Published in Hospital and University

By Dawn Shoemaker for Tornado Industries

We all know that children, especially toddlers, are invariably in contact with floors. They may play with toys while sitting on the floor, sometimes they lie on the floor to take a nap, and sometimes they stretch out to watch television – on the floor. However, floors can be a source of contamination that can cause illness in both children and adults if it spreads to hands and fingers or is ingested.

According to a CBS News report (April 25, 2009), it is estimated that nearly 96 percent of shoe soles carry traces of fecal bacteria and coliform, a bacteria that can become a serious, health-threatening contaminant if ingested. The report went on to say that these contaminants often have a “free ride,” meaning they can be transferred from place to place, room to room, on shoes.

In a more comprehensive study, Dr. Charles Gerba, a microbiologist with the University of Arizona, found that shoe soles can actually contain a wide variety of pathogens, many of which can negatively impact health. Gerba distributed brand-new shoes to 10 participants. He asked them to go about their daily activities—working, shopping, studying, etc.—for two weeks and then return the shoes to a laboratory for examination. The results were surprising, according to Gerba, because such heavy concentrations of pathogens were found not only on the outsides of the shoes but on the insides as well.

For instance, Gerba reported finding approximately 420,000 units of different types of bacteria on shoe bottoms along with nearly 3,000 units on the insides of the shoes. Similar to the study mentioned earlier, Gerba also found that more than 90 percent of the shoes contained coliform; E. coli found its way onto nearly a third of the shoes; and contaminants such as *Klebsiella pneumoniae*, which can cause blood infections, as well as *Serratia ficaria*, which can cause respiratory infections, were also discovered.

“The CBS News report said that these contaminants have a ‘free ride,’ allowing them to move from one floor to another,” says Mark Warner, Product Manager for Disinfectants and Sanitizers for Enviro-Solutions, a leading manufacturer of Green cleaning chemicals and products. “That’s why I refer to them [the contaminants] as hitchhikers.”

But Do We Really Touch Floors That Often?

It's pretty clear to see how children come into contact with floors and the contaminants that may be on them. But how often do we adults actually come into contact with floors?

According to Warner, he once discussed this problem with an administrator with a major healthcare-related organization. The administrator "downplayed any potential problems, in hospitals and other facilities," he said. "He agreed that floors can become contaminated but simply did not believe these contaminants [are touched that often and] can become the source for cross-contamination."

However, Warner explained that adults may have as many as 50 direct and indirect contacts with floors every day, and children likely have many more. With each "touch," we can come in contact with pathogens. Among his examples of how this happens are these:

- Tying a shoelace
- Touching and wrapping up power cords
- Moving a mat
- Picking up a tool, pen, or piece of paper that has fallen to the floor
- Lifting a briefcase or purse that was placed on the floor

In fact, women's purses can be major carrier and source of contamination. In an informal but still informative June 2006 study

conducted by an Atlanta television station, researchers asked 50 random women visiting a shopping center if they could swab the women's purses. Laboratory results found that one in four purses contained significant amounts of E. coli and other bacteria. Digging a bit deeper, researchers discovered that all of the contaminated purses had recently been placed on the floors of the mall's public restrooms … likely making the floors the source of the contamination.

Preventing Contaminants from Thumbing a Ride

Thorough and frequent floor cleaning along with more aggressive actions when there is a public health threat or concern are the best ways to stop the hitchhiking of floor contaminants, according to Warner. This involves both the type of cleaning performed and the types of cleaning chemicals and floor equipment used.

For instance, Warner suggests that if there is no dangerous infection or pathogen present, floors can be cleaned following standard cleaning procedures using clean mops, mop heads, and neutral cleaners. However, if a health threat or concern *exists in a community* (for instance, H1N1), "the neutral cleaners should be replaced with products that have greater cleaning efficacy such as a neutral cleaner- disinfectant with specific 'kill claims' for the pathogens of concern," he says. "These kill claims should be indicated on the product's label."

More serious and extensive measures are called for when a health threat is *present within a facility*. For instance, when specific schools

and universities are experiencing increasing numbers of influenza cases, presumed to be caused by H1N1, as some were earlier this year, all cleaning procedures, including floorcare, should be amplified significantly, according to Warner. “The floors should be cleaned with a hospital-grade neutral cleaner disinfectant cleaner and cleaned before all other areas,” he says. “This is followed by [cleaning] walls, counters, fixtures, and high-touch-point areas with the disinfectant. Again, verify that the kill claims of the disinfectant will eliminate the pathogen of concern.”

The Role of Floorcare Equipment

As important a role as chemicals and disinfectants play in keeping floors healthy, they are only part of the equation. The other key component is the use of proper floorcare equipment. According to Mike Schaffer, President of Tornado Industries®, manufacturers of professional cleaning equipment along with several types of floorcare machines, the most effective way to clean floors is by using automatic scrubbers whenever and wherever possible.

Automatic floor scrubbers are essentially a combination of different floorcare tools including a mop and bucket, a floor buffer/polisher, and a wet/dry vac all in one machine. The machine dispenses water (mixed with a cleaning chemical or disinfectant), scrubs the floor with a pad, and then squeegees the solution back up into a recovery tank—all in one process.

“[Automatic] scrubbers, as the name implies, can scrub deep down into floor and grout areas,” says Schaffer. “Not only does this help remove grit and soil that can harm the floor’s appearance, it can also help remove potentially harmful bacteria and pathogens where they may hide.”

When selecting an automatic scrubber, Schaffer says the size of the machine is important. A conventional buffer may suffice if the area to be maintained is less than 2,000 square feet; however, an automatic machine is called for in larger areas. “It will quickly pay for itself in increased worker productivity,” he says.

Additionally, to keep floors clean and healthy, Schaffer suggests managers look for these features:

- A cleaning path of 22 inches to 26 inches
- Manually adjustable brush pressure to deep clean heavily soiled or potentially contaminated areas
- Easy access to batteries, vacuum motors, and hoses to minimize downtime
- Quiet operation to help prevent worker fatigue
- A rotomolded, polyethylene-constructed body for greater durability

Although many people have become sick and have died as a result of H1N1, we always learn some things from epidemics. One lesson that

is repeated is the importance of thorough and effective cleaning. Usually managers and cleaning professionals believe this implies more detailed cleaning of restroom fixtures and high-touch areas such as doorknobs and elevator buttons. But it also involves areas we do not always think could be a source of contamination, such as floors. Keeping floors not only clean but healthy can play a major role in keeping an entire facility healthy and can help prevent the spread of disease.

Dawn Shoemaker is a freelance writer for the professional cleaning, building, healthcare, and education industries. She can be reached at info@alturasolutions.com

Sidebar:

Are Cleaning and Disinfecting the Same?

Unless a disinfectant is labeled a "cleaner disinfectant," it does not necessarily clean and also disinfect a surface, killing any pathogens found on that surface. Cleaning and disinfecting are normally two different tasks to be performed in the cleaning process:

1. First the area is cleaned, using a neutral or all-purpose cleaner to remove unwanted materials and soils on a surface.

2. Next the area is disinfected (apply disinfectant, allow stated dwell (aka wet) time) using appropriate EPA-registered disinfectants with specific kill claims to eliminate those pathogens of concern.