kaivac cleaning systems™
Complete Cleaning For Healthy Results™

The Public Restroom – A High Risk Environment

Decontaminating the Waste Transfer Station

An Infectious Wasteland

From an environmental health scientist's point of view, a restroom, in particular a public restroom, is a high risk environment. That's because, at its most basic level, the restroom is essentially a bio-hazardous waste transfer station. In more graphic terms, the restroom is where biological waste is transferred from one system, the human digestive system, to another, the sanitary sewage system. When all goes well, this waste is safely contained within a manmade plumbing system and transported to a suitable disposal point where it is properly processed.

Unfortunately, with humans and mechanical systems involved, the transfer is not always as effective and sanitary as we all would hope. For starters, hands often become contaminated in the "elimination" process, which then come into contact with flush and sink handles, door knobs, tissue and soap dispensers and other touch points, creating a high risk of fecal-oral transfer and disease. Also, spillage, backups, accidents and drips are common, releasing countless bio-contaminants onto floors and other surfaces. Moreover, every flush of the commode creates an aerosol of urine and fecal toxins, releasing millions of waste particles and microorganisms into the air that eventually settle on floors, dispensers and other surfaces. And, if that isn't bad enough, restrooms are also common collection points for other bio-hazardous substances, such as blood, vomit, mucous, menstrual fluids and so on. Besides containing potentially infectious microorganisms, these substances can be rich food sources for odor and disease causing bacteria, especially in a warm and moist environment. And

odors, which are considered by some to be merely “nuisance” issues, typically come from bacteria excreta and can actually signal the presence of more harmful pollutants.

Is it any wonder, then, that restrooms consistently generate more complaints than any other area of the building? In fact, if you listen to a number of critics today, schools and other public facilities are experiencing an undeniable restroom crisis. For example, Dr. Tom Keating, parent, educator and coordinator of project CLEAN (Citizens, Learners and Educators Against Neglect), a national effort focused on the safety and healthiness of school restrooms says, “the state of school restrooms is a national disaster.”

To make matters worse, given that an indoor environment is basically a set of interconnected compartments through which organisms flow, the problems associated with restroom sanitation don’t stop at the restroom door. Contaminated hands, shoes, book bags, briefcases, pencils, purses, and more track the soils, microorganisms and infectious waste into cafeterias, kitchens, stairwells, patient rooms, classrooms, desk tops and other areas and surfaces. Even worse, cleaning workers, often unaware of the dangers of cross-contamination, re-use their mops and buckets elsewhere in the building, essentially cleaning the hallways with sewage.

Cleanliness and Health

With these factors in mind, attaining and maintaining a sanitary state in today’s buildings, especially the restroom, is a challenge, yet one that’s very important to public health. It is vital that these areas be cleaned completely and properly to remove the harmful biological hazards and reduce the risk of disease. It isn’t good enough to simply clean for appearance. Cleaning for health must be the ultimate goal.

This becomes even more important as health issues and microbiology-based concerns related to cleaning continue to occur, such as E. coli, Hepatitis, HIV, Anthrax, toxic mold, Shigella, and more recently, the bird flu. Recent studies even show that there is a one in ten risk of picking up an infectious disease in a hospital. And, seasonal school closures due to illness, outbreaks on cruise ships, food poisoning in restaurants are all too common, and oftentimes avoidable by proper cleaning methods.

KaiVacing for Health

Kaivac has long believed that clean can be defined as the absence of unwanted soils and substances. More recently, Kaivac has embraced the definition of clean put forth by Michael A. Berry, Ph.D., a member of the Scientific Advisory Council for CIRI. He recently defined clean as being “a condition free of unwanted matter that has the potential to cause an adverse or undesirable effect.” (May 11, 2006 CIRI online seminar.)

Or, as Dr. Berry has elaborates, "Clean is an environmental condition free of unwanted matter in the form of solids, liquids, gases, or living organisms that have the potential to cause an adverse or undesirable effect." Berry also states, "These unwanted, out of place substances, whether derived from humans or nature, are pollutants. They are commonly referred to as 'waste,' 'dirt,' 'dust,' 'trash' or 'germs.'"

In order to achieve truly clean results, Kaivac determined early on that removal of unwanted matter, or pollution, needed to be the ultimate goal of its systems. Consequently, from the beginning, a key design consideration for Kaivac when developing or enhancing its systems has been the ability to thoroughly and properly remove and contain unwanted pollutants.

No-Touch Cleaning

Kaivac originally developed its no-touch cleaning systems to address the public restroom, which is not only the number one source of building maintenance complaints but is also often considered the most dangerous area within a building by environmental scientists.

Designed from the beginning to remove the maximum amount of undesirable soils, bacteria and other indoor pollutants, a no-touch cleaning system combines automatic chemical metering and injection, an indoor pressure washer, and a powerful wet vacuum into a single integrated system. Its ultimate purpose is to decontaminate a building's bio-hazardous waste transfer station.

The Process

To begin, the cleaning professional applies automatically diluted cleaning solution to fixtures and floors in a low pressure fan spray. As the liquid cleaning solution dwells, it loosens and lifts soils in preparation for vacuum extraction. In addition, the fluid on the floor brings residual dehydrated soils, such as dried urine, into a liquid solution.

Next, the operator blast-rinses the target surfaces with fresh, pressurized water, power-rinsing hard to reach areas such as seat hinges, behind toilets, grout lines, etc., carrying the contaminants to the floor in a current of water. The power of the indoor pressure washer is at an ideal setting to attack accumulated matter without causing harm to building surfaces or personnel. In a heavily soiled environment, the operator may also choose to manually brush problem spots to further loosen soils.

At this point, the operator suctions all liquids and contaminants from the floor with the system's built-in wet vacuum. This high-flow hard surface extraction process creates a liquid current that transports the unwanted matter into a

recovery/contamination holding tank where it is contained and quarantined. The vacuum also leaves the floor virtually dry and ready for near immediate use.

Once the restroom has been cleaned, it is highly recommended that the hazardous materials within the holding tank be disposed of properly within the confines of the cleaning site. To eliminate the possibility of cross-contamination, they should never be transported into other areas of the building. Consequently, Kaivac's holding tanks are designed with a high volume drain hose that allows the contaminated waste water to be dumped into any toilet, including handicapped toilets. For further protection, the holding tanks are developed so that they can be easily rinsed, cleaned and disinfected as necessary.

Depending on the restroom, there may be common touch and disease transfer points that are not adequately cleaned by the Kaivac system. For cases such as these, Kaivac offers additional sanitizing steps and tools for incorporation into the system.

Validation

How effective is no-touch cleaning at removing soils and other unwanted matter? In early 2006, Kaivac conducted scientific research comparing the soil removal capabilities of no-touch cleaning with the two most common methods of restroom cleaning: string mopping and flat mopping.

According to the test results, no-touch cleaning, at least with a Kaivac system, is far more effective than string or flat mopping at removing urine from a grouted tile restroom floor – both from the tile surface and from the all-important grout line. (For a copy of this research report, Removing Soil: A Comparison of Cleaning Methods, please contact Kaivac at 1-800-287-1136 or visit its web site.)

Kaivac believes that these results are due to the inherent capabilities of the no-touch cleaning methodology and system that are non-existent in mopping

processes. For example, the no-touch cleaning process includes built-in dwell time, which is typically minimized during mopping, to loosen and lift soils. The no-touch cleaning process also enforces the use of fresh ingredients in order to minimize the risk of cross-contamination. But perhaps most important, the suctioning of soils and liquid through the system's built-in wet vacuum carries all contaminants away from surfaces, including the vulnerable grout lines.

The Need for Measurement

Regardless of which method is used in the restroom cleaning process, it is vitally important that results be measured. Only then will we be able to truly determine whether or not harmful and unwanted indoor pollutants have been removed from the environment. Just because it "looks clean and smells clean" doesn't mean that it really is clean – and healthy.

Kaivac believes that in the coming months and years, as the impact of cleaning on the health of a building's occupants is better understood, that the importance of measuring cleaning results will increase significantly. To that end, Kaivac has developed the Bio-Waste Detection Kit™, a simple, cost effective and immediate measurement tool designed to measure the effectiveness of a facility's cleaning program. In addition, a number of companies have developed extremely accurate hygiene measurement devices that detect and quantify the presence of biological agents on surfaces. Prevalent in other industries, these types of tools will become necessary and mainstream in the cleaning industry. If you would like additional information on the Bio-Waste Detection Kit or other methods of measurement, please contact Kaivac.

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