



Alcohol and Fermentation Wastewater

What is a fermentation operation?

Any business that produces beer, wine, cider, spirits, kombucha or other fermented products.

Why are these operations a concern?

This industry has the potential to release large volumes of high-strength wastewater into the City's sanitary sewer system. The amount and strength of this wastewater can stress the treatment capacity of the receiving wastewater treatment plant. Individual facilities may contribute smaller quantities of these substances however collectively, impact from the industry can be significant.



Brewery tanks

What are the Substances of Concern?	Sources
Organics (BOD)	Alcohol, sugars, yeast, raw materials
Solids	Spent grains, pulp, fruit, hops, trub
pH	Acidic final product, caustic and acidic cleaning solutions
Nutrients	Organic source materials
Temperature	Boiling and fermenting process



Impact our ability to treat wastewater

What helps to reduce the risk to The City's sanitary system and the environment?

Pre-Treatment System Options

Solids Management: Install screens, filters or baskets within the process stream. Keep solids from hitting the ground and prevent material from entering floor drains. Solids may have value as animal feed or compost.

Biological Oxygen Demand (BOD) Reduction: Diverting concentrated sources of waste rather than mixing and releasing to the wastewater system. Once segregated this high strength waste can either be treated or hauled away for offsite disposal. Ensure spilled product does not enter floor drains. Some of the options to reduce BOD in effluent are Anaerobic (commonly used in breweries) or Aerobic Digestion, Membrane Filtration, Advanced Oxidation, Electrochemical Methods or Activated Carbon treatment.

pH Treatment: The wastewater bylaw 14M2012 states wastewater must fall between 5.5 and 10.0. This can be achieved, for example, by adjusting effluent pH through a pH Equalization/Neutralization Tank prior to releasing to the wastewater system.

Maintenance Record: When maintaining a pre-treatment system, it is important to keep records of any activities completed. Records are required to be kept onsite for minimum of two years.

If you have any questions about installation of a pre-treatment system, please call 311.

Wastewater Bylaw 14M2012 Fines for Non-Compliance

Schedule “A” Prohibited Substances

The following must not be released into the wastewater system:

(k) wastewater having a pH of less than 5.5 or greater than 10;

(l) wastewater having a temperature in excess of 75 degree Celsius;

22 (1) (a) Releasing, or allowing the release of wastewater that contains a prohibited substance into the wastewater system

Min. **\$1000**, Specified Penalty **\$3000**

Release Reporting

35 (1) Failing to immediately notify the proper authorities in accordance with subsection 35 (1) where a substance is released into the wastewater system in contravention of the Bylaw

Min **\$500** Specified Penalty **\$1000**

Monitoring Access Points

28 (a) Failing to provide one or more monitoring access points for the monitoring of wastewater in compliance with subsection 26 (1) (a)

Min **\$500** Specified penalty **\$2000**

Records Maintenance

26 (4) (b) Failing to maintain a maintenance schedule and record of each maintenance for the pre-treatment system installed at a premises for a period of two years, including records for disposal of waste residue

Min **\$100** Specified Penalty **\$500**

Surcharge Program (Wastewater Bylaw 14M2012)

Untreated, high strength Alcohol and Fermentation Wastewater effluent likely contains one or more substances at a concentration that would fall under the City of Calgary’s Surcharge program (Schedule “C”).

Wastewater Bylaw 14M2012 Schedule “C” Surcharge Substances

To recover costs incurred for the treatment of high strength effluent a surcharge may be applied to your monthly water bill. The table below shows the average effluent quality of Alcohol and Fermentation Wastewater and how it would translate to a surcharge bill. The surcharge has been broken down by parameter and range of cost by \$/m3 of wastewater generated. This would need to be multiplied by the estimated wastewater volume you would produce from your operation.

Parameter	Bylaw Limit	*Typical Industry Average	**Approximate Surcharge \$/m3
BOD (mg/L)	300	8,500	11.83
TSS (mg/L)	300	1,600	1.49
pH	5.5-10		

* Ranges and average determined from numerous North American literature reviews

** Approximate surcharge rate based on typical industry average

More information on the surcharge program and rate formula can be found at calgary.ca in Schedule “C” and “F” of wastewater bylaw 14M2012.

Effluent Metering Program

Alcohol and fermentation customers typically have a water use to wastewater ratio less than other industries as they consume water in their product. As such, you may want to consider participating in the Effluent Metering Program. This will be used to calculate your wastewater bill by measuring the flows leaving the building and will also be used when calculating your monthly surcharge. More information on the program visit calgary.ca and search for [effluent metering](#).