

## Waterless and Loving It

What do Harvard and Yale Universities, Eastern and Western Connecticut State Universities, the Vermont National Guard, Delta Airlines (in Logan Airport, Boston), and Camelot Cruise Lines based in Haddam, CT, all have in common?

If you said they are all in New England, you'd be right. But all of these entities share something else as well, although not quite as obvious. They've all gone waterless—that is, they have installed urinals that do not use water or require flushing in some if not all of their men's restrooms.



The installation and use of waterless urinals is slowly spreading throughout North America as more and more facilities, large and small, seek new ways to cut costs, improve hygiene, use less water and energy, and become more sustainable. And in most situations where they have been installed, facility managers and building occupants have come to appreciate them and their many benefits.

Consider the fact that the average urinal in an office building or school is flushed approximately 2,000 times per month. Each flush of a recent-model urinal requires the use of about 1.0 to 1.5 gallons of

water. This means that just one urinal uses as much as 35,000 gallons of water per year—enough to fill a large swimming pool.

And this is even less water than urinals used to use. Before 1990, most urinals installed in North America consumed about three to four gallons of water per flush. Federal, state, and local laws enacted about 15 years ago, limited the amount of water a urinal can use per flush significantly.

But many of these older urinals are still in use, and even the newer, less-water-consuming urinals use huge amounts of potable water. This is becoming less and less sustainable, especially in often drought-stricken areas of the country such as Nevada, Arizona, Idaho, Southern California, and, as of late, some states on the East Coast as well. In addition, all of that water and urine must be disposed of. It is transported down drains and sewers where it must be treated by costly-to-build and -maintain local sewage-treatment plants.

Waterless, or no-flushing, urinals have benefits other than just saving tremendous amounts of water:

- They cost less to install because they require no plumbing supply lines.
- There are no handles to touch, preventing the possible spread of germs and bacteria.
- They do not require electronic sensors.

- They have no moving parts.

Waterless urinals also tend to be easier to clean and maintain, as we will discuss in greater detail later. Most are made of highly finished, very smooth liquid-repellant surfaces. Because urine is softer than water and does not adhere to these surfaces, and because no water is used, there are fewer deposits or stains left on the urinal, which can require scrubbing to remove.

So, with all of these benefits, why aren't waterless urinals used everywhere?

To answer that question requires a better understanding of how waterless urinals work and how people deal with change.

### **Odor: The First Barrier**

Whenever a facility manager considers installing waterless urinals, one of the first concerns is whether there will be an odor problem as a result. This has proved to be especially true when no-water urinals have been installed in busy stadiums and sporting arenas—often heavily used in the summer months when beer sales soar.

“Because most people do not know exactly how a waterless urinal works, trepidation about odor is almost always the first issue we must contend with,” says Klaus Reichardt, managing partner of



Waterless No-Flush Urinals, Vista, CA. “Very often, even after we explain how traditional and no-flush urinals work, we still have to install a waterless urinal or refer them to someone using a waterless urinal to convince them that odor is not a problem.”

Each conventional, flush-urinal has a “trap” in its drain that retains a small amount of water at all times. This liquid trap prevents odors and sewer gases from escaping into the restroom. As long as the water urinal and surrounding areas are flushed, cleaned, and well maintained, there should not be an odor problem.

“But waterless urinals also have a trap,” explains Reichardt. “Rather than holding water, which can evaporate, waterless urinals use a vertical trap design filled with a thin layer of liquid or sealant that sits atop the drain area of the urinal. Urine passes through the trap and sealant—forming a barrier—and preventing odors from escaping. In addition, the liquid eliminates evaporation of the urine, which can harm indoor air quality.”

The urine, which is heavier than the liquid sealant, eventually flows under the barrier layer and into a central tube connected to a conventional drainpipe, allowing the urine to be drained. Reichardt adds that the sealant must eventually be replenished on most no-water urinals as well as the trap inserts.

“Independent laboratory studies have shown that the no-water urinals have the same, or less, odor than do flush-type [conventional]

urinals,” according to a report by Julius Ballanco, president of JB Engineering and Code Consulting, Munster, IN. “Some of my colleagues have even performed their own field studies regarding odor and waterless urinals. Their nonscientific studies indicate that the no-water urinals work fine—without an odor problem—when you follow the manufacturer’s recommendations for maintaining the urinal.”

Ballanco adds that when the recommendations are not followed, facility managers may experience odor problems. “But, if you do not properly clean and maintain a water-supplied urinal, it would have a stench in a short period of time as well,” he says.

### **Dealing with Change**

Along with worries about odor, another major obstacle to the installation of no-water urinals is concern about knowing how to use them. “Some men use a waterless urinal and then look for a handle to push or see if the fixture has an electric sensor,” says Reichardt. “They want to flush away the urine and might be bewildered when they can’t.”

The problem is so widespread that in some facilities, such as the Harold Washington Social Security Building in downtown Chicago, a small sign is now posted above each urinal explaining how to use the waterless urinals. Essentially, the posting indicates that the urinal uses no water, it requires no flushing, and users may simply walk away after using it.

“The concerns about both odor and how to use waterless urinals are psychological barriers,” says Reichardt. “Those of us in the industry have been dealing with [these barriers] for years, and slowly they are coming down.”

### **Building Codes**

A third obstacle, which appears to be coming down as well, involves local building codes. “As far as code approvals go,” says Ballanco, “no-water urinals have been approved by the International Plumbing Code. There is also now a code change before the Uniform Plumbing Code to accept the fixture in the next edition of the code.”

They have also been approved by the American National Standards Institute, the International Association of Plumbing and Mechanical Officials, the Canadian Standards, and the National Standards Plumbing Code.

### **Cleaning and Maintenance**

As mentioned earlier, waterless urinals tend to be easy to clean and are cleaned the same way conventional urinals are cleaned. Usually, all that is required is a general-purpose cleaner applied with a cleaning cloth, jolly mop, or sponge.

However, as also discussed earlier, the liquid sealant on all waterless urinals must be replenished or changed on a regular basis, depending on traffic to the fixture. Additionally, the entire trap unit or

specific parts of it must also be replaced, again depending on use, but in most instances only two to four times a year with little effort.

According to Reichardt, there are three or four different manufacturers of waterless urinals in the market today, and each uses a slightly different system, requiring different maintenance requirements. “Facility managers must do their homework, analyze each system, and decide which works best for their facilities,” he says. “Some trap inserts can be quite expensive and eliminate the savings [facility managers] might have hoped to achieve by minimizing water use and installation costs.”

But the good news is that waterless urinals have proven they have many benefits, they can work in a variety of settings, and are helping to protect and sustain our environment in a safer, more hygienic manner.

Sidebar:

- A urinal is used three times more often than a toilet.
- Urinals use, on average, 1.5 gallons of water per flush; older urinals can use up to 4 gallons per flush or more.
- A flushed urinal uses, on average, uses up to 36,000 gallons of water per year.
- Water leakage on a conventional urinal is estimated at 5 percent to 15 percent annually.

- Although most urinals are made by men, a “funnel” type urinal has been developed for women, found mostly on transportable restrooms used at sporting events.
- Because of high installation and plumbing costs, two or more flush-style urinals are almost always installed at one time sharing common supply pipes and drains

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