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Technical Bulletins

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CARPET FILTRATION SOILING

You walk into a room. What looks to be an otherwise well maintained room of carpeting has an unsightly dark discoloration around all of the edges and near all gaps in the subfloor. It can be a commercial or residential setting. Sometimes normal cleaning procedures have almost no effect at removing this discoloration. Now everyone is unhappy. The carpet still does not look completely clean. You as the professional cleaner can't figure out why. You are dealing with a problem that has plagued carpet cleaners for many years - filtration soiling. In the past, carpet filtration soiling was just seen as a pesky problem that occasionally developed. Now, however, with all of the changes that have developed in the industry, we are beginning to recognize it as a more serious dilemma and problem.

Filtration soiling has been defined as the *"soiling of carpet under doors, draperies, furniture, or along baseboards caused by the carpet pile's filtration of soil, dust and other pollutants where air flow is restricted or channeled. It is also sometimes associated with fabric wall coverings or office dividers."* (*Cleaning, Restoration, Inspection, Safety Glossary. Cleancare Seminars, 1992*). In simpler terms, filtration soiling is simply a dark area of soiling that collects along the walls in installed wall-to-wall carpeting that makes the carpeting appear almost to have a dark stripe all the way around the room. Filtration soiling is usually identified as dark, grayish lines under doors, around baseboards, and along the edges of stairs. In Dr. Michael Berry's Book, *Cleaning For Health - Protecting The Built Environment*, he discusses another cause of filtration soiling. In discussing the needed maintenance of buildings he states: *"Stairs, landings, and elevators connect different levels of the built environment. They need to be inspected because they act as chimneys or breezeways and are paths for pollutants to move from upper to lower floors. Elevator shafts even act more like chimneys than stairwells."* What these problems have in common is that carpeting is acting as a filter when concentrations of air are being channeled through a specific part of that carpet. In normal circumstances this channel takes place at the edges of a room where there is a small gap between the wall and the floor. But, as Dr. Berry's discussion points out, any structural design that supports a funneling or channeling of air through the carpeting can lead to filtration soiling.

What makes filtration soiling so difficult to remove are the two major contributing factors - the composition of the soil being filtered and the concentrations that those soils are in. Think of a building as a breathing building. As internal and external air pressures are changed by wind, barometric pressure, humidity, forced air heating and air conditioning, and natural air movement, air moves back and forth between the inside and the outside of the building. It literally breathes - inhale, exhale, inhale, exhale.... There is a natural gap that exists between a floor and a wall. This gap varies due to materials used, quality of construction and insulation goals. Since most air pressure is from the outside inward (due to wind), a lot of air moves through this gap, and subsequently through the carpeting that is installed all the way to edge of this wall. If you will paint a mental picture of this process, it is not difficult to see how any soils or pollutants that are being carried by this air are actually filtered out by the carpet. In addition, in the case of a forced air heating or ventilation system, a gap often exists between the air duct outlet and the carpet. Therefore, the carpet is filtering out all of the air that moves through that gap. Filtration soiling often develops around these vent outlets. In addition, as Dr. Berry points out, the design of the building with natural channels or funnels (stairwells, elevator shafts, etc.) can create an airflow through a small concentrated area of carpet fibers.

The aspect of this that complicates the whole picture is what is the composition of the soil that makes up the filtration soiling. In a normal residential household, the primary airborne problem soiling would be cooking oils and greases and household dust. Every time the house "exhaled," these would be collected by the carpet. It is, however, the outdoor pollutants that really complicate things. Exhaust emissions, carbon, soot, and all of the other things that can make up outdoor air pollution are filtered out of the air by the carpet every time the wind blows or the building "inhales." This extreme concentration of soiling into a very small area of carpeting

usually causes a dark stripe of soiling along all outside edges of the house. In a commercial environment, all kinds of activities can lead to all different types of airborne contaminants and pollutants being filtered out of the air by carpeting. Once again, we are dealing with extreme concentrations. There are two potential complicating factors about this soil that may make it difficult or impossible to remove. First, it may contain pollutants which damage, change, or alter the dye structure of the carpet itself. Once this damage occurs, cleaning procedures cannot fix it. Secondly, the concentrations and prolonged exposure that this soiling gets may make a stain that is permanent. In other words, what would normally be a removable soil, is made permanent by the concentrations and increased exposure time.

So what can you do about filtration soiling? Well, ask almost any carpet cleaner who has been at it for a few years and they will probably give you their favorite "home" remedy. Truth is, there is no guaranteed way to remove all filtration soiling. We can give you some ideas that work pretty well on a consistent basis.

First, let's look at the cleaning tool used. Obviously, a cleaning wand can only get so close to the edge of the carpet. It has a difficult time getting to filtration soiling. (So did the vacuum - that's one of the reasons the filtration soiling developed). Many cleaners use their upholstery or stair tools which help reach the soiling somewhat. One tool that many professional cleaners use is a vacuum crevice tool which can concentrate vacuum on a small area. By spraying a cleaning solution across the soiling and providing an almost instantaneous vacuum suction, this technique has found some success. An even more effective tool is a cleaning tool designed for crevice cleaning (*Steam Way Hydro-Crevice Tool*) that provides concentrated solution flow and vacuuming at the same time. Truthfully, though, successful removal of filtration soiling lies more in the cleaning or spotting solution selected than the cleaning tool.

Conventional high powered traffic lane cleaners (*Steam Way Super Traffic Lane Cleaner, Steam Way Environmentally Friendly Formula "O", Steam Way Spectrum Traffic Lane Cleaner*) have a great deal of success at removing some filtration soiling. In more difficult situations, many cleaners follow up conventional cleaning by treating with a volatile spotting solution (*Steam Way Spotter "101"*). This high powered cleaning solvent will dissolve many troublesome greases and oils. For more stubborn, older grease and oil contamination, a non-volatile solvent spotter (*Steam Way Spotter "701"*) is used because it can break down and dissolve stubborn deposits. Most of these applications could be considered as conventional treatments and would qualify as industry standards for the treatment and attempted removal of filtration soiling. We have found, however, due to the complicated make-up of filtration soiling, that many times, after conventional treatments have fallen short, the application of a shampoo cleaning agent that contains solvents (*Steam Way Upholstery Cleaning Concentrate HP*), followed by aggressive agitation with a horsehair or nylon brush, and then followed by rinsing with extremely hot cleaning solution, is consistently the most effective means of removing filtration soiling. It is very important to keep in mind that there is no guaranteed way that will always remove all filtration soiling. In many cases, you can lighten it but not eliminate it. In some cases, permanent dark discoloration simply is not removable, but it certainly is always worth a try.

Some professional cleaners advocate using a product such as "Go-Jo®" hand cream . These hand cleaning solutions contain solvents that separate the oily filtration soiling from the fibers and detergents that will suspend them for removal. A Professional should keep in mind however, that these types of solutions contain lanolin (to prevent drying of the skin). These types of chemicals were never designed for carpeting and can cause rapid resoiling.

One final thing to consider, if too large of a gap exists between a floor and a wall which contributes to problem filtration soiling, before the next carpeting is installed the owner may want to consider reducing or eliminating that gap, usually by the application of a sealant caulk. More serious construction problems would require more serious repair considerations.

As we delve further into investigations of indoor air pollution, we will probably expose more soiling and airborne pollutants that complicate filtration soiling. A list of contaminants that have been identified in indoor air is simply too long to list here. As usual, though, the carpeting is trying to tell us something. There are airborne pollutants that filter throughout the indoor environment. In the case of filtration soiling, this air is being funneled through the carpeting. The carpet, in turn, is acting as a filter. Our job is to clean that filter out. In order for us to be effective at our job, as Dr. Berry points out in many places in his book, frequency of cleaning is an important consideration.

About The Author:

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