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Hold the Water

Feb 1, 2006 12:00 PM By Robert Kravitz and Klaus Reichardt

AS&U Asks...

A recent study concludes that gifted students should be allowed to skip grade levels more often. Do you think... Cindy Pollock Shea, known by some as an "environmental guru" at the University of North Carolina-Chapel Hill, is a soft-spoken, well-informed advocate for "green" buildings. As the university undergoes its most significant construction boom since World War II, adding nearly 6 million square feet of building space to the existing 14 million — Shea has been promoting coordinating the campus' ecological, environmental and economic goals.

In selecting safer alternatives to feature at the "new" college, Shea has chosen to install urinals that don't use water. The university is not alone in choosing no-water urinals:

- Colorado State University, Fort Collins, is testing this type of urinal for use in locker rooms and residence halls.
Stanford University's Jasper Ridge Biologic Preserve Field Station, Stanford, Calif., is one of the school's most environmentally responsible renovation projects, has installed no-water urinals.

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THE LATEST

- Palm Beach County Accepts Bid for 1,000 no-water urinals for its schools.
The Carlsbad (Calif.) Unified School District has been using no-water urinals in its schools since the mid-1990s.
Harvard University also installed no-water urinals in some buildings.

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Why no water?

Many facilities are considering no-water urinals because they are regarded as an effective way to conserve water. Because water must be pumped by electricity, so estimate that as much as \$300 per year per urinal saved in utility costs. The installation of no-water can help buildings achieve credits toward Leadership in Energy and Environmental Design (LEED) certification.

Before 1990, the average urinal in the United States used as much as 4 gallons of water per flush. Today, because of legislation and conservation, conventional urinals use about 1 to 1½ gallons of water when flushed. This still is a significant amount of water — as much as 40,000 gallons of water per year per urinal. That's enough to fill a large swimming pool. Excessive use of water can be troublesome in drought-prone areas, such as California and other western states.

The average office building in the United States uses 14,695 gallons of water per day, according to the Southwest Florida Water Management District. No-water urinals have the potential to reduce this usage significantly and relieve the water supplies in these locations.

Installing no-water urinals is not complicated. "The initial installation is easy and relatively inexpensive because you need only a drain line instead of both a water and a drain line," says David Rose, an architect in Troy, Mich. "You also don't have to contend with additional plumbing, flush valves, sensors and the like, which can be costly maintenance headaches."

Some school districts have found less vandalism and restroom property damage because there are fewer parts for students to tamper with. (See sidebar, right)

Inner workings

No-water urinals are not new. They were first installed during the early 1890s in public marketplaces in Switzerland. These early models used sesame oil to keep urine below the urinal drain and minimize odors. However, they essentially were forgotten until the 1970s, when they were rediscovered.

Basically, a no-water urinal works the same way as a conventional urinal, except without the water. A conventional flush urinal has a "trap" in the drain filled with a small amount of water that — as long as it does not evaporate — prevents odors and sewer gases from escaping.

No-water urinals also have a trap or cylinder that sits atop the drain area of the urinal. The cylinder is filled with a thin layer of liquid or sealant. Urine passes through the trap and sealant, forming a barrier, which prevents odors from escaping. It also helps to eliminate evaporation of the urine, which can harm indoor air quality.

Cleaning and maintenance

No-water urinals are cleaned in much the same way as conventional urinals. However, some models are designed to facilitate cleaning because they have a smoother interior "skin" or surface than what is found on a conventional urinal. With no water disbursement rims, there is no buildup of mineral deposits on the urinal.

The urinal's trap insert requires attention, and on some models the liquid sealant can be replenished to prolong the trap's life span and effectiveness. But depending on use, it eventually must be changed. In most instances, this change happens about two to four times a year. There are three or four different manufacturers of no-water urinals, and each uses a slightly different

system, requiring different maintenance. Facility managers should analyze each system and decide which works best for their facilities.

Potential drawbacks

There are some drawbacks when switching to a no-water system. For instance, the cylinders used in some no-water urinals can be expensive and may need to be changed more frequently than originally thought. This may eliminate any savings a facility hoped to realize.

Additionally, some facilities with few urinals, low water usage, or low sewer or water costs may not benefit by installing no-water urinals — especially if existing conventional urinals still are useful. And, some environmentalists believe that no-water urinals raise sanitary, public-health and environmental concerns; they believe that the flushing action on a conventional urinal helps keep the urinal germ-free.

However, other studies indicate a urinal's dry surface helps prevent germ buildup. For no-water urinals to be most effective, it is important to select systems that use recyclable inserts and safer, biodegradable chemicals and sealants in the trap. And just like any urinal, they must be cleaned and maintained properly and regularly.

Facilities with no-water urinals also must teach their custodial staff how to maintain them. Some abrasive cleaners used in a conventional urinal can be harmful to the surface and the trap in a no-water urinal.

Additionally, men must get accustomed to using urinals with no water. Men usually look for a flush handle or search for an electric sensor. To end such confusion, one Chicago office building installed a small sign above each urinal that says in essence, "This is a no-water urinal. No flushing is required. After use, simply walk away."

Kravitz is a former building service contractor and now a communications professional for the cleaning and building industries. Klaus Reichardt is managing partner of Waterless No-Flush Urinals, Vista, Calif. The company has been manufacturing waterless urinals since 1989.

NOTABLE

1 to

Gallons of water used per urinal flush.

40,000

Gallons of water used per year in a typical urinal.

\$300

Potential amount saved per urinal by using no-water urinals.

Preventing vandalism with no-water urinals

A school's image and the morale of students and staff often center on the condition of the facility's restrooms. People are quick to complain about restrooms that are dirty or out of supplies. Restrooms also are a frequent site of vandalism, assaults and costly accidents.

Few facilities — especially public schools — have the funds or personnel to supervise restrooms continually. And if restrooms are closed constantly for repairs, it is difficult for all building occupants to maintain personal

hygiene.

“Our urinals were [especially] getting a lot of abuse,” says Chuck Aaker, facilities director with the Carlsbad (Calif.) Unified School District, which has used no-water urinals for several years. “Kids were literally destroying them, and it was costing the district a small fortune.”


Conservation is a key motivation for no-water urinals, but industry statistics indicate that no-water urinals often are installed to reduce vandalism.

According to Aaker, the preferred target of restroom vandals is not the urinal itself as much as the plumbing above the fixture — the valves, pipes and flush handle. “The kids abused the plumbing until it was beyond repair, and we just weren’t able to stop it,” he says.

Soon after the district began testing no-water urinals, the cleaning staff noticed a significant difference. Aaker says the vandalism stopped.

“When we have graffiti problems, we clean it up as soon as we find it because if the kids don’t see it, they don’t do it,” Aaker says. “The same appears true with the waterless urinals. If they don’t see the plumbing, they leave the urinals alone.”

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