

The following article was published in the February 2005 issue of Building Services Management Magazine.

Floors, Health, Dust, and IAQ

By Dawn Shoemaker

Since the early 1970s, when buildings were first designed to be “air tight” in order to reduce energy costs, indoor air quality (IAQ) has been a major issue. Since then, some cleaning professionals have turned to such practices as Green cleaning and the use of a true-HEPA vacuum cleaner to help lower cleaning’s negative impact on the environment and IAQ.



However, we now know that maintaining floors, a common cleaning task, can have a negative impact on IAQ as well. For example, when floors are polished or burnished, dust particles can become airborne; if cleaners are near HVAC systems or intakes, this dust can quickly be distributed throughout the facility.

When examined through a microscope, the dust most often found in facilities is made-up of paper, skin flakes, fabric fiber, and soil particulates. However, each gram of dust may also contain hundreds of thousands of fungal spores, volatile organic chemicals (VOCs), residue from cleaning chemicals used on the floors, as well as pesticides, bacteria, and germs. These airborne dust contaminants are continually redistributed as people walk through and use the facility.

One way to enhance a building's health and improve IAQ is to make sure facility service providers (FSPs) are thoroughly trained in all aspects of floor maintenance—from dust and damp mopping to performing a complete strip and refinish. Additionally, all floor care duties should be incorporated into a written floor maintenance program, created to address the specific facility's needs.

Also, the most significant way to improve any facility's IAQ and its occupant's health is by using floor machines that are designed to reduce dust's negative impact.

Active or Passive

When selecting floor equipment, such as high-speed or propane burnishers, FSPs should look for machines with

“active” or “passive” vacuum systems that help prevent the airborne dust created when polishing floors.

Active systems, most commonly used in Europe, are equipped with an actual cleaner that vacuums the floor surface as it burnishes. The dust and impurities are suctioned through filters into filter bags—just like a regular vacuum cleaner—where they are trapped, preventing them from becoming airborne.

Moreover, passive systems have a shroud over the floor machine’s base that helps trap dust, preventing it from being released. Centrifugal force and “holes” in the pad driver propel the dust and debris through filters into a container,



hopper, or bag located at the machine’s rear—preventing dust from escaping and contaminating the air.

Of the two systems, active machines are usually more effective, but are rarely found in the United States since they are not compatible with American electric power systems. Passive vacuum systems are more common in the U.S. and can significantly reduce the amount of particulates released into the air by as much as 50 percent. Of course, the effectiveness of both systems depends on the quality of the pad used, the floor's finish, the experience and training of the worker, and the machine's rotations per minute (RPM).

Other Ways to Reduce Floor Maintenance Dust

Besides the use of active or passive high-speed floor equipment, airborne dust can also be reduced by the following:

- Always dust and damp mop before burnishing. This prevents the machine from throwing dust particulates into the air and contaminating surfaces and IAQ.
- Assure proper pad and finish compatibility. Finishes must withstand the heat generated by burnishers as they polish a floor surface. A machine will quickly sand away a finish that is not compatible with a high-speed.

This can also damage the floor, and when the old finish's particulates become airborne, it can potentially create serious IAQ problems. Always check the manufacturer's instruction on the label to ensure compatibility before beginning.

- Avoid burnishing near raised objects on the floor, such as outlets.
- Perform a final sweeping of the floor with a dust mop following all buffing and burnishing tasks to remove any dust and soil that vacuuming may have missed.
- Use high-quality chemicals and finishes. The old expression "you get what you pay for" certainly applies to floor maintenance chemicals and finishes. Cheaper products often require more coats, more time, and more labor because they do not hold up as well, which in turn, can increase dust problems.
- Choose Green cleaning chemicals that have been certified by either the Environmental Choice Program™ (Canada) or Green Seal® (United States). These

products are safer for facility occupants, cleaning workers, and the environment since they do not contain many of the harmful chemical ingredients found in traditional floor care products.

- Regularly change the pads. Using clean pads can significantly reduce the amount of generated dust.
- Opt for cylindrical brush technology. Cylindrical floor care machines, which can be used on all types of floors, have counter-rotating brushes on each end that rotate at more than 1,000 RPM at 3.5 psi (pounds per square inch)—five times the contact pressure that is provided by a rotary machine. Cylindrical machines use less water, chemical, and tend to produce less dust—keeping it confined within the machine’s width. Rotary machines tend to slosh water, dirt, and chemical about 30 percent *greater* than the width of the machine and use about 30 percent more water as well.
- Check that all equipment is in good working order. Propane burnishers may need periodic oil and air filter changes as well as spark plug checks and adjustments

to the engine pulley belts. Grease fittings should be serviced with a grease gun; the pad driver checked for wear or slippage; and wheel, engine mount, and handle bolts all checked and tightened.

Worker Training

As previously mentioned, worker training is an essential component in proper floor care maintenance. Workers should attend floor care courses and seek credentials from a reputable organization, such as the Institute of Inspection, Cleaning, and Restoration Certification (IICRC).

Many jansan distributors also offer one-day training sessions for FSPs on the proper use and maintenance of floor care machines. These training programs often include safe-operating techniques, including where high-speed machines may or may not be safely used. For example, small, enclosed areas with low ceilings and poor air circulation are not ideal settings to use burnishers and doing so can actually harm IAQ.

Incorporating these floor care measures, as well as using equipment with either active or passive vacuum systems, can make a major contribution to reducing dust and other IAQ contaminants. A good program in the hands of a well-

trained worker can greatly improve the health, well-being, and performance of a facility's workers, occupants, and users, which is cleaning's ultimate goal.

Dawn Shoemaker is a writer for the janitor industry working for AlturaSolutions Communications, Chicago.