

Guide to Brewery Discharges



WHAT YOU NEED TO KNOW ABOUT BREWERY WASTEWATER

Breweries and distilleries are popping up all over the State in cities and rural communities alike. According to the Maine Brewer's Guild the number of active breweries in the State has almost doubled since 2010. Growth is expected to continue for the foreseeable future, especially in smaller towns and rural areas. Industry growth is great for the local economy and is encouraged but communities must be prepared for potential impacts. The following information will help your community understand the impact that brewery and distillery operations have on wastewater collection and treatment systems.

HOW MUCH AND WHAT'S IN IT?

Breweries typically generate between 5-8 gallons of wastewater per gallon of beer produced. This wastewater source is from the production process and cleaning/sanitizing operations. Because of the ingredients used to produce beer and other beverages, highly concentrated pollutants are in the wastewater, much higher than levels typically found in domestic sewage.

Consider that a typical household generates between 100-200 gallons per day of wastewater with a BOD of about 200 mg/l. The impact of brewery wastewater becomes more obvious when comparing brewery BOD to household BOD. For example, a brewery that produces about 1,000 bbl of beer annually, will generate up to 1,000 gallons/day of wastewater. With a BOD (strength) of about 3,000 mg/l, this brewery discharge is equivalent to about 50 homes.

Parameter	Raw Wastewater	Treated Wastewater
Water to Beer	4-10 liter/liter	Same
Wastewater to Beer Ratio	1.3-2 liter/liter lower than water to beer ratio	Same
Biochemical Oxygen Demand (BOD)	600-5,000 mg/l	100-400 mg/l
Chemical Oxygen Demand (COD)	1,800-5,500 mg/l	
Nitrogen	30-100 mg/l	
Phosphorus	3-12 mg/l	
pH	3-12	6-9
Total Suspended Solids (TSS)	200-1,500 mg/l	50-500 mg/l

Main Areas Of Wastewater Generation

SOURCE	OPERATION	CHARACTERISTICS
Mash Tun	Rinsing	Cellulose, sugars, amino acids. ~3,000 ppm BOD
Lauter Tun	Rinsing	Cellulose, sugars, spent grain. SS ~3,000 ppm, BOD ~10,000 ppm
Spent Grain	Last running and washing	Cellulose, nitrogenous material. Very high in SS (~30,000 ppm). Up to 100,000 ppm BOD
Boil Kettle	Dewatering	Nitrogenous residue. BOD ~2,000 ppm
Whirlpool	Rinsing spent hops and hot trub	Proteins, sludge and wort. High in SS (~35,000 ppm). BOD ~85,000 ppm
Fermenters	Rinsing	Yeast SS ~6,000 ppm, BOD up to 100,000 ppm
Storage tanks	Rinsing	Beer, yeast, protein. High SS (~4,000 ppm). BOD ~80,000 ppm
Filtration	Cleaning, start up, end of filtration, leaks during filtration	Excessive SS (up to 60,000 ppm). Beer, yeast, proteins. BOD up to 135,000 ppm
Beer spills	Waste, flushing etc	1,000 ppm BOD
Bottle washer	Discharges from bottle washer operation	High pH due to chemical used. Also high SS and BOD, especially thru load of paper pulp.
Keg washer	Discharges from keg washing operations	Low in SS (~400 ppm). Higher BOD.
Miscellaneous	Discharged cleaning and sanitation materials. Floor washina. flushina water. boiler blow-down etc.	Relatively low on SS and BOD. Problem is pH due to chemicals beina used.

QUICK FACTS

- 1 gal of beer = 5-8 gal of wastewater
- Brewery BOD = 2,000-3,000 mg/L
- Cleaning Ops generate high pH wastewater and can contain high levels of phosphorus
- Many brewing operations utilize septic systems – know the hauler!
- You can find much more information on the [MeWEA Pretreatment Committee web page](http://www.mewea.org), including **FACT sheets** you can give to your local breweries.

www.mewea.org

A BREWERY IS MOVING IN... Here is a tool you can use to collect important information on your brewery dischargers.

Company Name: _____
 Address: _____
 Website: _____
 POC Name: _____
 POC Email: _____
 POC Phone: _____

SEWER (Y/N)	
SEPTIC (Y/N)	
If Septic - Hauler Name	
RESTAURANT (Y/N)	

DOMESTIC INFORMATION	
# OF EMPLOYEES	
# OF TOILETS	
# OF SINKS	

BASE PRODUCTION INFORMATION	
ANNUAL GALLONS OF PRODUCT PRODUCED (est.)	
HOURS OF OPERATION	
DAYS PER WEEK IN PRODUCTION	

FACILITY INFORMATION	
COMPANY OWNED OR LEASED? IF LEASED PROVIDE OWNER CONTACT INFORMATION	
SANITARY SEWER SEPARATE FROM PROCESS DISCHARGE?	
SAMPLING POINT LOCATION FOR SANITARY & PROCESS	
FLOOR DRAINS: QTY, LOCATIONS, SANITARY/PROCESS, PRIMARY USE DESCRIPTION	
FACILITY SQUARE FOOTAGE <i>Break out each type of space separately: Production floor, Office, Shipping/Receiving, Retail, Break Room, Maintenance Areas, Chemical Storage, etc.</i>	

PROCESS INFORMATION	
PRODUCT BEING PRODUCED	
DESCRIBE THE CLEANING AND SANITIZING OPERATION. <i>INCLUDE TYPICAL DAY/TIME, TYPES OF CHEMICALS, LOCATION</i>	
TANK DESCRIPTION <i>CAPACITY, USE, OVERFLOW AND DRAINING DISCHARGE LOCATION</i>	
INDUSTRIAL WASTEWATER TREATMENT PROCESS DESCRIPTION	