

ESR Fact Sheet – Wastewater Testing

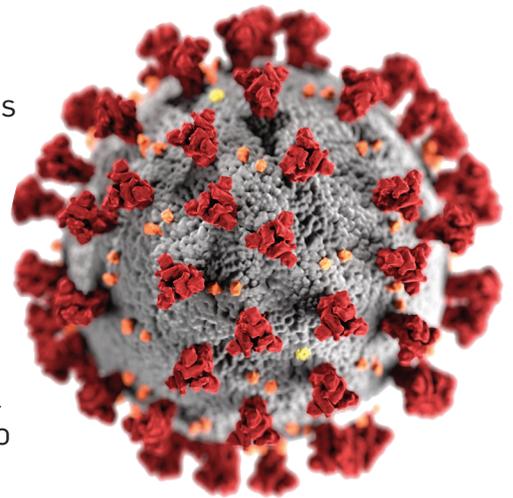
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What is wastewater and why is it being tested?

Wastewater is used water from toilets, showers, baths, basins, sinks and laundries that passes through the sewerage system. ESR is testing this wastewater because the presence of viral fragments shows that SARS-CoV-2 – the virus that causes COVID-19 – has been found in the sewerage system catchment.

Samples are currently being collected from wastewater treatment facilities throughout New Zealand.

This early warning can lead to increased local vigilance and clinical testing and allow health authorities to target public health advice to prevent transmission.



How do viral fragments get into wastewater?

People who have or recently had COVID-19 may shed the virus on used tissues, off their hands and skin when washing and in their stool. It can take several weeks for someone to stop shedding the virus. Over time the virus breaks down and small non-infectious pieces of the virus (called 'viral fragments') can enter wastewater and travel through the sewer network.

How are wastewater samples taken and tested?

Samples of untreated wastewater are collected from sites across the sewerage network, including from the inlet to wastewater treatment plants. The samples are taken to a ESR laboratory and analysed for fragments of SARS-CoV-2 – the specific coronavirus associated with COVID-19.

Poliovirus, norovirus and adenovirus are also routinely monitored in wastewater around the world.

How are samples collected?

The preferred option is called the 'automatic composite sample'. This is where a pump automatically collects a small volume of wastewater every 15 minutes over 24 hours. These are already set up at most wastewater treatment plants and most of the samples are taken this way.

ESR receives one litre samples and then our laboratory staff work to process them as quickly as possible. First, we take up to 500 ml from those samples and store the rest. As viruses can be attached to the solids (poo) and be in the water, we use methods that will recover viruses from both parts, so we don't lose any virus. This is important if we don't expect a high level of virus in the sample. Then we concentrate it all down to about half a teaspoon, basically removing all the water and leaving the virus behind.

From there it's the same process as you go through for regular testing for the virus of someone's swab, we extract the viruses, turn the RNA into DNA and run it on a PCR to tell us if the sample is positive or negative for the virus.

Continued on next page

Does a positive wastewater test result always mean that there is an active case of COVID-19 in a local area?

No. A positive wastewater test result may be due to a person or people with COVID-19 being in the early active infectious phase but it may also be due to someone or people who are no longer infectious continuing to shed the virus. The person or people shedding the virus may be local or visitors to the community.

Can I get COVID-19 from wastewater?

No. There's no evidence that the virus causing COVID-19 can be transmitted through wastewater, either before or after treatment. The viral fragments themselves are not infectious.

Is my drinking water safe?

There is no impact on your local water supply from wastewater testing. Drinking water supplied by water utilities is safe to drink and for normal household uses.

Where can I get more information?

[ESR Wastewater FAQs](#)

[ESR Scientists lead the way on Coronavirus wastewater testing](#)