Kaivac, Cleaning, and Public Restrooms

by Dr. Jay Glasel

In a classic and unique book written 30 years ago[i] the architect and industrial consultant, Alexander Kira, discussed in detail the almost universal poor design of restroom facilities. The contents of the book were based on many years of scientific and engineering research on a subject most architects then and now find distasteful and therefore neglect. In discussing both male and female facilities for elimination, Kira's research showed that with the metal and vitreous fixtures available when the book was written, it was almost impossible to avoid aerosol (small airborne liquid droplets) dispersions of urine and fecal liquids throughout restroom facilities. Almost nothing in the design of public restrooms has changed since the book was published. The aerosols are still plentifully produced and contaminate the surfaces in restrooms—particularly the floors.

Besides antiquated fixtures, the interiors of restroom facilities are still almost always a throwback to very old methods of construction—involving grouted tile walls and flooring. The deposited aerosols that accumulate on the tiles and grout act as rich growth media for bacteria whose metabolic byproducts cause malodors and can spread disease. Removing these harmful deposits is left in the hands of cleaning crews. Unfortunately, the widely used methods for restroom cleaning operations using mops (both traditional string mops and flat microfiber ones) and buckets are also a throwback to obsolete methods.

Kaivac, Inc. has developed a cleaning system that supersedes outmoded mop and bucket methods. The Company has proven by scientific experiment and data that it works significantly better (data available upon request*) in removing dried and liquid floor surface contamination in restrooms.

Kaivac's development—called High Flow Fluid Extraction (HFFE)—is a 'no-touch' method that uses pressurized application of water containing an EPA-registered disinfectant or other cleaner to contaminated surfaces followed by vacuum suctioning that removes the applied liquid along with the suspended solids and dissolved contaminants that have soiled the surface.

It has been known for thousands of years that effective cleaning requires liquids, turbulence, and cleaning aids (traditionally, soaps or detergents) to dislodge contaminating solids and dissolvable materials. Mops, brooms, water and soaps for performing this type of cleaning are probably nearly as old as mankind.

One of the major reasons that Kaivac's equipment is so much better than traditional mopping methods is because it enables deep cleaning of grout. Kaivac's studies show that the grout between tiles is a place where contamination collects and where mops of any design have the most difficulty reaching: Mop strings or microfiber applicators don't enter the narrow grouted gaps between tiles efficiently. On the other

hand, the HFFE method works efficiently in cleaning both grout and tile because the turbulent liquid scours both grout and tile surfaces.

There is an additional advantage that Kaivac's HFFE equipment has over traditional cleaning / mopping methods. In the more advanced mopping methods, a dual-compartment bucket is used. One compartment is used for cleaning solution, the second for rinsing and/or receiving most of the dirty solution wrung out of the mop after it has passed over the floor surface. This mopping cycle is designed to minimize the amount of contamination returned to the floor by the mop. The amount of minimization depends upon operator proficiency with the mop and wringer, the freshness of the liquid in the compartment(s), and other factors. The 3 primary parameters in this form of cleaning are Agitation (provided by mop action), Chemical (provided by the cleaning compounds), and Time of application of the liquid on the surface. These parameters form the familiar ACT acronym that describes conventional cleaning.

In contrast, the Kaivac method can be described by 2 additional parameters: Fresh cleaning solution is always applied in proper quantities to the surface, agitated as needed, then Suctioned away from the surface. That means that instead of just minimizing recontamination of the surfaces by a mop, fresh cleaning solution is always supplied to the surface and then removed. The Kaivac system expands the conventional cleaning acronym from ACT to FACTS (while also maximizing the dwell time of the solution) and has been factually shown to work extremely well.

(*For a copy of the research report, "Removing Soil: A Comparison of Cleaning Methods", please contact Kaivac at 1-800-287-1136 or visit its Web site www.kaivac.com.)

About the Author:

Dr. Jay Glasel is the Managing Member and Founder of Global Scientific Consulting, LLC. He is a Professor Emeritus in the Department of Microbial, Molecular and Structural Biology at the University of Connecticut Medical/Dental School in Farmington, Connecticut. He has lectured and done research in many countries in Europe and Asia.

Dr. Glasel's scientific research has been in the fields of structural biochemistry, molecular immunology, pharmacology, and cell biology. Major portions of the research involved the structure and properties of water and aqueous solutions and on the structural chemistry and molecular biology of opiates and opiate peptides. He pioneered the uses of anti-morphine monoclonal antibodies and anti-opiate receptor anti-idiotypic antibodies in research on the cellular effects and actions of narcotics.

Dr. Glasel is co-editor and an author for the Academic Press textbook "Introduction to Biophysical Methods for Protein and Nucleic Acid Research" and many other contributed book chapters and original scientific research articles.

Dr. Glasel obtained a B.S. in chemistry and physics from Caltech. His Ph.D. from the

University of Chicago was in chemical physics for work on chemical reactions on comets. He has served on active duty in the U.S. Air Force as a nuclear research officer.

SIDEBAR

Bio-Waste Detection Kit™

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 buy-in to 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 hygienic 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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[i] Kira, Alexander, The Bathroom, The Viking Press, New York, 1976.