At Your Service...

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Last month we introduced the topic of infection control by using the analogy of a family portrait rather than a puzzle. Puzzle pieces are static and only fit together in one correct combination, whereas infection control is much more similar to a family dynamic where the relationships between the different parties are always in flux. This analogy is extremely helpful when we discuss the critical infection control concepts of custodial practices and cleaning chemicals.

If the farmer and his wife in the painting American Gothic is the centerpiece of our infection control family portrait and a baby in the bath represents the importance of personal hygiene, then the custodial practices are best represented by Cinderella. Custodial practices are the backbone of any infection control program, yet the process and the individuals who do the work are routinely overlooked. Just as Cinderella’s efforts for her stepmother and stepsisters were taken for granted until the crisis of the arrival of the prince occurred, so too custodial efforts are often viewed as being of low importance until an outbreak or some other emergency occurs. At such times, organizations are forced to rely heavily on the capabilities of internal or contract custodial help.

When custodial practices are examined with regard to infection control, a “cleaning conundrum” is quickly revealed. Most custodial activities are geared towards the big stuff, which makes the building look better. However, it is the attention to detail, the little stuff, which often makes the biggest difference in infection control.

Therefore, effective custodial practices must integrate procedures that allow buildings to look and perform better.

A Review of Custodial Practices

The time to review custodial practices and improve worker training so that individuals are cleaning for health as well as appearance is now. Although some changes can be implemented in the face of an infection control emergency, such adjustments will be most effective if they build upon a pre-existing knowledge base rather than trying to implement an entirely new system. Custodial managers and all cleaning staff should be trained and frequently reminded that proper removal of litter and visible dirt is only part of the cleaning process. The removal of these materials should be done in a manner which minimizes airborne particulates and volatile organic compounds, while also addressing common infection hot spots such as public touchpoints and bathroom facilities. The move towards microfiber cleaning cloths, vacuums with enhanced filtration, and damp mopping of hard surface floors with microfiber fabrics are all improvements instituted over the last decade to minimize the amount of airborne particulates generated during normal cleaning processes. The move toward “green” style cleaning chemicals which are effective against microorganisms but break down into non-hazardous components is a direct...
response to occupants’ health concerns related to exposure to volatile organic compounds (VOCs).

For example, a new study was released in December 2007 by the Environmental Working Group that found: “…that certain chemicals commonly found in hospitals increased the risk of disease to the nurses exposed to them as well as their children if exposure takes place during pregnancy.” Although the study examined a number of hospital chemicals beyond those used by the custodial staff, such as anesthetic gases and medications that must be administered by the nurses, they also keyed in on cleaning agents and hand disinfectants.

Such reports give additional momentum to a trend which is growing to identify and utilize chemicals that are effective anti-microbial agents with low side effects for the users and building occupants. The lesson from all of this is that an examination of custodial practices, equipment and supplies should be done every two to three years to ensure that staff members have the right training and materials to prevent infectious outbreaks and respond to them appropriately if they do occur.

Reviewing custodial practices may sound daunting, but new approaches developed by cleaning and custodial professionals make it relatively simple. One painless technique that has produced impressive results is the color coding of cleaning equipment. Rather than using a single scrub brush or mop to clean a kitchen surface and then use the same equipment to clean a bathroom or locker room, the necessary tools for such activities are restricted to certain areas of the structure in order to minimize the potential for cross contamination.

The cleaning industry has even settled on some basic colors so that there is consistency with the custodial personnel who move from one building to the next. Currently the color coding of cleaning equipment is structured as follows:

- **Red:** high risk (toilets, bathroom floors, biohazard)
- **Yellow:** specialty (labs, general restroom, locker rooms)
- **Green:** kitchen and food service
- **Blue:** general (halls, offices, guest rooms, classrooms)

The manufacturers have gone so far as to adopt the color system for disposable items as well as equipment. As such, many vendors offer wiping cloths, scrub pads and mop heads in a variety of colors along with buckets, brooms, vacuums and other durable items.

Other specific cleaning improvements that should be considered during the bi-annual custodial review include preventative steps to reduce contamination, as well as cleaning techniques. The use of barrier mats at all entry points minimizes the amount of soil tracked into the building; a source for a wide variety of bacterial and fungal contaminants.

Other innovative cleaning techniques that should be considered include:

- vapor cleaning with steam rather than chemicals to disinfect floor surfaces;
- electrostatic sprayers for better coverage with less product (MagnetSpray);
- personnel cleaning assignments by specialty rather than by area; and
- application of surface coatings utilizing the latest nanotechnology to produce durable, easy to clean surfaces (some coating manufacturers even build anti-microbial properties right into the products).

**According to the EPA**

**Sterilizer:** a chemical that destroys all forms of microbial life and their spores

**Disinfectant:** a chemical that destroys fungi and bacteria but not their spores

**Sanitizer:** a chemical that reduces micro-organisms to safe levels as determined by public health codes or regulations

**Emphasizing the Benefits of the Basics**

However, even the greatest technology will prove ineffective if it is not used properly on a consistent basis. Custodial efforts for infection control must continue to emphasize the basics of regular cleaning of frequent touchpoints. Special emphasis should always be given to doorknobs, pushbars, handicap buttons, sink handles and water fountains.

Although not generally included in the work scope for custodial personnel, cleaning of electronic components of shared workstations can also have a big impact in reducing the transmission of infectious agents. A whole class of keyboards, computer control “mice,” touch screens, and other computer accessories that are waterproof/washable are now available. (See such products as SpillSeal®, ScrollSea, and Moskey.) Integrating such equipment into the workplace allows for the regular cleaning of frequently touched surfaces, which used to be forbidden to the custodial crew.

While all this may sound exotic or prohibitively expensive, the value of incorporating such specialized cleaning...
surfaces is coming to light through carefully controlled studies. One such report, recently published in the *Journal of Infection Control*, carefully tracked the costs and benefits of upgrading custodial practices. In one New York City day care center, aggressive infection control custodial efforts produced the following positive impacts for the staff and children in the first 12 months:

- Number of illnesses - reduced 24 percent
- Antibiotic usage - reduced 24 percent
- Doctor visits - reduced 34 percent
- Absenteeism - reduced 46 percent

**Selecting and Using Chemicals**

Chemicals are such an important yet oftentimes mysterious part of infection control efforts that this section of our family portrait would be best represented by Doc Brown of the “Back to the Future” movies. Chemical companies are constantly dreaming up so many new formulations that end users can be forgiven if they believe that mad scientists populate their laboratories muttering terms like “flux capacitor” and “biocidal efficacy.”

The users’ wariness of claims made by chemical manufacturers is further heightened by a confusing trend. Over the past decade, advertising literature has constantly touted the increased strength and greater effectiveness of cleaning chemicals being brought to the market. But at the same time, the number of community-related cases of Methicillin Resistant Staphylococcus Aureus (MRSA) infections and Health Care Acquired Infections (HCAI) has risen dramatically. The simple answer to this apparent contradiction is that stronger chemicals are not a substitute for effective cleaning practices. Both the physical cleaning and the selection of chemicals have to be blended into a consistent process if real progress is to be made on the infection control front.

**Chemical Confusion**

One of the barriers that has to be surmounted when integrating chemicals into infection control efforts is the confusing terminology that has developed. Is a biocide the same as an anti-microbial? What is the difference between a sterilizer and a sanitizer? Are soap and water considered chemicals? Does it make a difference if the soap being used is a product that anyone can buy at the grocery store without restrictions? Are “green” chemicals really less toxic than other competing products?

While it takes some work to digest the details of these terms, cleaning and restoration professionals must make the effort if they are going to make good decisions regarding which products to use and be able to effectively communicate their recommendations to customers. (See the boxed information for a starting point on some of the most frequently used terms that have specific definitions assigned to them by the Environmental Protection Agency.)

Once a person acquires some basic knowledge regarding the terminology used in the industry, he can begin the process of evaluating various chemicals for use in infection control; both for preventive and emergency response situations. The term “buyer beware” should always be the starting point when considering the purchase and use of chemicals. Approach marketing claims with skepticism, as many chemical manufacturers tend to oversell their products. While most organizations that advertise to the cleaning and restoration industry are legitimate and helpful allies, there are some true scam artists in the chemical arena selling worthless, and potentially harmful, junk.

When selecting a product, think about the surface type (porous or non-porous), the pH level (of both the surface being cleaned and the chemical), the manufacturer’s instructions for use (does the chemical need to be rinsed or neutralized?), and potential compatibility problems (can a cleaner be used in an area where a disinfectant is to be applied without creating an adverse reaction?).

The most important aspect of chemicals used for infection control is that they be applied properly. Follow labeling information, but understand that under EPA regulations labeling information may be included on items other than the label such as packaging inserts and instructional fliers. It is always a good idea to use equipment dedicated to an individual chemical whenever possible. Avoid using the same spray bottle for a window cleaner (which often contains ammonia) and then filling it with stain remover (products that often contain bleach or oxidizers), as hazardous gases can be formed even in small containers (hydrazine, chloramines or nitrogen trichloride in the example illustrated here).

Next month we will continue our exploration of infection control by looking at uniform and equipment laundering, as well as emergency response procedures.

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**Editor’s Note:** This is the second installment of a multi-part series. Part 1 appeared in the January 2008 issue of *Cleaning & Restoration.*