Metro Vancouver
Fermentation Operations
Bylaw Guide
Spring 2016

Metro Vancouver wishes to thank Main Street Brewing Company, Granville Island Brewing, Big Rock Urban Brewery, and R&B Brewing Co. for allowing us to use images of their fermentation operations for demonstration purposes.

© Copyright 2016 Greater Vancouver Regional District

Disclaimer
Copyright to this publication is owned by the Greater Vancouver Regional District ("Metro Vancouver"). Permission is granted to produce or reproduce this publication, or any substantial part of it, for personal, non-commercial, educational and informational purposes only, provided that the publication is not modified or altered and provided that this copyright notice and disclaimer is included in any such production or reproduction. Otherwise, no part of this publication may be reproduced except in accordance with the provisions of the Copyright Act, as amended or replaced from time to time.

While the information in this publication is believed to be accurate, this publication and all of the information contained in it are provided “as is” without warranty of any kind, whether express or implied. All implied warranties, including, without limitation, implied warranties of merchantability and fitness for a particular purpose, are expressly disclaimed by Metro Vancouver.

The material provided in this publication is intended for educational and informational purposes only. This publication is not intended to endorse or recommend any particular product, material or service provider nor is it intended as a substitute for engineering, legal or other professional advice. Such advice should be sought from qualified professionals.
Fermentation Operations Bylaw

Beginning November 27, 2015, Metro Vancouver is implementing a new bylaw to reduce and prevent spent grains, fruit and yeast from smaller fermentation operations from going down the drain.

The Fermentation Operations Bylaw applies to any business using yeast to produce alcoholic beverages and discharging up to 300 m$^3$ (300,000 L) of wastewater into the sewer within 30 days, including brew pubs, cottage breweries, micro-breweries, vint-on-premises, wineries, distilleries and u-brews.

Ensuring waste from fermentation operations is managed responsibly

A rise in the number of fermentation operations in the Metro Vancouver region has increased the volume of spent grains, fruit and yeast entering and stressing the sewer system. The bylaw requires fermentation operations to remove solids from wastewater and monitor and control the pH of cleaning and sterilization water.

The Fermentation Operations Bylaw was developed in consultation with operators from across the region and reflects the distinct conditions of their operations. The bylaw is a set of standards operators need to meet; it was designed so there are multiple ways of achieving the standards, depending on a business’ unique situation.

Supporting fermentation operations to comply with the bylaw

This guide describes each bylaw requirement and offers support to fermentation operators to comply with the new regulation.

The guide is a companion piece to the Fermentation Operations Bylaw which can be found at www.metrovancouver.org by searching “Fermentation Operations Bylaw.”

Operators are also encouraged to contact Metro Vancouver at 604-432-6200 and speak to an Officer with any questions or comments about the bylaw. In Vancouver, the bylaw is managed and enforced by the City of Vancouver local government. Fermentation operations within the City of Vancouver should call 3-1-1 for any inquiries related to the bylaw.

Contact information

Metro Vancouver:
Call: 604-432-6200
Email: regulationenforcement@metrovancouver.org

City of Vancouver:
(for operations in the City of Vancouver only)
Call: 3-1-1
Email: environmentalprotection@vancouver.ca
Requirement 1: Remove solids

When coarse solids like spent grains and fruit, and fine solids suspended in water, like yeast, enter the sewer it stresses the system and costs money to maintain and repair.

This requirement ensures both coarse and suspended solids are removed from wastewater.

Bylaw requirement

- The discharge of coarse spent grains or fruit pulp to the sewer is prohibited on the date the bylaw is enacted.
- The maximum concentration of Total Suspended Solids (TSS) shall not exceed 1,200 mg/L

All operations must comply with the TSS limit effective January 1, 2017.

Supporting compliance

Operations employing Best Management Practices for this sector usually have TSS concentrations under 800 mg/L.

In practice

Since it is unlawful to put organic solids in the garbage, some breweries have made arrangements to have their spent grains delivered to farmers to use as feed.

Operators are encouraged to call their waste hauler to learn about customized waste management services or contact processing facilities around the region to see what materials can be accepted.

Operators can contact the Recycling Council of BC (www.rcbc.ca) to learn how to manage organic waste. RCBC can connect operators to the right resources to help them develop or improve an organics management program.
To ensure operators and regulatory staff have accurate knowledge of wastewater quality, they must be able to access wastewater for sampling purposes.

**Bylaw requirement**

Fermentation operations must provide a suitable sampling point that can be accessed during operating hours by July 1, 2016. A suitable sampling point must be:

- Downstream from fermentation equipment;
- Downstream from any equipment or device for treating wastewater;
- Upstream from washrooms; and
- Easily accessible.

**Supporting compliance**

The intent of this requirement is that both operators and Metro Vancouver staff will be able to gather a representative sample of the wastewater produced from a fermentation operation. Examples of sampling points for operations with or without treatment equipment are shown in Figures 1 and 2.

**In practice**

The sampling point will be different based on the scale and type of operation. Fermentation operators are strongly encouraged to contact regulation staff to confirm their plans before installing a sampling point. Regulation staff would be pleased to provide guidance and suggestions on the appropriate sampling point type and location.

---

**Figure 1: Example of sampling point for fermentation operations with treatment equipment**

- Fermentation Equipment
- Treatment Equipment
- Sampling Point
- Washrooms
- Sewer

**Figure 2: Examples of sampling points for fermentation operations without treatment equipment**

- Fermentation Vessel
- Sink
- Spigot or Check Valve
- Trade Waste Interceptor

In some cases, samples can be drawn directly from a carboy or other small fermentation vessel.

In operations that rinse the fermentation vessel into a sink, it may be possible to simply plug the sink and take samples from there.

Installing a spigot or check valve, either underneath a sink or further downstream, may be considered an acceptable sampling point.

It may be possible to use an existing trade waste interceptor, as long as it is accessible and upstream of washrooms.

Sampling point must be located upstream of washrooms and other sources of wastewater unrelated to fermentation.

Please contact regulatory staff to discuss your options prior to installing a new sampling point.
Cleaning and sterilizing activities for fermentation operations can impact the pH levels of wastewater which can damage pipes and can cause chemical imbalances that may be dangerous for workers in the sewer. This requirement ensures wastewater is tested regularly and adjusted to meet appropriate pH levels.

**Bylaw requirement**

Each operation is required to monitor and record wastewater pH. On days operators clean and sterilize fermentation equipment, they must measure and record pH at least once. The pH level must be measured immediately after sampling using an onsite pH meter.

Bottles are not considered fermentation equipment and therefore are excluded from the sampling requirement.

pH monitoring should begin once the sampling point is installed, to determine whether the wastewater complies with the Sewer Use Bylaw range of 5.5 to 10.5.

By October 31, 2016, all operations are required to submit a pH Characterization Report showing their daily pH results. Metro Vancouver recommends using the form provided on page 10, which is also available on Metro Vancouver’s website. The Characterization Report must include all data collected between July 1 and September 30, 2016.

Other types of forms, such as a calendar, may be used by operators as long as the required information (date, time, pH) is clearly provided.

If the Characterization Report shows an operation is discharging wastewater with a pH outside the 5.5 to 10.5 range they will be required to submit a Compliance Plan to Metro Vancouver or City of Vancouver regulatory staff by January 31, 2017.

The Compliance Plan will detail the works and/or procedures the operator will undertake to treat the wastewater to fall within the pH range. See page 11 to view the elements of a Compliance Plan.

Wastewater pH levels for all operations must be in compliance effective July 1, 2017.

**Supporting compliance**

In order to obtain a representative and accurate pH reading, fermentation operators should use a digital handheld pH meter. Meters can be obtained from a scientific supply retailer.

Operators should not use pH paper strips (paper) since they do not provide an accurate measure of wastewater pH.
Records are required so regulatory staff can confirm operators are complying with the bylaw when they inspect the facility. Record keeping can also help operators understand the nature of their wastewater over time.

**Bylaw requirement**

Operators are required to keep the following records:

- Hectolitres (hl) of packaged product being produced per calendar month
- Dates, times and results of pH testing

Operators must maintain records of monthly hl of product. Copies of data recorded by operators for tax purposes (Canada Revenue Agency) would be acceptable. Record keeping of daily pH testing must begin July 1, 2016.

These records must be kept at the facility and available for inspection for a minimum of two years.

**Supporting compliance**

Metro Vancouver has created a simple template for recording pH testing that can be copied from this guide (see page 10) or downloaded from the Metro Vancouver website and used to track this data.

Other types of forms, such as a calendar, may be used by operators as long as the required information (date, time, pH) is clearly provided.

The Characterization Report noted in Requirement 3 is all data collected between July 1 and September 30, 2016.
Requirement 5: Pay treatment fees

Treatment fees are designed to recover the costs of conveying and treating the wastewater from fermentation operations.

**Bylaw requirement**

All fermentation operations are required to pay an annual amount for treatment fees based on their annual production from the previous year. The annual fees are presented in the fee table, at right.

Treatment fees will be invoiced within the first six months of each calendar year beginning in 2016.

Metro Vancouver will determine the appropriate fee based on information collected for Provincial or Federal government agencies for tax purposes, or an operator’s records if it is a new operation.

### TREATMENT FEE TABLE

#### OPERATIONS PRODUCING BEER, CIDER OR WINE

<table>
<thead>
<tr>
<th>Production (hl)</th>
<th>Annual Treatment Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 1000</td>
<td>$250</td>
</tr>
<tr>
<td>1001 – 2000</td>
<td>$750</td>
</tr>
<tr>
<td>2001 – 3000</td>
<td>$1,250</td>
</tr>
<tr>
<td>3001 – 4000</td>
<td>$1,750</td>
</tr>
<tr>
<td>4001 – 5000</td>
<td>$2,250</td>
</tr>
<tr>
<td>5001 – 6000</td>
<td>$2,750</td>
</tr>
<tr>
<td>&gt; 6001</td>
<td>$3,500</td>
</tr>
</tbody>
</table>

#### OPERATIONS PRODUCING SPIRITS

An annual $100 treatment fee will be charged to distilleries. Operations with mixed production (e.g. brewery and distillery at one site) do not pay the annual treatment fee for spirits if they produce beer, cider or wine.

Requirement 6: Pay administrative fees

Administrative fees recover the costs to administer and enforce the bylaw. These costs include staffing, sampling and analysis.

**Bylaw requirement**

Operators are required to pay an annual administration fee of $200 to Metro Vancouver or the City of Vancouver to cover the costs of regulating fermentation operations under this bylaw.

Regulatory fees will be invoiced within the first six months of each year and are payable by the date specified.
Off-spec product (bad batches) is very high in Biochemical Oxygen Demand (BOD) which can negatively impact the region’s wastewater treatment plants.

Off-spec management depends on the volume produced:

- **Off-spec over 100 litres and under 2000 litres per day**: notify Metro Vancouver or the City of Vancouver by phone or email and then discharge. No response is required from Metro Vancouver or the City of Vancouver. Record the date, time and volume of off-spec in the appropriate section of the Monthly Reporting Form.

- **Off-spec over 2000 litres per day**: contact Metro Vancouver or the City of Vancouver by phone, email or online and obtain authorization before discharging to the sewer. Record the date, time and volume of off-spec in the appropriate section of the Monthly Reporting Form. Metro Vancouver/City of Vancouver will typically respond to your notification within one to two business days.

This requirement comes into effect immediately.

**Contact information**

**Metro Vancouver:**
Call: 604-432-6200
Email: regulationenforcement@metrovancouver.org

**City of Vancouver:**
(for operations in the City of Vancouver only)
Call: 3-1-1
Email: environmentalprotection@vancouver.ca
Fermentation Operations Bylaw Reporting Form

Instructions: On days that you clean and sterilize fermentation equipment, measure and record wastewater pH at least once.

Date: ________________________ MONTH ___________________ YEAR ________________

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>pH</th>
<th>Sampling point (indicate location if more than one)</th>
<th>Sampled by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Off-spec discharge report

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Compliance Plan Overview

A compliance plan is a document which includes:
- a statement of objectives
- a description of the approach that will be taken to meet the objectives
- a schedule

The compliance plan must outline your approach to resolving the compliance issue and may involve the use of your in-house resources or the services of a qualified consultant.

Statement of Objectives

The statement of objectives must define what is to be achieved by the compliance plan and must include a compliance date.

Description of Approach

The solution to a non-compliance issue may be immediately evident or may require further study and evaluation of alternatives. Alternatives may include:
- modification to the process generating wastewater
- modification to procedures
- repair of defective equipment, or
- installation of new treatment works.

Schedule

A schedule for completion should be included which contains a timeline of design, procurement, construction, and system commissioning.

Metro Vancouver Review

In reviewing the compliance plan, Metro Vancouver will evaluate the statement of objectives, the commitment of resources, and the proposed schedule. Metro Vancouver will review the compliance plan and respond with comments. Metro Vancouver's evaluation of the compliance plan and recommendations will consider
- the appropriateness of the alternatives
- data quality
- soundness of the recommendations, and
- the implementation schedule.

Implementation of the Compliance Plan

When implementing the compliance plan, you will be required to submit regular progress reports to Metro Vancouver updating the status of the activities listed in the submitted schedule. Report frequency will be determined following completion of Metro Vancouver's evaluation.

Completion

The compliance program is complete when you have successfully demonstrated full and consistent compliance with the requirements of the Fermentation Operations Bylaw through a compliance verification process.

Fermentation Operations Bylaw Implementation Schedule

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Starts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove solids</td>
<td></td>
</tr>
<tr>
<td>a. Discharge of coarse solids prohibited</td>
<td>November 27, 2015</td>
</tr>
<tr>
<td>b. Max. concentration of TSS must not exceed 1,200 mg/l</td>
<td>January 1, 2017</td>
</tr>
<tr>
<td>2. Install a sampling point</td>
<td>July 1, 2016</td>
</tr>
<tr>
<td>3. Monitor and treat wastewater pH</td>
<td></td>
</tr>
<tr>
<td>a. Record pH</td>
<td>July 1, 2016</td>
</tr>
<tr>
<td>c. Submit Compliance Plan (only if directed by Metro Vancouver/City of Vancouver)</td>
<td>By: January 31, 2017 if applicable</td>
</tr>
<tr>
<td>4. Keep records</td>
<td></td>
</tr>
<tr>
<td>a. Record hl/month</td>
<td>November 27, 2015</td>
</tr>
<tr>
<td>b. Record pH on days when cleaning and sterilizing occur</td>
<td>July 1, 2016</td>
</tr>
<tr>
<td>5. Pay Treatment Fees</td>
<td>Invoices sent to operators between January and June every year beginning in 2016</td>
</tr>
<tr>
<td>6. Pay Regulatory Fees</td>
<td>Invoices sent to operators between January and June every year beginning in 2016</td>
</tr>
<tr>
<td>7. Manage off-spec product</td>
<td>November 27, 2015</td>
</tr>
</tbody>
</table>
Important contact information

Metro Vancouver:
Call: 604-432-6200
Email: regulationenforcement@metrovancouver.org

City of Vancouver:
(for operations in the City of Vancouver only)
Call: 3-1-1
Email: environmentalprotection@vancouver.ca

Metro Vancouver
Fermentation Operations
Bylaw Guide

Spring 2016