

Liquid ozone offers sustainable, economical cleaning solution in Housing

By Kyle Swanson
University Housing student staff

University Housing is phasing out many chemical cleaners from its closets and replacing them with liquid ozone — the first university in the country to do so. Liquid ozone cleaning is more sustainable, less expensive, safer, and as effective at cleaning as chemical agents.

The technology has existed for more than 75 years. In fact, liquid ozone cleaning has long been used to clean swimming pools used in the Olympics. Many municipalities in the United States and Europe, including the City of Ann Arbor, also use the technology to sanitize drinking water. However, the technology only recently has become practicable for use in smaller applications like cleaning residence halls on campus.



Liquid ozone is created by introducing an extra oxygen atom to an oxygen molecule and water molecules. The instability of the third oxygen atom creates a high-quality cleaning agent in which atoms of oxygen search for something to bond with. As it searches, the oxygen atoms break up dirt bonds and combine with hydrogen and oxygen to create more molecules of water and oxygen while cleaning the surface in the same way as toxic cleaners, but naturally.

University Housing piloted liquid ozone cleaning at South Quad in October 2010, and it now also is being used at Mosher Jordon, Stockwell, North Quad, Couzens, and Fletcher residence halls. Plans are under way to implement the technology at all residence halls, including Alice Lloyd in fall 2012 and East Quad in fall 2013, when renovations of the two buildings are complete. Liquid Ozone cleaning also is being implemented in other buildings on campus, including the Michigan League, where it will be rolled out this month.

Joseph Kennedy, assistant director of University Housing facilities, notes that extensive testing was conducted before liquid ozone technology was implemented in residence halls. As part of the pilot program proposed by Kennedy and Sally Gonzales, a building facilities manager, swab samples were taken before and after cleaning surfaces to compare the effectiveness of liquid ozone to that of chemicals.

"We wanted to test it in one residence hall first to make sure switching to liquid ozone would make sense for us," Kennedy says. "Once we observed that liquid ozone sanitized just as well or better than the chemicals we had been using, the sustainability and financial benefits made it an easy decision to keep rolling this out across campus."

Liquid ozone is more sustainable than chemical cleaning agents because, once used, liquid ozone reverts to water and oxygen molecules, leaving only a bucket of dirty water to be poured down the drain. And unlike chemical agents, liquid ozone does not leave a residue on cleaned surfaces, making it safer for custodians and residents with skin sensitivities that may be aggravated by chemical residues.

"University Housing has long been committed to creating safe, sanitary living conditions for students living in the residence halls, while trying to be as conscious of our environmental footprint as possible," Director of Housing Facilities Vicki Hueter says. "Liquid ozone is allowing us to take this commitment to an entirely new level by eliminating the need for most of the chemicals we used in the past."

In addition to being an effective and more sustainable cleaning agent, liquid ozone also is much more economical than using chemicals. It is expected that nearly \$50,000 will be saved in chemical expenses each year once the system is fully implemented at all residence halls.

"It's really quite amazing how simple and effective liquid ozone is," Hueter says. "Liquid ozone requires electricity to add oxygen molecules into water, but that's about it. After we've purchased the liquid ozone machines, there will be almost no recurring costs."

Gonzales adds that Michigan has now become a role model for other Big Ten schools interested in implementing the technology in their custodial operations.

"We've had a lot of interest from other schools about how we're using liquid ozone to clean our facilities," she says. "Ohio State and Harvard have each made inquiries, and Michigan State came for a site visit and had their custodians shadow our custodians."

Dave Camp, a custodian who was involved in the piloting process, says he was skeptical about using liquid ozone instead of chemicals when cleaning, but he's seen a remarkably positive impact from the switch.

"Sustainability is a big thing at the university. Eeveryone talks about it, but with liquid ozone cleaning, we're really living it too," Camp says.