

Session I: The Financial Case For Cleaning

Cleanliness may be next to Godliness, but while cleaning is recognized as an important function, we measure cleaning only in the most simplistic of terms. Typically we measure cleaning by the number of complaints about smelly bathrooms, trash cans not being emptied and the little round pieces from a three-hole punch which haven't been vacuumed off the carpets.

Many believe that if it looks clean and building occupants aren't complaining, then it must be adequate. And if this is adequate then we should focus on decreasing cleaning costs. Cleaning costs can be reduced by purchasing cheaper and more aggressive chemicals, less efficient vacuums and other equipment, eliminating chemical dispensing equipment, and reducing the frequencies for cleaning, dusting, vacuuming, and other cleaning operations. However in reducing cleaning costs we may actually be decreasing occupant productivity — a poor business trade-off.

Few building owners or managers equate cleaning to health or productivity. Yet many organizations including the U.S. Environmental Protection Agency (EPA), the World Health Organization (WHO) and the Building Owners and Managers Association (BOMA) have all linked cleanings' impact on indoor air quality problems and the subsequent impacts on health and productivity. These numbers are startling. The WHO states that 30% of buildings worldwide suffer from indoor air quality (IAQ) problems. BOMA quantifies the lost productivity due to IAQ problems at 18% annually. And EPA made the clear connection between IAQ and cleaning and quantified the impacts at \$60 Billion of lost productivity, and in the hundreds of billions of dollars when the associated health care costs are included.

It has now be proven that thorough cleaning can reduce the particles, VOCs and biologicals and have a direct and dramatic impact on health and worker productivity. An informed building owner or manager can use this information to give them a competitive advantage leading to increased success in today's highly competitive business environment.

THE IMPACTS OF CLEANING

A study was conducted at the Frank Porter Graham Child Development Center on the University of North Carolina, Chapel Hill Campus. The study was a

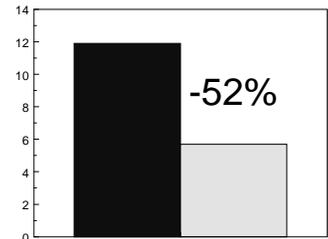
collaborative effort between EPA's Environmental Criteria and Assessment Office under the direction of Dr. Michael Berry, Research Triangle Institute, the University of North Carolina, a building service contractor, commercial cleaning industries, and their suppliers.

The deep-cleaning procedure, including new cleaning equipment and cleaning supplies, was found to decrease the levels of airborne dust inside the building by 52% (Graph 1). Total VOC concentrations decreased by 49% (Graph 2), total bacteria decreased by 40% (Graph 3) and fungi colony forming units decreased by 61% (Graph 4).

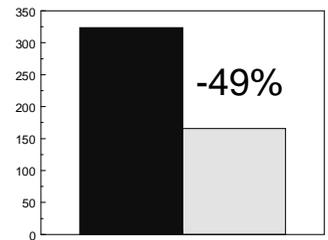
The researchers offered their conclusions as to the cause resulting in the improvement in the building's air quality. Generally, the improvements resulted from following sound cleaning practices including the use of the most appropriate chemicals and maintenance procedures.

Dr. Berry's ground breaking cleaning study quantified the reductions in contaminants. The reductions were dramatic, especially when considering that the study was done in a well maintained building. With these results we can conclude that by decreasing the hazards we would reduce the risks.

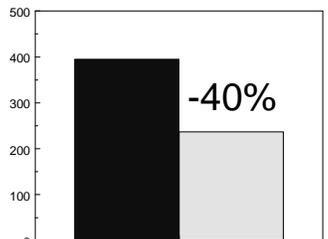
While Dr. Berry's study made the health associations based on reducing hazards, Dr. Leonard Krilov with North Shore University Hospital - Cornell University



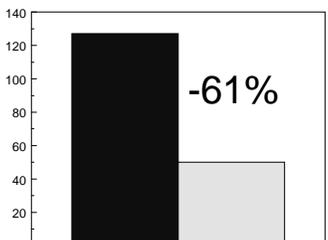
Graph 1: Airborne Dust



Graph 2: Total VOC

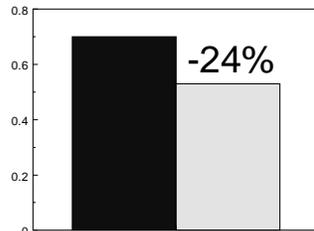


Graph 3: Total Bacteria

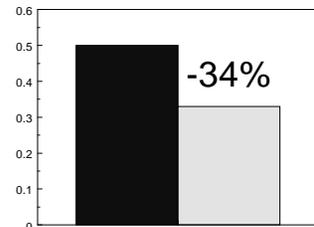


Graph 4: Total Fungi

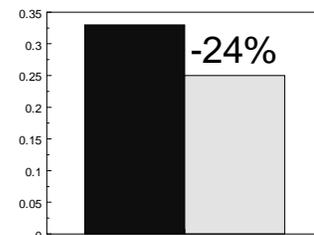
Medical College took the next step. This study conducted at the Association for Children with Downs Syndrome School in Bellmore, New York looked at the health implications associated with improved cleaning. Rather than focusing on the dust, VOCs and biologicals, Dr. Krilov tracked the health and attendance impacts after improved cleaning was implemented. The improved cleaning reduced total illnesses by 24% (Graph 5), doctor visits by 34% (Graph 6), courses of antibiotics by 24% (Graph 7) and days absent from school by 46% (Graph 8).



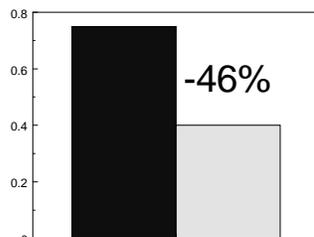
Graph 5: Total Illnesses



Graph 6: Doctor Visits



Graph 7: Courses of Antibiotics



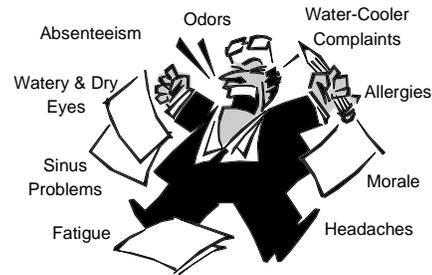
Graph 8: Days Absent from School

In buildings, such as schools and day care centers better cleaning keeps kids in the school which has significant consequences on the children's ability to learn. After all, if Johnny isn't in school, Johnny can't learn. Not only does this directly impact the children, it also affects the families because when Johnny isn't in school, Johnny's parent must stay home from their job to care for him, plus the financial outlays to pay for doctor visits and medications.

But the costs and impacts go beyond just the building occupants and their families. The facility itself may have a direct financial consequence based on increased attendance. In one study done at Syracuse (New York) Public School District by Barry Moore of Opus Consulting reports that attendance increased by 11.7% after improved cleaning was implemented. This generated \$2,513,250 in additional reimbursements to the school for the higher student enrollment.

While we might try to repeat the 11+% increase in attendance that was achieved in Syracuse Schools, this figure would be difficult to attain in the traditional office setting. Parents are willing to keep children home and schools have clear procedures for addressing sick children in the classroom. Office workers on the other hand in the face of down sizing and reorganizing continue to come to work when ill. So while we might not expect double digit improvements in attendance in the office environment, we would anticipate improvements in productivity to easily justify the cost of improved cleaning and in many cases could be used to give the organization a competitive advantage that would directly impact the bottom line.

GENERATING PRODUCTIVITY IMPROVEMENTS

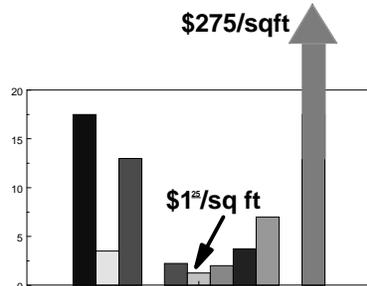


When an employee attends work suffering from health related symptoms such as respiratory illness, allergies and headaches their performance suffers. Symptoms relating directly to cleaning, such as dust from ineffective vacuuming can cause dry and scratchy eyes. VOCs from cleaning products can cause headaches and nausea. Bacterial contamination from molds and fungi can cause allergic reactions and flu symptoms. Even simple odors can cause "water cooler complaints" and low employee morale where workers waste time complaining around the water cooler.

Beyond a justification for additional cleaning, an improved safer, healthier indoor environment can have substantial financial benefits. According to the Building Owners and Managers Association (BOMA) the average costs for a Class A office building is \$275.00 per square foot for the salaries and benefits, while the average cost for cleaning is only \$1.25 per square foot (Graph 9). Thus, each incremental increase of just 0.5% in worker productivity will result in an increase equal to \$1.37 per square foot. These benefits can be

realized by owner occupied buildings to improve productivity, as well as commercial buildings to create added-value or incentives to lease space and retain existing tenants.

In today's highly competitive market-place, improved cleaning can contribute to a more productive workplace. Additional benefits for employers is the contribution that a healthier, more productive workplace can have in recruiting and retaining top



Graph 8: Building Related Costs

talent as part of the quality of life issues. Other benefits could include a reduction in health care and insurance costs. So while cleanliness may be next to godliness, we now know that an investment in cleaning we can improve productivity, attendance and overall success.

Stephen P. Ashkin is vice president of the Rochester Midland Corporation and is active internationally with the development of environmentally preferable products and green technologies. Mr. Ashkin serves as Chair of the ASTM Task Force that is writing the *Standard Guide On Stewardship For Cleaning Commercial And Institutional Buildings*, and a Task Force Chair of the *President's Green Chemistry Challenge*. For more information he can be reached at 716 / 336-2308.