Wastewater Management for Breweries
Brewing Wastewater: What You Need to Know

Types of Wastewater:

- Sanitary: Human waste, kitchen, and sink waste
- Production/Process: What comes from the process of making beer
- Stormwater Runoff: Generally, what comes from rain, but can include high strength
- Production byproducts, such as spent grain, yeast, or trub

Best Management Practices (BMPs):

- If you don't know what your water source is, find out and help protect it
- If you don't know where your wastewater goes, how it gets there, how it's processed, or the plant's capacity, find out. Establish a relationship. You won't regret it
- Depending on where you are located, you may not have to pay for runoff, but you must comply with local/state laws, which include byproduct storage. It is not fun to be blamed for an algae bloom
- Add screens to your floor drains
- Sweep before washdown
- Install low flow hose nozzles
- Know your wort/beer loss and work to reduce it
- Sidestream spent grain, trub, yeast, and spoiled product

Typical Billing Structure (Municipal System):

- Volume In: Incoming (metered), measured in Hundred Cubic Feet (HCF)(1 HCF = 748.052 gallons). Includes water used for production and sanitary purposes areas
- Volume Out: Effluent traveling from your brewery, through a municipal system, and treated at a municipal wastewater treatment facility
  - Depending on your location, you may be part of an industrial pretreatment program. If part of a program, this volume is likely your volume sold subtracted from your volume in
  - If not part of a pretreatment program, this is the same amount as your volume in
    - The only way to provide a true production water use and wastewater volume, and a way to save a lot of money in the long run, is to install submeters (reversing meters) for non-production use, and a wastewater discharge flowmeter for production discharge. This is how to account for losses in spent grain, trub, and evaporation
- Stormwater: Square footage of non-permeable surface, such as roof/parking lot runoff. This charge is currently limited to certain municipalities
- Surcharges: Biochemical/Biological Oxygen Demand and Total Suspended Solids. If part of a pretreatment program, a brewery's surcharges are determined by effluent sampling
  - Biological Oxygen Demand (BOD): The amount of oxygen needed to break down organic material. A municipality sets limits on allowable BOD based on treatment practices and plant capacity
    - Measured by concentration (mg/L) or weight (lb)
  - Total Suspended Solids (TSS): Particles big enough to get caught in a filter. A municipality sets limits based on treatment practices and plant capacity
    - Measured by concentration (mg/L) or weight (lb)
  - Potential of Hydrogen (pH): Acidity or basicity of a solution. A municipality sets limits based on their infrastructure and plant capacity

Ways to keep water/wastewater bills in check:

- Track your water usage. Use the BA's benchmarking tool to understand how you're doing compared to others. Less water in = less water out - you pay for it in both directions
- Look at your bills when you get them. There is a possibility you are being overcharged
- Recover knockout water. This water is hot and clean, and perfect for reuse
- Establish consistent CIP procedures, and use of final rinse water as first rinse water
- Install flowmeters on production hose drops and use them
- Reduce BOD and TSS by reducing loss and side-streaming as much as possible. Wort, beer, yeast, and spent grain are all high in BOD and TSS. Reducing the strength of your wastewater through reduced loss = profit, which side-streaming = lower surcharges
- Install submeters (reversing meters) for non-production uses, and a wastewater flowmeter on the production discharge. If viable, work with your municipality to make this happen to their required specs
- Collect high strength wastewater to balance the pH. An IBC tote works well for this
- Approach landscaping, patio work, etc. to be as permeable and low maintenance as possible. This may not save you money initially, but will in the long run

Why it Matters:

- It should come as no surprise that regulators are looking at the craft beer industry as a risk to wastewater treatment plants. Proactive adherence to BMPs displays responsibility
- All wastewater winds up in a waterway. Source reduction is the best way to keep rivers, lakes, and oceans healthy, and tells a much better story

For more information, please visit the BA's Water and Wastewater Manual and reach out to those in place to assist you:

Wastewater Management for Breweries

Wastewater management is an important part of operating a brewery but may not seem like one until it is too late. Municipalities are beginning to focus on high-strength wastewater management and have asked breweries to pay surcharges for their waste or reduce their strength. This presentation will provide a background on brewery wastewater and what brewers can do to minimize costs, comply with environmental regulations, and increase the efficiency of their operations through reduced water usage. Presenters: Shane Mullen (Weston & Sampson Engineers), Luke Truman (USM Craft Beverage Sector, New England Environmental Finance Ctr.)