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Steam Vapor Cleaning Gets Top Marks in University Restrooms

By: Allen P. Rathey, InstructionLink/JanTrain, Inc. - Tuesday, March 7, 2006

Steam vapor sanitation passes the test: cost-effective, green cleaning of restrooms in the University of Washington's Odegard Library

Keeping college and university libraries with heavy traffic and 24/7 operations safe and truly clean can be as challenging as winning a national athletic championship. While routine restroom cleaning must be done quickly, efficiently and unobtrusively, deep cleaning is even more demanding in such a high use facility due to the resources and discipline involved to restore surfaces to the desired level of sanitation and appearance within acceptable time, operational and budgetary constraints.

Thankfully, the equipment available for use by today's cleaning professionals is better and more effective than ever before.

Recent testing of a specialized steam vapor system at the University of Washington (UW), Seattle proves this method yields excellent results, requires few if any chemicals and very little facility downtime.

Working Around Learning

The University of Washington's Odegard Undergraduate Library is always open, and used by approximately 12,000 -15,000 students a day.

The 123,312 sq. ft. library has 18 restrooms.

According to Ben Haywood, day shift supervisor for the library and a member of the facilities services custodial division: "To evaluate this system for integration into our regular cleaning program, we decided there was no better test site than our undergraduate library."

Technical specialists from Advanced Vapor Technologies, Edmonds WA, trained seven of the 31 employees on Haywood's staff to participate in the restroom cleaning test. Three of the seven custodians participated during the entire test.

UW personnel deep cleaned the subject test areas first to remove soil and chemical build up, then over a period of 6 weeks the three custodians performed a daily cleaning and sanitation regimen using the steam vapor system.

The Equipment

The Mondo Vap 2400 steam vapor cleaning system was selected for the test. The 20 pound portable unit fits on an institutional service cart that also keeps all accessories readily available. The equipment features TANCS™ (Thermal Accelerated Nano Crystal Sanitation), an exclusive patent-pending water treatment process. The internal TANCS processor provides extended boiler life, and maintains the efficiency of the boiler in producing steam while also enhancing the disinfection capabilities of the steam vapor. According to the U.S. Environmental Protection Agency (EPA), the TANCS-equipped steam vapor system is a Disinfection Device with an EPA Establishment Number. The unit facilitates cleaning and disinfection in a single step, producing a near sterile surface without the use of chemical disinfectants.

"We elected to test the Mondo Vap 2400 with TANCS technology because of its design, capabilities and ease of use," Haywood says. "Among the other advantages of the unit, the equipment's non-pressurized reservoir automatically feeds the stainless steel boiler. This allows cold water to be added as needed without shutting off the unit and waiting for it to cool.

"We were familiar with other brands but purchased nine Mondo Vap 2400s, one for each custodial work area, to verify the effectiveness of using the machines daily as well as for restoration projects. We believed that positive results would encourage other area or division supervisors not directly involved in the test to adopt and use the machines."

Training, Testing and Results

Custodians participating in the test were thoroughly trained in proper usage of the Mondo Vap.



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Haywood, who was also trained, believes that the training was critical to ensuring the value of the test. "It takes some time, as it does with any piece of cleaning equipment, to learn the nuances of the machine. Steam cleaning was a new proposition for our staff, so the training they received before the test was critical to ensuring that we would get an accurate picture of what they could accomplish if they used the steam vapor equipment correctly."

Six restrooms were deep cleaned by the three staff members over a period of six weeks. The deep cleaning included the floor tile and grout, wall areas, baseboards, fittings and fixtures. When the custodial team encountered a heavy residue of dirt and urine stains in tough to reach areas, pre-treating with a low-odor, non-VOC cleaning solution accelerated the cleaning process, and was more efficient than the steam or the chemicals alone.

The custodial staff noted that the steam vapor equipment with the addition of an extension handle made cleaning hard-to-reach places behind toilet bowls, and under urinals and sinks much easier, and reduced the amount of time that staff had to spend squatting or stooping, or on hands and knees. It also kept their face and nose out of the work, and their hands out of cleaning solutions.

Using the Mondo Vapor to scrub and "mop" the restroom floors took no more time than traditional methods and produced a higher degree of cleanliness. Drying time was also reduced because there was no residual water on the floors; which also reduced the amount of time the restroom was "closed for service." The risk of cross-contamination was also minimized along with the time required, since custodians were not using, nor were they tempted to use, the same mop or mop-bucket water in other areas. Lowering the use of the traditional mop and bucket process saves water as well as the work effort required by custodial staff.

After deep cleaning with the equipment for two weeks, Haywood then measured routine cleaning time for traditional methods versus steam cleaning. This was done by using traditional cleaning methods one day and using steam cleaning another day. Cleaning times were almost identical, as shown below:

Cleaning Method

(Time shown in Minutes)

	<u>Traditional</u>	<u>Steam Vapor</u>
Sinks (5)	7.00	7.50
Mirrors & Dispensers	4.50	5.00
Urinals (5)	7.50	8.00
Toilets (5)	9.00	10.00
Floors	6.00	6.00
Drying Time	12.00	6.00
Total:	46.00	42.50

Swab Testing

Swab tests were conducted in a number of different areas to compare the relative degree of cleanliness between traditional and steam vapor cleaning. Readings were taken using a scientific "Lighting" Cleaning Validation System, which uses adenosine triphosphate (ATP) bioluminescence to detect food (organics) and microbial residue remaining on surfaces. ATP is found in all cells. Residue is exposed to a wetting agent that makes the cells permeable. This releases the ATP, which reacts with luciferin / luciferase to create light output. The intensity of the light is directly proportional to the amount of ATP and thus to the amount of residue. The higher the light output the dirtier the surface. The following scale indicates levels of clean verses dirty:

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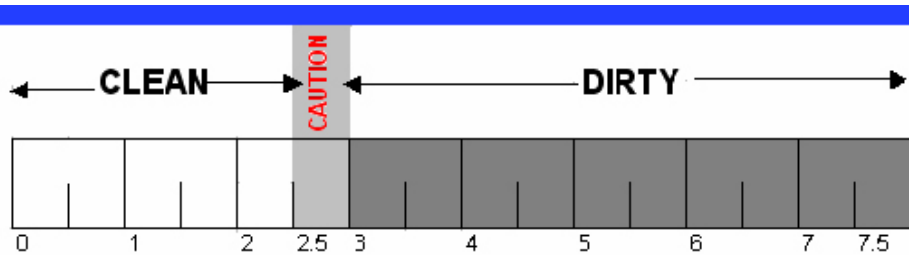
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Results achieved during the swab tests were as follows and are displayed using log (10) minus 1 scale, for ease of use (similar to the Richter Scale, '4' being 10 times greater than '3'):

	Before	After Traditional Cleaning	After Steam Cleaning
Faucets (handle)	4.1	3.3	2
Towel dispenser handle	4.1	3.4	2.4
Stall door handle	3.8	3.4	2.4
Urinal flush handle	3.5	3	2.1
Urinal floor area	3.9	3.3	2.5
Urinal wall (splash)	2.4	2.4	2.1
Toilet stool seat	3.1	2.7	2
Toilet rear shelf	3.1	2.8	2.4
Stall door handle	3.8	3.4	2.4
Sink drain	4.5	3.8	2.8
Entry area floor	4.2	3.7	2.8
Entry door push plate	4.1	3.4	2.8

Conclusions

The steam vapor equipment was well-received by personnel involved in its testing at the University of Washington based on numerous factors. These include:

- The steam vapor's low moisture and high temperature provides deeper cleaning because it penetrates into the pores and crevices better than topically applied cleaners. This produced superior results and a "Pride of Accomplishment" morale factor.
- Results of the swab tests revealed that steam vapor cleaning produced a higher level of sanitation verses traditional cleaning methods.
- The steam vapor achieved swab-test results that would be similar to those typically required for food service areas.
- Bending, reaching and scrubbing required by personnel were reduced because of the equipment's accessories and ability to reach less accessible areas.
- The use, cost and exposure to chemical cleaning/disinfectant agents were reduced. The restrooms also smelled "fresher".
- Less use of water and water transport by staff.
- Less required "downtime" within the facility for cleaning.

· According to supplemental testing, the system is multi-purpose, and can be used on a variety of surfaces outside of restrooms, including vinyl, carpets, walls, ceilings, upholstery, glass, and blinds.

Haywood says the University plans to use its steam vapor units on a rotating basis every two weeks in conjunction with traditional cleaning methods. Additional machines will be added based on budget allocations with the ultimate goal of having two to three systems in each area to adequately meet custodial requirements.

How does TANCS™ Work? (sidebar)

A processor installed between the reservoir and the boiler removes ionic minerals from common tap water or any potable water and converts them to millions of nano crystals. The nano crystals are energized by heat to help destroy bacteria, molds and pathogenic germs by disrupting the cell membranes of microbes. This disruption enables the heated steam vapor to quickly access and impair cell proteins so they can no longer support the growth or reproduction of the affected microbe. Germs are effectively and promptly destroyed.

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