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Experts Push Water Issues to the Top at Facilities America

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Experts Push Water Issues to the Top at Facilities America

Water quality, supply and safety are key components to operating and maintaining sustainable and eco-friendly facilities.

BY RICHARD BENNETT

You might not expect water quality and supply issues to be the first topic of discussion when nearly 2,000 facilities engineering, maintenance and operations professionals got together in October at the Facilities America Conference and Facility Decisions Trade Show in Las Vegas. After all, water issues had to compete with energy concerns, higher energy costs, and other pressing issues, such as safety and security matters, and the push by government and building owners to operate facilities in a sustainable manner.

But for those who attended Facilities America at the Las Vegas Convention Center, water supply and quality issues seemed to be on everyone's mind. "Water issues were the hot topic at Facilities America," said AFE Board Member Virginia Gibson, a water quality expert who is president and owner of Reliant Water

Management in Millbrae, Calif. Her comments were echoed by many of the other attendees.

One reason for the heightened interest: a speech given at the AFE Gala by Janet Stout, PhD, a University of Pittsburgh microbiologist credited with discovering the cause of Legionnaire's disease.

Stout described the painstaking (and often frustrating) research in discovering legionella bacteria and finding ways for facilities to prevent the virulent strain of pneumonia it causes. "Outbreaks of community-acquired and hospital-acquired Legionnaire's disease continue to occur," she warned, adding that "Legionella Pneumophila is one of the most deadly waterborne pathogens to infect patients in both the acute and long-term [hospital] care settings."

A second reason: water supply and quality issues also have an impact on many of the other issues facing facilities professionals. In this issue of *Facilities Engineering Journal*, for example, a Chem-Aqua expert discusses the impact of cooling water on facilities, and a landscape expert discusses safety and environmental issues related to recycling runoff water. And those are just two aspects of water quality and quantity issues that will keep engineers — and microbiologists — gainfully employed for decades.

The location of conference in Las Vegas may be another reason for the interest in water issues. With a surging populations and a strong tendency toward water shortages, Las Vegas has become the poster child for water issues faced by high-growth cities across America.

A recent report in the *Las Vegas Sun* suggested that Lake Mead, a Colorado River reservoir that is the source of most of Las Vegas' drinking water, "could run dry by 2021." *The New Republic* (November, 2009) noted that because of warmer temperature and diversion of water to quickly developing areas along the Colorado River, "Lake Mead fell to its lowest point since 1965."

The lower water levels have prompted concerns about high levels of trace minerals in the Las Vegas water supplies — a concern that water officials in Las Vegas dispute, citing high tech filtration and other tools to keep their water supply pure and safe. Gibson agreed, saying that "water officials in this country are great when



Cover: Water experts at Facilities America: DiHydro President Dr. Dan T. Hutchins, Dr. Janet Stout, keynote speaker at Facilities America, and Virginia Gibson, owner of Reliant Water Management and AFE board member. Photo courtesy of Cliff Muller

it comes to making sure that nothing goes wrong with the water supply?”

For facility engineers, a bigger concern over high mineral content in water might be its negative impact on facility machinery.

How Will Water Issues Impact Your Facility?

So what does that mean to you if you are a facilities engineer or operations professional in Raleigh, Chicago, or thousands of other American cities that have far more plentiful water supplies? The answer is simple: as the population grows in many regions, so will the demand and price of water. Some experts warn that supplies of fresh, potable water could outstrip demand in the event of a drought and cripple regional growth and business.

According to a study by Ethical Corporation (an independent organization that focuses on business sustainability and environmental responsibility), 99 percent of business managers surveyed ranked water conservation as a “top five” priority over the next decade, with 52 percent already ranking it as one of their top priorities at the moment.

Another reason why this may concern facilities-related professionals: water safety and quality concerns become heightened when water becomes scarce as localities look for new sources of water. These new sources may include what *The New Republic* calls “schemes to use gray



Facilities professionals and guests enjoy a reception during Facilities America in Las Vegas. Photo courtesy of Cliff Muller

pipe restoration, laboratory, cross connection and other water-related services. While such instances are rare, cross-contamination of recycled gray water with water used for other purposes could result in safety issues for building occupants, as well as costly remediation for the building owners themselves. And there is concern among some water quality professionals that instances of cross-contamination will rise as government agencies require more complex runoff and water recycling systems to make optimal use of strained water supplies.

system remained unfinished even after the building was occupied. Parts of the building did not even have hot water when the building was occupied.”

In addition, incorrect pipe sizes meant that no glycol flowed to the HVAC condenser piping system — leaving students and staff without heat. “It was very unfortunate mix of politics and pressure from

“As concern over water quality issues grow, it’s important for facilities professionals to test water supplies frequently.”

water” — that is, recycled wastewater generated from domestic activities such as laundry, dishwashing and bathing.

While most of this “gray water” is used for landscape irrigation, there is a concern for the potential for cross-contamination and the need to properly maintain the gray water systems.

“Whenever two systems are attached, there is always the danger of cross-contamination,” said Dan T. Hutchins, president of DiHydro Services Inc., a “total water management company” that offers

Although Hutchins said such cases are “extremely rare” — an opinion echoed by Gibson — he cited one case of a 2,500-student school in the Midwest for technically-gifted high school students. The five-year-old school was designed to take full advantage of gray water systems, recycling the water for sinks and other uses. “Because of the complexity of the school’s (water) system, it had all kinds of cross connections,” Hutchins said. “But because of cost-constraints and the complexity of the water systems, some areas of the water



Dr. Janet Stout gives a talk about water safety at Facilities America. Photo courtesy of Cliff Muller



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parents,” Hutchins said — and “could easily have been prevented” by allowing water quality experts like DiHydro to review plans and inspect the site prior to start up and the building becoming occupied.

Concerns Over Legionnaire’s Disease

The Mayo Clinic recently warned on their website that “outbreaks of Legionnaire’s disease are preventable, but require meticulous cleaning and disinfection of water systems, pools and spas.”

Why are hospitals, nursing homes and senior buildings more susceptible to legionella bacteria? Three of the primary reasons are: susceptible patient populations, moderate hot water temperatures to prevent scalding and stagnant or low flows in branch supply lines. “Water in most large buildings contains legionella,” Stout recently noted, adding that “drinking water poses a risk to only selected individuals.” Because the bacteria is transmitted by breathing in infected water vapor — rather than the water itself — “lung disease and smoking are also risk factors, and underlying immune-deficiency diseases or organ transplant recipients are also at higher risk.”

But while hospitals, nursing homes and senior buildings are at most risk for these outbreaks, Stout noted that “many incidents of Legionnaires’ disease in the workplace have been reported.” For example, she said, “we reported two cases at a plastic injection mold plant.” Because of the complexity of eliminating legionella bacteria and the potential for an outbreak of Legionnaire’s disease



DiHydro President Dr. Dan T. Hutchins makes a point about controlling piping costs at a roundtable discussion he led at Facilities America. Photo courtesy of Michael Bukay.

and other water-borne diseases, most experts recommend that facilities employ the services of an organization specializing in water quality issues.

Gibson said that in addition to the treatment of water in boilers, towers not only improve water safety, they also “improve energy efficiency and lengthen equipment life by eliminating corrosion and scale.”

According to Hutchins, not all water quality issues are related to active water pipes inside the building. In the case of some facilities — including one DiHydro client — water quality issues were caused by pipes that are no longer in use. “At one hospital,” he noted, “patients were getting sick for no apparent reason. But when we tested the hospital’s potable and drinking water, there was no problem.

“Then, as we were shown around the hospital,” “I noticed there was a closed in area (30’ x 30’) that had no way to enter it. So I did a little more investigation and found that at one time it has been used for water therapy and when the hospital was finished with it they just dry walled over it.”

Using Doppler radar and other tools, Hutchins and the crew from DiHydro found that that while the old burn center section of the hospital had not been in use for decades, the water pipes into the burn center had never been removed or drained and they had become a stagnant breeding grounds. As a result, water had been accumulating underground, stagnating and became “a great place for bacteria to hide and thrive,” said Hutchins. DiHydro was able to remove the stagnant pipe and provide bacteria remediation within weeks of the discovering the unwanted water.

What Happens in Vegas

As concern over water quality issues grow, it’s important for facilities professionals to test water supplies frequently. According to Gibson, companies interested in testing water supplies at their facilities should use the services of trained water professionals. “Some of the test kits are easy to use,” she said, “but it’s important to hire a [water quality] professional to do the testing anyway, so you have someone who knows how to interpret the results.”

Most of what happens in Vegas stays in Vegas. But for facilities engineering, maintenance and operations professionals



A high growth rate and desert environment have placed Las Vegas at the forefront of American cities facing water challenges. Photo courtesy of Cliff Muller

who attended the Facilities America Conference and Facility Decisions Trade Show, there is one message they will be sure to take home with them: water quality and cost issues are here to stay — and are likely to remain one a top priority for facilities professionals for decades to come. **FEJ**

Richard Bennett frequently covers the facilities engineering community for FEJ.



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