

The Effluencer

VOL.7

Acute Lethality



Under the [Wastewater Systems Effluent Regulations](#), effluent is considered **acutely lethal** when at 100% concentration (undiluted) it kills more than 50% of the rainbow trout subjected to it during a 96-hour period.

For all wastewater systems that are subject to the Regulations, the owner or operator is responsible for ensuring that effluent deposited from its final discharge point:

- ▶ is not acutely lethal; and
- ▶ meets established limits on the concentrations of certain pollutants (carbonaceous biochemical oxygen demand (CBOD), suspended solids, total residual chlorine and un-ionized ammonia) (subsection 6(1)).

The non-acute lethality standard applies, even if the owner or operator is not required to sample and test, unless the release is covered under a transitional or temporary authorization.

Sampling Procedure for Systems that Deposit an Average Daily Effluent Volume Greater than 2,500 m³

Acute lethality testing is required for wastewater systems with an average daily effluent volume greater than 2,500 m³ per day. The average annual daily volume corresponds to the daily volume of effluent deposited via all the final discharge points of the wastewater system during the previous calendar year. It is automatically calculated by ERRIS.

Minimum frequency of testing is prescribed based on the type of system. Owners or operators may conduct additional tests at their discretion.

Transitional authorization holders have an exemption and are not required to test for acute lethality, regardless of treatment type and size. However, if an acute lethality test is performed, results must be included in the monitoring report.

Intermittent Wastewater Systems

Per subsection 11(1), the owner or operator of an intermittent lagoon system must take a sample of effluent during each discharge period on the day the deposit begins and determine whether it is acutely lethal. An intermittent lagoon could be discharged up to four times per year, and therefore, up to four samples of effluent may be required in a year.

Continuous Wastewater Systems

Normal Sampling Frequency

The owner or operator of a continuous wastewater system must take samples of effluent at the minimum sampling frequency outlined in the chart below (subsection 11(2)) and determine whether the samples are acutely lethal. The average daily effluent volume deposited annually referenced below must be based on the previous calendar year.



Average Daily Volume Deposited Annually (m ³)	Minimum Sampling Frequency	Minimum Time Between Samples
> 2,500 and ≤ 50,000	Quarterly	At least 60 days after the previous sample
> 50,000	Monthly	At least 21 days after the previous sample

Reduced Sampling Frequency

The minimum sampling frequency for continuous systems can be reduced if samples were determined not to be acutely lethal for a specified period, as outlined in the chart below (subsection 11(6)). The average daily effluent volume deposited annually referenced below must be based on the previous calendar year.

Average Daily Volume Deposited Annually (m ³)	Number of Consecutive Samples Not Acutely Lethal	Reduced Frequency for Sampling
> 2,500 and ≤ 50,000	4 consecutive quarters where a discharge occurs	Yearly, but at least 6 months after the previous sample
> 50,000	12 consecutive months where a discharge occurs	Quarterly, but at least 60 days after the previous sample

Procedure for an Acutely Lethal Sample

For systems discharging more than 2,500 m³, if any sample is found to be acutely lethal, the effluent **is considered an unauthorized deposit under the *Fisheries Act (the Act)***.

Unauthorized deposits are subject to specific notification, reporting and mitigation requirements outlined in the Regulations and the Act, as applicable. You are required to:

- ▶ notify an inspector, a fishery officer, or a designated authority without delay (section 19.1 of the Regulations and [subsection 38\(5\)](#) of the Act)
- ▶ take all reasonable measures to prevent, counteract, mitigate or remedy any damages that result, or that might reasonably be expected to result, from such a deposit ([subsection 38\(6\)](#) of the Act), and
- ▶ submit a written report as soon as possible after the occurrence

For more guidance on reporting an unauthorized deposit, please consult the following factsheet: [procedure for reporting unauthorized wastewater deposits](#).

If you have a sample that is determined to be acutely lethal, **you must also collect a sample without delay** and do an acute lethality test. You must then sample every two weeks, with at least seven days between samples (subsection 11(4)).

Of note:


- ▶ If you have an intermittent lagoon and your discharge ends before you are able to conduct all additional testing, you are required to continue with the increased testing frequency once discharge resumes.
- ▶ If you have a transitional authorization and receive an acutely lethal test result, there are no requirements for further testing.


Only when three consecutive samples are found not to be acutely lethal, can the sampling frequency return to normal sampling frequency (subsections 11(1) and (2)). If the effluent continues to be acutely lethal, increased sampling frequency continues.

The last of your three consecutive samples can also be used to fulfill your requirements for normal sampling frequency. The Regulations allow you to fulfill both requirements with only one sample. Here is an illustrative example:

July 2024						
S	M	T	W	T	F	S
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

August 2024						
S	M	T	W	T	F	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

 Regular sampling frequency

 Additional testing required when effluent becomes acutely lethal

Small systems that deposit an average daily effluent volume less than or equal to 2,500 m³

Acute lethality testing is not required for wastewater systems with an average daily volume of less than or equal to 2,500 m³ (subsections 11(1) and (2)). However, you may decide to test for acute lethality on occasion to determine if the effluent is acutely lethal.

If you test for acute lethality, you must keep records onsite (paragraph 17(f)) and enter all test results in the corresponding monitoring report(s).

If any sample is found to be acutely lethal, the effluent is considered an unauthorized deposit under the Fisheries Act. You must consider your responsibilities under the Act ([subsection 38\(6\)](#) of the Act) as stated above. However, there is no need to do additional testing following an acute lethality failure.

For more guidance on reporting an unauthorized deposit, please consult the following factsheet: [procedure for reporting unauthorized wastewater deposits](#).

Testing Methods

The acute lethality test must be performed by an accredited laboratory (section 16) in accordance with:

- ▶ The procedure set out in Section five or six (Single or Multi-Concentration Test) of the [Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout](#) (EPS 1/RM/13, Second Edition), or
- ▶ The above Method in conjunction with the [Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout](#) (EPS 1/RM/50) (section 15).

Reporting

Each sample tested for acute lethality must be included in the monitoring report for the period in which the sample(s) were taken (subparagraph 19(1)(b)(viii)).

The following information is required to be submitted through the [Effluent Regulatory Reporting Information System](#) (ERRIS):

- ▶ the date on which the sample(s) were taken;
- ▶ the type of test used (Single or Multi-Concentration Test) when performing the EPS 1/RM/13 procedure for rainbow trout testing;
- ▶ whether the EPS 1/RM/50 procedure for pH stabilization was used or not; and
- ▶ whether the sample(s) were acutely lethal or not.

For Additional Information

Visit the Wastewater website at Canada.ca/wastewater

If the information you need is unavailable on our website, please contact Environment and Climate Change Canada at eu-ww@ec.gc.ca.

Disclaimer

This information does not in any way supersede or modify the *Wastewater Systems Effluent Regulations* or the *Fisheries Act*, or offer any legal interpretation of those Regulations or Act. Where there are any inconsistencies between this information and the Regulations or Act, the Regulations or Act take precedence, respectively. A copy of the Regulations is available at the following website: <https://laws-lois.justice.gc.ca/eng/Regulations/SOR-2012-139/FullText.html>

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