

# WATER MANAGEMENT

WRITTEN BY CHRIS LOZIER /// PHOTOS BY GLENN WENSLOFF

For some distillers, water availability and wastewater disposal are not critical issues, but for many they are two of their biggest expenses and headaches. In some areas they can even limit a distiller's ability to expand because the municipalities either cannot afford to provide any more water to produce the spirits on the front end, or they cannot process any more wastewater on the back end.

This May at the Craft Beverage Expo (CBE) in Oakland, California, Glenn Wensloff and Dr. Todd Webster spoke to a diverse crowd of beverage makers about common water management problems. Wensloff is the owner of Elutriate Systems, a design-build company

offering wastewater solutions like smart bioreactors for food and beverage makers. Webster is the West region vice president and food and beverage market sector leader for Envirogen Technologies, Inc., a North American company that provides water and wastewater treatment, air treatment, and process improvement solutions within the food and beverage industry.

Together they talked about the water challenges beverage makers face and gave examples of the technology available to overcome those obstacles. The solutions they presented ranged from simple, low-cost filters to complex water recovery and treatment systems. From the examples they gave, both said that some of their clients were required to use those technologies to meet water usage and disposal demands, while others elected to treat their water because they felt it was more environmentally friendly, saved them money, or both.

## THE LOCATION CORRELATION

Of all the factors affecting the cost of water usage and disposal, Webster says geography plays the largest role.

"It's very simple," he explained, "It's availability, quality and the cost of water, that's really what you're looking at."

In places with an abundance of high quality water, incoming water costs will likely be low and that water will typically require little to no treatment from the distiller. Many distillers even use their water source in their marketing: Kentucky distillers are proud of their limestone spring water and Colorado distillers boast about their fresh mountain snowmelt.

But in water-strapped places like Southern California, incoming water costs can be very high, and sometimes businesses are literally unable to get any more water. When a municipality has very little water to spare, they will usually allocate it to housing before industry.

If you have trouble sourcing enough water for your DSP, or if that water is very expensive, there are several ways to either use that water more efficiently or reuse it, sometimes endlessly.

One simple option is to install tanks to capture some or all of your wastewater (process water, not septic from your bathrooms). Then you can use those tanks to blend your low pH wastewater with your caustic water from cleaning, thereby potentially neutralizing it



to the municipality's standards without having to add extra chemicals or fresh water for dilution.

Those tanks also allow you to reuse that water. Reuse options range from floor cleaning with tank rinse water which requires very little treatment (usually just solids removal), to more complex water recycling systems.

Most water recycling systems can clean the water to near-potable standards, and though a distiller may choose not to use that recycled water for distilling, they can use it for cleaning over and over again. In this scenario, all of a DSP's purchased front-end water can go to production rather than cleaning, allowing them to increase production even if they have a capped limit on what they can purchase.

Even though recycling systems can be costly, they often pay for themselves in areas with high water rates or in the above scenario where you can actually increase production with the same amount of incoming water. Plus, distillers can lease them or install small systems to start with.

"You can jump into reuse at any point — you can go 100 percent reuse, you can go 50 percent reuse — whatever level you want or whatever makes sense to you financially," tells Wensloff. "Up to this point, who really thought about optimizing water usage as being part of the business model? Who thought, 'Maybe if I decrease my water use by half I can increase my profit margin?'"

Another money-saving option in areas with high wastewater surcharges is to treat that water yourself. For example, Wensloff says that the first rinse of a tank after fermentation or mashing can register high in the three measurements municipalities really regulate (and charge for): TSS (total suspended solids), BOD (biochemical oxygen demand) and pH (most municipalities want a five or higher, but DSP waste is usually about four). By capturing that high-demand water and separating it from the rest, called side streaming, you now have the bulk of your surcharged wastewater isolated so you won't be billed at that high rate for all of your water usage. Then distillers can employ aerobic digesters, membrane bioreactors or other technologies to treat that water in-house.

In most cases this level of treatment does not make sense, but for larger DSPs and those looking to expand it is usually cost-effective, and in some places it is even required.

Back on the front end, what if your incoming water is poor quality, i.e. it tastes bad for producing and proofing spirits, it hinders your yeast activity through fermentation, it is hard on your equipment or all of the above? Webster says this is a geographical question too, advising that some areas of the country have better quality water that needs no treatment, while in other places treatment is necessary. Even within a community this can vary depending on how far away a distillery is from a chlorine-injection station, and it can also depend on the distiller's desires.

"Some distillers want to remove everything from their incoming water, then add back in only the necessary minerals for their particular distilling process requirements," explains Webster, saying their only limits are space for that equipment and their budget.

For some distillers, water availability and wastewater disposal are not critical issues, but for many they are two of their biggest expenses and headaches.

The simplest form of front-end treatment Webster employs at Envirogen is a granular activated carbon filter system, which he says is small, easy to maintain and effective at removing chlorine and chloramines. Excessive levels of chlorine compounds not only affect spirit taste and aroma, they can also cause equipment damage like pitting and corrosion, even in stainless steel. In some rare cases excess chlorine can also generate toxic fermentation byproducts.

The next level up from carbon filters is deionization and reverse osmosis which can remove cationic and anionic minerals from the water. Excessively mineral-rich waters not only affect the fermentation efficiency and flavor of the spirits, they can lead to premature equipment failure and excessive cleaning due to scaling. In these cases, those systems are cost-effective not only because they improve product quality, but they also reduce labor, cleaning and equipment costs.

## FINDING THE RIGHT SOLUTIONS

All beverage producers face very similar water challenges. While each business will have its own unique problems, this common ground has resulted in one great benefit: Just about every water problem from the front end to the back end has been solved.

Water treatment technologies vary widely in both cost and complexity, but when a distiller has a water problem they can often find a solution that actually pays for itself in saved water and electricity costs. Those solutions often benefit the environment too, and subsequently add an eco-friendly marketing edge to the distillery.

Whether you currently have water problems or you want to plan for the future, look to your neighbors, municipality and water-management experts to find what's right for you.

"When it comes to wastewater we're all in this together," said Wensloff. "Feel free to reach out to your comrades in the industry and ask them what their costs are, what they're doing, what their hookup fees are, what they're doing for treatment, what they're paying and they should have no problem talking to you about it."



Keep your ears open for possible community partnerships, as well. Some bioreactors create compost teas that can then be sold, offsetting the equipment costs even more. And sometimes local utilities will offer rebates for new wastewater equipment because they save electricity.

Occasionally your neighbors might even want your wastewater. In Modesto, California Do Good Distillery was paying nearly \$200,000 a year to dump just their wastewater down the drain after spending an hour and a half each day removing the solids. That changed when they partnered with a local farm that had an anaerobic digester (story on page 51), who takes all of their wastewater for free. All Do Good pays for is shipping the waste 10 miles to the farm, costing them roughly 90 percent less than the sewer option.

While most distilleries do not have access to a digester, there are other solutions for their waste streams besides paying hefty sewer bills. Do Good owner Jim Harrelson says the first question he asks aspiring distillers is if they have checked with their municipality about wastewater fees, saying that it can break a business if not accounted for.

"New distillers always think about the shiny equipment and their recipes," he shares. "People never think about the downstream side of it. I think new distillers getting into this business need to budget for this — you need to plan for it."

Webster says the most efficient way to plan for it is to start before you even select a location. He says many businesses get hung up on properties like historic buildings or storefronts in high-

traffic areas only to find out later that their wastewater will cost exponentially more to dispose of than another site 10 miles away in another municipality.

One last tip from Webster is that if you do get to plan your distillery, do not mix the septic wastewater from the bathrooms with your production wastewater until after any sump pumps, if applicable. Those lateral lines can join before the sewer main without any problem, but he says you should avoid routing them to the same pump or spot where they may be tested by the municipality.

"If you ever get into that position where you actually must perform some level of treatment on your wastewater from your distilling process, you don't want to also be dealing with pathogens," said Webster. "It's a whole other world."

If your current front- and back-end water fees and processes are good right now consider yourself lucky, but with a growing population and fluctuating weather patterns, that could change. And even if the water availability itself does not change, cash-strapped municipalities are increasingly looking for and finding new revenue by charging more for water usage and wastewater disposal. Regardless of your situation, it does not hurt to consider new options for better water management. AS

---

*Envirogen Technologies, Inc.'s West region vice president Dr. Todd Webster can be reached at 877-312-8950 x1145, or visit [www.envirogen.com](http://www.envirogen.com). Elutriate Systems founder Glenn Wensloff's phone number is 805-474-9390, or go to [www.elutriatesystems.com](http://www.elutriatesystems.com).*

MAKE YOUR  
**FIRST**  
IMPRESSION  
A MEMORABLE ONE.  
*We'll help you get there.*

**IMPERIAL-PACKAGING CORP.**  
INTERNATIONAL SUPPLIER OF STOCK AND CUSTOM PACKAGING

888.326.5679 ext 302 📧 [sam@imperial-packaging.com](mailto:sam@imperial-packaging.com) 🌐 [www.imperial-packaging.com](http://www.imperial-packaging.com)