of chemicals employed, and thus aids in separation of unwanted matter from fibers.

Agitation – Agitation in some form is required to accomplish uniform chemical penetration and distribution. Without agitation, soil suspension tends to be non-uniform, which is often indicated by soil streaks following the removal process.

Using a common, multi-bristled brush or comb to work in pre-conditioner chemicals is most effective and time-efficient. Brush agitation refers to the fore-and-aft stroking of preconditioned carpet pile throughout traffic areas, placing particular emphasis on entry, pivot, and heavily soiled areas. Mechanical agitation involves the use of mechanized rotary or cylindrical, nylon-bristled brush action to achieve aggressive agitation and distribution of pre-conditioning chemicals into the carpet pile.

Time – The fourth fundamental, time, is often the least considered. Soils deposited and compacted over extended periods between cleanings take time to dissolve and become suspended. Pre-conditioner chemicals require prolonged contact or “dwell time” for adequate fiber penetration and soil suspension to occur. Based on chemical formulation and application temperature, dwell time can vary, usually 10 to 15 minutes. Follow pre-conditioner chemical manufacturer’s label instructions.

Principle 3: Soil Extraction – Soil is an unwanted substance that is foreign to the construction of the carpet. In order to achieve effective cleaning, suspended soils must be removed physically (extracted or rinsed) as completely as possible from the carpet’s pile.

Principle 4: Pile Setting (Finishing or Grooming) – The term “finishing” refers to any procedure that enhances the appearance of carpet beyond the physical soil removal process in order to improve end-user perceptions of cleanliness. Generally, pile setting or grooming employs one of several finishing or pile-grooming tools (e.g., carpet brush or

Carpet Maintenance Guidelines

comb) specifically designed for this purpose. Most low loop pile carpet does not require pile setting.

Principle 5: Drying – Cleaning is not complete until carpet is dry and ready to be trafficked. Drying carpet is essential for three reasons:

- First, it is required to return the carpet to use by end-users as soon as possible.
- Second, drying carpet essentially eliminates slip-fall hazards, especially in areas where carpet transitions to hard surfaces.
- Third, rapid drying eliminates the potential for microorganism growth (bacteria and fungi) and associated musty odors, in addition to health hazards that may arise if carpet stays wet in excess of 12 hours.

Adequate natural or mechanical ventilation during the cleaning and drying phases of restorative cleaning will speed drying time. The use of commercial air movers (drying fans), HVAC handling systems, or dehumidifiers greatly reduces drying time. When properly performed, restorative cleaning methods should leave the carpet dry within six to eight hours. Humidity or environmental conditions may extend drying time, but under no circumstances should drying time exceed 12 hours.

A facility-wide restorative cleaning should take place at least twice a year to remove the accumulation of soil overlooked during daily maintenance.

[**Note:** Inspect heavy use areas for slight dulling of color. This indicates a buildup of soil and requires more frequent restorative cleaning.]

Precautions: During restorative cleaning of carpet, follow several common sense precautions:

- Always vacuum first.
- Apply a pre-conditioner, following chemical manufacturer's label instructions, and agitate into the carpet's fibers allowing a dwell time of usually 10 to 15 minutes.
- If using a chemical cleaning agent, it is important to use a rinse system to remove any potential chemical cleaning residue from the carpet yarn that might result in a high rate of resoil.
- Supply natural or mechanical ventilation during the cleaning and drying phases of restorative cleaning. Adequate ventilation is necessary to speed drying time. The use of commercial air movers (drying fans), HVAC handling systems or dehumidifiers greatly reduce drying time.
- Follow directions for mixing solutions carefully. Using a solution stronger than the concentration recommended will not improve cleaning efficiency and may leave behind detergent residue that can lead to accelerated soiling.
- Limit access to damp carpet until it is completely dry to avoid rapid resoiling.
- Furniture should not be moved back into the room until carpet is completely dry. **Note:** If furniture has to be moved back into the room before carpet is completely dry, be sure to use plastic tabs under the legs of furniture to prevent rust or furniture stains from developing on the carpet.

Carpet Maintenance Guidelines

One of the most beneficial features of restorative cleaning is its capability of removing deeply embedded soils. Carpet should always be cleaned according to carpet manufacturers' specifications. If the manufacturer is not known, procedures should be followed as stated in the Institute of Inspection, Cleaning and Restoration Certification's Standard and Reference Guide for Professional Carpet Cleaning, S100, (IICRC S100, Revised, 2002).³

Many cleaning systems are available; however, their effectiveness varies widely. When choosing the cleaning system, the important considerations are:

- Obtain the carpet manufacturer's recommendations, if possible.
- It must clean effectively.
- It must not damage the texture of the carpet.
- It must not leave excessive residues of cleaning materials.

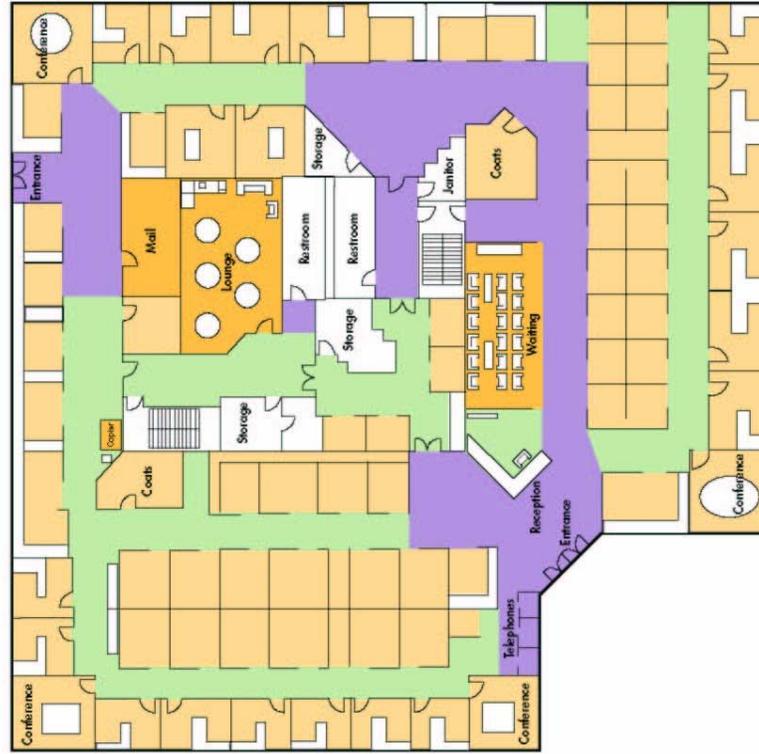
Figure 4

CLEANING

Recommended flooring maintenance

Traffic Level	Pile Lift	Spot Clean	Deep Cleaning
Light	As needed	Daily	Annually
Medium	Quarterly	Daily	Every 6 months
Heavy	Monthly	Daily	Quarterly

Light Traffic - Private offices and cubicles
Medium Traffic - Shared offices, interior hallways and conference rooms
Heavy Traffic - Entrances, elevators, main hallways, break rooms, work/copy rooms & mail rooms



Hard Surfaces Adjoining Carpet Surfaces

Transition areas where carpet and hard floors meet can be a challenge. It is very important to keep hard surface flooring clean in order to prevent the tracking of hard surface residues onto carpet. Daily maintenance of hard surface floor coverings, such as vinyl composition tile (VCT), ceramic tile, wood and terrazzo floors, presents a greater challenge to the average maintenance staff than carpeted surfaces.

Hard surface flooring must receive constant care because of its inability to hide soil and possible damage to the finish by dry soil. Hard surfaces that have become wet due to spills, leaks or even tracked in moisture must be a constant concern to the maintenance staff, as well as the risk management staff.

Daily maintenance of hard surface floors includes dry mopping, wet mopping and spot mopping. Wet mops should be stored in cool dry areas to prevent molding. Wet spills should be removed immediately to minimize falls and injuries. High quality finishes need to be used. Some softer finishes may track onto carpet.

To avoid problems, observe a few common sense rules.

- During treatment of hard surface floors, whether stripping, finishing or maintaining, keep chemicals off the carpet. Many of the cleaning agents used to maintain hard floors can cause damage to carpet.
- After wet-mopping maintenance of hard surfaces, dry completely before allowing traffic onto carpet to help prevent tracking of any residues of hard surface cleaning agents.
- When using rotary equipment on hard surfaces next to carpet, be careful not to allow pads or brushes to come in contact with the carpet and, thus, abrade the carpet pile.
- Do not set buckets or equipment used for the maintenance of hard floors on the carpet as residues on the bucket may cause soiling or staining.
- Spot-prone areas should be checked daily in order to remove spills before they attract dirt or become permanent.

It is a misperception that carpet maintenance is more costly than hard surfaces. As stated in “A Life-Cycle Cost Analysis for Floor Coverings in School Facilities” cleaning and maintenance of carpet is cost-effective.⁴

Spills and Spots and How to Effectively Treat Them

Spills and spots are inevitable, but they don't have to be permanent. There should be an immediate reaction to remove incidental spills, mud, oil, tar, etc., from the surface of the carpet. These contaminants should be removed as quickly as possible to prevent the spill on the carpet from becoming a permanent stain.

Complete removal of many common spills may require the repeated use of a single solution or the use of a combination of solutions. Always use the spot-cleaning solutions in the concentrations recommended. (See **Figure 5**)

Spills

- Act quickly! The longer the delay, the higher the probability a spill will become a permanent stain.
- Gently scrape up solids that typically do not cause stains with a rounded spoon and vacuum. If a stain occurs, follow the procedures for removing spots and stains.
- Gently scrape up semi-solids that could cause stains with a rounded spoon and vacuum. If a stain occurs, follow the procedures for removing spots and stains.
- Liquid spills should be blotted with a dry, white, absorbent cloth or plain, white paper towels. Do not scrub the area! Continue to **blot** until the area is completely dry. If a stain occurs, follow the procedures for removing spots and stains.

Removing Spots and Stains:

- Apply water to the spill first. Especially if the spot is fresh, water may be all that is needed to remove the spill. If water doesn't remove the spill, proceed as follows.
- Locate the spill on the spot removal chart and follow the directions carefully.
- Pretest any spot removal agent in an inconspicuous area to make certain the solution will not damage the fiber or the dye. After applying several drops to the testing area, hold a white cloth on the wet area for ten seconds. Examine the carpet and cloth for color transfer, color change, or damage to the carpet. If a change occurs, another cleaning solution must be selected.
- Apply a small amount of the selected cleaning solution to a white cloth and blot. Work from the edges of the spill to the center to prevent the spill from spreading. Do not scrub! Blot, absorbing as much as possible, and repeat, if necessary.
- Continue using the first cleaning solution as long as there is a transfer of the spill to the cloth. It is not necessary to use all of the cleaning solutions if the first solution removes the spill. Be patient! Complete removal of the spill may require repeating the same step several times.
- Rinse the affected area thoroughly with clear water after the spill has been removed. Blot with a dry cloth until all of the solution has been removed. Some

Carpet Maintenance Guidelines

cleaning solutions will cause rapid soiling if the solution is not completely removed. Small extraction machines designed for rinsing after spot-cleaning are an excellent investment. Dry absorbent polymer can also be used to absorb and remove any residues left behind by the spot-cleaning agent.

- Place a one-half inch layer of white paper towels over the affected area to absorb all the moisture and weigh down with a flat, heavy object that will not transfer color. Continue to change paper towels as needed.

Spots

Caution! Read the following information carefully! Too often a carpet is damaged or bleached when home remedies or mixtures are used without consulting a professional source first. Many suppliers that sell cleaning and spot treatment products to professional carpet cleaners are willing to assist you in selecting the right agents and procedures for your situation. Be sure to always check with the carpet manufacturer to make sure what type of cleaning chemicals can be safely used on the carpet.

Vacuum all dry spills. Pouring any liquid onto a dry spill may create additional problems.

The following are methods of spot removal. See the spot removal chart to find out which method is best for each kind of spot.

Volatile Solvent (A fast-evaporating dry cleaning fluid.) Exercise caution when using a solvent. A non-flammable spot removal solution is preferred. Never pour a volatile cleaning solvent directly onto the carpet. Volatile cleaning solvents will destroy the latex that holds the carpet components together.

Non-volatile Solvents – (Referred to as paint, oil and grease removers.) This type of cleaning solvent evaporates slower for more effective cleaning. Non-volatile solvents can leave residues that may cause rapid soiling. When using a non-volatile remover, always rinse the area thoroughly with a volatile solvent. See residue precautions.

Nail Polish – Use nail polish removers without conditioners.

Detergent Solution – Mix ¼ teaspoon liquid, non-lanolin, hand dishwashing detergent with one cup warm water. Mix professionally formulated detergent solutions according to the manufacturer's recommendations. **NEVER USE A STRONGER CONCENTRATION.** (Increasing the amount of detergent beyond the recommended level does not increase cleaning performance but makes the complete removal of detergent more difficult.) Always use a detergent with a pH of less than 10. Thorough rinsing is necessary to remove detergent residues that may cause rapid soiling. You may need to rinse with warm water several times to completely remove residues. (See residue precautions.) Care should be used in selecting a detergent. Never use a laundry detergent of any type because laundry detergents may contain optical brighteners (fluorescent dyes) that dye the fiber. Do not select an automatic dishwashing detergent because many contain bleaching agents that destroy dyes. A professionally formulated,

Carpet Maintenance Guidelines

neutral detergent solution, specifically designed for use on carpet, should also be considered for consistent spot removal results.

Small portable extraction machines designed for spot cleaning are also very effective.

Warm Water Rinse – Use lukewarm tap water in most cases to rinse the spotting agent from the fiber. Failure to completely rinse the solutions from the fiber may cause accelerated soiling. Wicking, or reappearance of the spot as the moisture moves upward from the backing on the carpet, will occur if contaminant is not totally removed.

NOTE: Only use cold water when removing blood stains.

Vinegar Solution – Mix one cup of white vinegar (a 5% acetic acid solution) and one cup of water. This is used most often to lower the alkalinity caused by detergent solutions or alkaline spills removing residue. A professional solution may also be used (available from sanitation suppliers).

Ammonia Solution – Mix one tablespoon of household ammonia and one cup of water, or use a professional protein spotter (available from cleaning suppliers).

Spot Removal Kit – Available from most carpet retail stores and professional carpet cleaning suppliers. Follow directions closely! Some spot removal kits contain a detergent solution and a stain-resist solution. Use of the stain-resist solution prior to the complete removal of the spill may cause a permanent stain. (Other spot removal kits may have dry absorbent cleaning products for fast spot removal). It is suggested that a professional spotting kit be purchased and that a portable spot extractor be used.

Spot Removal Residue Precautions!

Although your detergent selection is important, it is even more important to remove all the detergent you put into the carpet. A detergent's ability to bind to particles of soil and oil is what makes cleaning happen. However, the detergent residue continues to attract and hold soil even after drying. Increasing the amount of detergent beyond the recommended level does not increase cleaning performance but makes the complete removal of detergent more difficult. A small, portable extractor is recommended for efficient rinsing and spot removal. A solution of one cup white vinegar (5% acetic acid solution) to one cup water can be used to remove heavy detergent residue. **Remember: Never use any of the solutions in concentrations stronger than those recommended.**

Avoid Overwetting – Prolonged dampness may cause discoloration, promote growth of mold and bacteria in the carpet, or cause separation of the backing. This can be controlled by a combination of proper equipment use and operator training.

Carpet Maintenance Guidelines

SPOT REMOVAL CHART								
	DRY CLEANING FLUID	NAIL POLISH REMOVER	DETERGENT SOLUTION	WARM WATER RINSE	WHITE VINEGAR SOLUTION	AMMONIA SOLUTION	SPOT REMOVAL KIT	CALL A PROFESSIONAL
BLOOD			2	3		1	4	5
CHEWING GUM	1							2
CHOCOLATE	1		2	5	4	3		6
COFFEE			1	3	2		4	5
CRAYON	2	1						3
DYE	3		1	2				4
FINGERNAIL POLISH		1	2	3				4
HAND LOTION	1		2	4		3		5
ICE CREAM	1		2	5	4	3		6
INK (BALLPOINT)	2	1	3	6	5	4	7	8
KOOL-AID			1	3	2		4	5
LATEX PAINT			1	3		2	4	5
LIPSTICK	2	1	3	6	5	4	7	8
MUSTARD			1	3	2		4	5
SOFT DRINKS			1	4	3	2	5	6
TOMATO SAUCES			1	3	2		4	5
UNKNOWN	2	1	3	6	4	5	7	8
URINE			1	2	3	4		5
VOMIT			1	4	3	2	5	6

Perform steps in order (1,2,3, etc.) while following the spot removal directions.

Figure 5

NOTE: Use only cold water when removing blood stains.

How to use the Spot Removal Chart

1. Look on the left side of the chart to locate the type of spot or stain to be removed.
2. Across the top of the chart, see the appropriate methods of removing a spot or stain.
3. Once type of spot or stain is located, look in the center of the chart and follow along the type of spot or stain doing step 1 first, then, if needed, step 2, and so on.
4. Follow the steps in order until spot or stain is removed. If the first step removes the spot or stain, it isn't necessary to move to the next step.
Remember: **rinse, rinse, rinse.**

For a more extensive spot removal chart, visit CRI's website www.carpet-rug.org.

Summary of Carpet Cleaning Principles

1. **Dry Soil Removal** through vacuuming in three areas: **overall** with an efficient commercial vacuum; in **entries** to remove abrasive particle soils; and along **edges** (perimeter of rooms) to remove dust and dirt build-up that can cause soil filtration.
2. **Soil suspension** through **chemical action** to dissolve, suspend and emulsify soils; **elevated temperature (heat)** to excite chemicals for optimum performance; **agitation** for uniform chemical distribution to achieve maximum contact with soils; and **dwel time** to allow chemicals to suspend embedded or oxidized soils.
3. **Wet extraction** of suspended soils through **absorption, wet vacuuming, rinsing** to flush suspended soils from fibers, and/or **dry vacuuming** following cleaning and drying to remove detergent and soil residues.
4. **Finishing or Grooming (Pile Setting)** of carpet surface in order to: **maximize appearance** for customer; **distribute additives**, such as fabric protectors; **promote drying** by untangling tufts; and **eliminate appearance of matting and crushing** that causes complaints.
5. **Drying:** to minimize customer inconvenience and promote safety and health, use adequate ventilation for speeding up drying time. The use of commercial air movers (drying fans), HVAC handling systems, or dehumidifiers greatly reduces drying time.

Troubleshooting

Burns

Burn damage can be remedied only by reweaving, retufting, or resectioning the damaged area. However, in some cases, the appearance of an area of charred carpet can be improved by carefully clipping off blackened ends of tufts using small, sharp scissors. Trim surrounding tufts to minimize indentation. Remember, clipping blackened ends of tufts is permanent.

Crushing

Crushing is the loss of pile thickness due to foot traffic. It is not a manufacturing defect unless specifically cited in manufacturer's warranty. Regular vacuuming can help reduce crushing. Manufacturers' definitions of crushing may vary.

Depressions

The weight of heavy pieces of furniture can put indentions in carpet. Use furniture glides or cups under the legs of heavy pieces or occasionally move your furniture a few inches backward or sideways so that the weight is not concentrated in one place. If depressions do occur, apply water to the indentions with a spray bottle. Hold a hair dryer, set on medium, a few inches above the indentation. As the spot is drying use your fingers to gently work the pile upright and in the opposite direction.

Fading or Color Loss

Protect carpet from direct sunlight to minimize fading or color loss. Fading can be caused by emissions from heating fuels or chemicals, such as pesticides, household cleaning agents, and other household items.

Filtration Soiling

Filtration soiling may appear as dark or grayish lines on carpet along walls, stairways, around vents, and under doors. It is caused by airflow over and through the carpet that allows fine, airborne soils to settle on the carpet surface. This type of soiling, while sometimes permanent, requires special treatments for effective removal. Contact a carpet cleaning professional for assistance.

Fluffing or Shedding

The balls of fluff found on carpet or in the vacuum cleaner bag are merely loose bits of fiber left in the carpet from the manufacturing process. The removal of loose fibers does not affect the carpet life or quality. With proper vacuuming, using a quality vacuum cleaner, most shedding gradually disappears within the first year after installation.

Carpet Maintenance Guidelines

Matting

Matting, the untwisting of the fiber and intermingling of the yarn tips, is usually the result of concentrated foot traffic and possibly inadequate maintenance. But other factors, including improperly specified cushion or cushion failure, can also be the cause. Matting is not considered a manufacturing defect unless specifically cited in the manufacturer's warranty. Manufacturers' definitions of matting may vary.

Shading, Pile Reversal, "Watermarking," or "Pooling"

Shading is not a change in color, but a change in pile direction that sometimes randomly appears in a carpet or rug. It may look darker or lighter from different directions. Shading may be more prevalent in a solid color cut pile carpet than in patterned and textured styles. This is not considered a manufacturing defect and is usually permanent and has no known cause.

Soiling

The secret to maintaining the beauty of your carpet is to vacuum often and clean it regularly before it becomes excessively soiled. Dulling is caused by the deposits of all types of soil that abrade the carpet's fibers. Still, the original color is not lost, but is present under the soil film. If the soil is allowed to remain, the carpet is much more difficult to clean. Frequent cleanings are important to avoid excessive soiling.

Sprouting

Occasionally a yarn tuft will rise above the pile surface of a carpet. **Do not pull them out.** Just snip these tufts off level with the carpet. If a long run has occurred, consult your dealer, installer, or professional cleaner promptly. It is frequently possible for the yarn to be retufted (reburled) or glued back into place.

Static

The static electricity generated by some carpets is aggravated by low humidity. That is why it is most bothersome in colder weather when the relative humidity is low. The use of a humidifier can help by reducing the buildup of static and reducing annoying shocks. Be cautious about using anti-static treatment on carpets, as some can cause the carpet to soil very readily. For the same reason, never use fabric softeners made for home laundry, as they may leave sticky residues that will cause rapid soiling.

References

1. The Carpet and Rug Institute, Inc., *Standard for Installation Specifications of Commercial Carpet*, (CRI 104, 2003), Dalton, GA, 2002.
2. Berry, Michael, Ph.D., *Protecting the Build Environment: Cleaning for Health*, Tricomm 21st Press, Chapel Hill, NC, 1993, Page 108.
3. Institute of Inspection, Cleaning and Restoration *Certification, Standard and Reference Guide for Professional Carpet Cleaning*, (IICRC S100, Revised 2002).
4. Bishop, L.J., Certification Board Chairman, Institute of Inspection, Cleaning, and Restoration Certification, Dr. Michael A. Berry, Ph.D., Research Professor, University of North Carolina at Chapel Hill, and Stanley Quentin Hulin, National Hard Floor Maintenance Manager, DuPont Flooring Systems, *Cleaning and Restoration Certification: A Life-Cycle Analysis For Floor Coverings In School Facilities*, Clean Care Seminars, Dothan, AL, 2002.



The Carpet and Rug Institute (CRI) is the national trade association for the carpet and rug industry. Its members are manufacturers and suppliers providing over 90% of all carpet produced in the United States.

CRI offers extensive information about carpet, installation, maintenance, and indoor air quality through a toll free information line, 800-882-8846 and a website at www.carpet-rug.org. See referenced studies at www.carpet-health.org.