



FACTSHEET

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CONSIDERATIONS WHEN DETERMINING DISCHARGE LIMITS

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Introduction

There are numerous laws and regulations that are designed to protect the health of Canadian water bodies from the improper disposal of wastewater. Different regulations at the federal, provincial, and municipal level can govern how an operation must handle its wastewater, and these regulations will also apply to the disposal and management of vegetable wash and process water. Due to the complexity of these legal documents and the various regulations at different levels, determining what 'is legal' can be not only very confusing but also frustrating. It is not always clear under what regulation a specific operation may fall. However, it is usually up to the discretion of the regulating officer to decide how each situation will be handled. The following is an attempt to summarize the available information on wastewater discharge regulations.

Sewage Discharge Regulations under Ontario Building Code

There are different types of sewage: sanitary sewage (wastewater from a domestic source), storm water (water runoff from a weather related event that flows over one's property), and process wastewater (water from an industrial process). An operation with a combined daily sewage discharge volume of **less than 10,000 L/day** may not be required to apply for an Environmental Compliance Approval (ECA) from the Ministry of the Environment and Climate Change (MOECC). Rather, sewage discharges less than 10,000

L/day may be regulated under Section 8 of the Ontario Building Code if the **discharge is to a properly engineered subsurface leaching bed** (septic system). If this is the case, there are certain factors that need to be considered.

- The 10,000 L/day (peak flow - not average) includes all sewage generated on the property, residential, employee bathrooms, kitchens, etc., as well as any wastewater produced by the commercial operation. However, if daily flows exceed 10,000 L/day one could choose to treat the excess water in a different manor (other regulations would then apply). Generally, sewage systems built under the building code are for the management of domestic sanitary sewage but Section 8.1.3.1(3) states that:
"Where industrial process waste water is treated to the contaminant levels found in domestic sanitary sewage, it may be discharged to a leaching bed provided the treatment unit and sewage system are designed in accordance with good engineering practice."
- Sewage systems that discharge to the environment are classified as 'class 4 sewage systems' and they must contain a 'treatment unit' (treatment technology) that is connected to a subsurface leaching bed.
 - The 'treatment unit' must produce an effluent quality that meets the standards found in CAN/BNQ 3680-600, "Onsite Residential Wastewater Treatment Technologies". Only two parameters are regulated (30 day average concentrations):

- **Total Suspended Solids (TSS) and Carbonaceous Biochemical Oxygen Demand (CBOD), both at 10 mg/L.**
- Even though only these two parameters are regulated, the overall water quality needs to be, “treated to the contaminant levels found in domestic sanitary sewage”.
 - There is a list of technologies approved by the building code that are capable of meeting these discharge standards and they should be employed as necessary. If other technologies are used that are not found on the list, they can be approved as ‘engineered alternatives’ if they have a proven track record.
 - The leaching bed must meet the design standards found in Sec. 8.7 of the building code.
- Effluent water samples must be taken once/year and be analyzed for TSS and CBOD to monitor the performance of the treatment unit and to confirm compliance.
- Building permits for sewage systems are required as with any new construction regulated by the building code.
 - Note: Approval for discharge under the building code is more easily achieved than an MOECC issued ECA, but it is still important to work with knowledgeable parties (consultants and engineers) to ensure that the installed system will function properly, remain compliant, and not pose a risk to human health or the environment.
- The focus here will be on wastewater discharges only, or ‘sewage works’, as ECAs are needed for a number of other activities as well (solid waste management, gas emissions, etc.)
- Discharge limits are set by the MOECC and if they are not followed, the MOECC can take legal action against the producer under the Environmental Protection Act and Ontario Water Resources Act (OWRA) (MOECC 2012a).
 - The guilty party may be fined, be ordered to purchase and install proper wastewater management technologies, or their operation may be shut down.
- Discharge limits are set for each individual operation on a site-to-site basis (MOECC 2012a) and as a result, when designing a water treatment system, the farm consultant needs to estimate what the limits will be. This can make the process difficult for consultants when creating water management plans.
 - It is recommended to plan for the worst and ensure that even if the most stringent limits are applied, compliance will be possible.

Discharge limits are not randomly chosen, and it is possible to predict what they may be. The MOECC sets discharge limits based on legislation found in section 53 of the OWRA (MOECC 2012a).

- This legislation outlines the Provincial Water Quality Objectives and states that no discharge should compromise the current state of a receiving water body.
 - This simply means not to ‘make it worse’.
 - Discharge limits take into account the background quality of the water body and its assimilative capacity (ability to ‘self-purify’).
- It is also possible to make assumptions as to what the discharge limits will be by looking at the regulations applied to other sectors.

Sewage Discharge under Environmental Compliance Approvals (ECA) from the MOECC

When an operation discharges water to the environment, the MOECC requires they apply for an ECA (unless the discharge falls under regulation by the building code)

- An ECA is an agreement between the MOECC and the operation that outlines the kinds of discharges that will be acceptable.

Table 1: A summary of the known discharge limits under different regulations and the Provincial Water Quality Objectives for some common parameters of concern in vegetable washwater. Note: other parameters not included in this table may also be considered when regulating discharges (e.g. metals).

<i>Units are mg/L unless otherwise indicated</i>	Provincial Water Quality Objectives	Ontario Building Code	Ontario Water Resources Act	Fisheries Act ^a
This act applies specifically to:	Target water chemistry for Ontario water bodies	<10,000L/day discharge to subsurface leaching beds	Any discharge (unless it is regulated by the building code)	>100,000 L/day discharge to water bodies with fish
pH (no units)	6.5 - 8.5	-	Site specific	-
Total Suspended Solids (TSS)	-	10	Site specific	25
Ammonia	0.02	-	Site specific	1.25
Nitrate	-	-	Site specific	-
Nitrite	-	-	Site specific	-
Total Kjeldahl Nitrogen (TKN)	-	-	Site specific	-
Total Phosphorous	0.01 - 0.03	-	Site specific	-
CBOD (organic matter)	-	10	Site specific	25
Dissolved Oxygen	4 - 8 (temperature dependent)	-	Site specific	-
<i>E. coli</i> (CFU/100mL)	100	-	Site specific	-

^a Mostly focused on regulating municipal sewage treatment plants

- Recently the MOECC has started heavily regulating discharges from greenhouses and they have cited the regulations set for greenhouses when discussing what may be imposed on vegetable washers.
- Predications should only be used as guidelines as ECAs are issued on a site-to-site basis and even neighbouring farms could be given different discharge limits.

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