NEW TECHNOLOGIES

Mai Ann Healy, United States regional manager at BioFiltro, notes how critical wastewater management can be to operations. "If you have major issues with your wastewater, a facility must shut down and address the issue or risk noncompliance with discharge standards. We want to prevent that." BioFiltro sells biofiltration systems that look like above-ground concrete pools, custom-sized to each client's wastewater volume and concentrations. But instead of being filled with water, the pool contains drainage basins, river cobble and wood shavings inoculated with bacteria and earthworms that work in tandem to clean wastewater applied via intermittent surface irrigation. The system footprint depends on how many gallons and pounds of contaminants the system needs to remove each day so that it can deliver rapid results in four hours.

"As water percolates through the system, wood shavings trap contaminants on their surface. In turn, the worms eat these solids and excrete rich waste in the form of castings," explains Healy. "These castings, and the airways created by burrowing worms, nourish billions of bacteria colonies that feed away at the dissolved and soluble contaminants. This

OZONE AS A WINERY DISINFECTION TOOL

BY MARC **DEBRUM**

Disinfecting a winery is a huge contributor to wastewater. And while some wineries use chemicals, steam or hot water for disinfecting equipment, many are turning to ozone technology as an effective alternative that significantly cuts down water use.

Ozone is the most powerful oxidizer and disinfectant that can safely be used and is commercially available for the control of bacteria, molds and other microbes. It provides disinfection through a lysing process that breaks down the microbe membranes and cell walls, destroying them completely and quickly. It's far more efficient in disinfection than hot water, caustic chemicals or acids. Further, it's generated onsite, reducing the need for handling and storage of such chemicals.

FDA- and USDA-approved for food surface contact, ozone leaves behind no residues or aftertastes. Because it's created from oxygen, once this powerful molecule is consumed by the contaminant, it reverts back to oxygen very quickly.

POINT-OF-USE

Cleaning and disinfection procedures take time — many winemakers admit it takes far more time to clean and disinfect the winery than it does to actually make the wine. Traditional procedures start with a pre-rinse to knock down all the large debris; then the chemical cleaning step, typically using alkalis and acid-based products to remove dirt, sugars and other debris; a post rinse to remove the cleaning chemicals; then the disinfection rinse to reduce and destroy microbes, oftentimes using hot water, peracetic acid, caustic soda or even hydrogen peroxide; and a final rinse to remove the disinfectant.

However, when using ozone as the disinfectant, the post rinse and final rinse can often be eliminated, as there are no negative effects of the ozone mixing with the cleaning chemicals and, because ozone is safe for food contact, the ozone disinfectant rinse can also be the final rinse.

Typical disinfection products can take 30 minutes or more to provide sufficient contact time, whereas the proper levels of ozone can take mere seconds. Further, if hot water is being used in the disinfection protocol, it can be eliminated, as the ozone rinse will use cold water only.

Ozone is an excellent addition to disinfection protocol to assure microbe-free surfaces within processing equipment such as hoppers, conveyors, destemmers and crushers. In addition, it can be used to disinfect barrels and fermentation tanks (inside and out), transfer lines, hoses, fittings, valves and clamps.

Floors, walls, and drains also need disinfection. Left untouched, these places can attract fruit flies and other pests, creating a breeding ground for microbes that can eventually become the source of microbial problems throughout the winery. Ozone-containing water can be used in these places simply and effectively on a daily basis to help prevent microbial outbreaks.

The use of ozone for disinfection has now spread throughout much of the wine industry and is an industry standard worldwide. As its benefits and cost advantages become more widely understood, the technology's role in wineries will grow.

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