

Environmental surveillance in Public health

SARS-CoV-2 monitoring in wastewater

Key facts

Simple

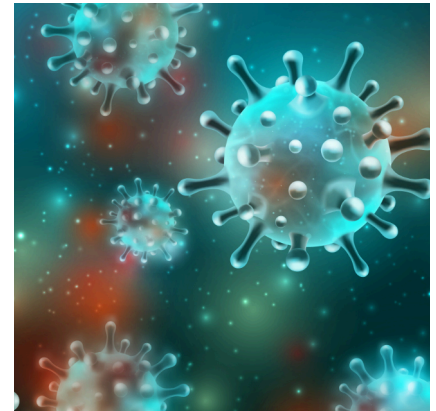
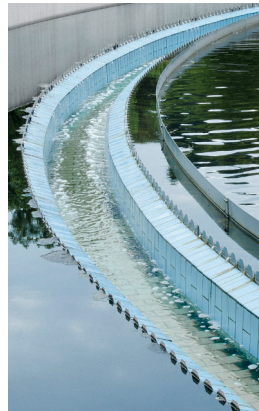
- Easy workflow with minimized hands-on-time
- No trained laboratory personnel needed

Fast

- Get your results in less than 90 minutes
- No need to wait for external analysis results
- Always be one step ahead and make the right decisions on time
- Adjust health regulations before incidences rise

On-site

- Save time by doing the analysis at your site
- Always keep the full control from sampling to result
- No time-consuming shipping process of your samples



As an early warning system, the detection of SARS-CoV-2 in wastewater is becoming increasingly important for environmental surveillance. Therefore, Endress+Hauser BioSense has developed a completely new, simple, fast and very efficient analysis system for detecting viral RNA in wastewater on-site.

Monitoring of SARS-CoV-2 viral loads in wastewater is a powerful tool in public health to

- Warn communities or municipalities about the (re)emergence of the virus
- Detect “hot spots” and engage in targeted COVID-19 management
- Detect the number of unreported cases of asymptomatic persons
- Monitor the impact of social safety precautions
- Monitor trends with a non-invasive method
- Increase, relax or introduce restrictions
- Introduce and offer testing obligations in a timely manner

Application examples



Municipalities & Cities



Marine vessels & Cruise ships



Hotels & Resorts



Defined group of people

The new Endress+Hauser BioSense Analysis System enables rapid detection of even small amounts of SARS-CoV-2 virus particles. By combining patented sample concentration technologies with centrifugal microfluidics and state of the art automation, the system is adaptable at any time to cover further health related parameter.

The entire lysis, RNA extraction and PCR analysis is performed without any manual intervention. All reagents required for RNA extraction, as well as multiplex PCR are prestored on the closed Detection Module and are processed automatically during the analysis process. This significantly reduces the risk of analysis errors or contamination.

By eliminating the need for error-prone pipetting and handling of harmful chemical reagents, the work area is kept safe, and the health of your staff is optimally protected. After the analysis is complete, the quantitative results can be conveniently read from the device display.

By obtaining results faster, public health authorities can be informed just before diagnostic test results are officially known or reported.

Moreover, environmental surveillance is more comprehensive as it also includes people without symptoms and those, who are clinically false-negative tested. In addition, wastewater monitoring helps to reduce unpleasant swabbing for those with less compliance like children or elderly people in need of care.

Simple workflow for efficient SARS-CoV-2 monitoring



Step 1: Collecting & Preparing the sample

Just 30 millilitres of wastewater are required. There is no need for special pre-treatment like homogenization or filtration.



Step 2: Sample Concentration

Using a proprietary Concentration Module, analyte levels can be increased without the need for centrifugation, filtration or flocculation within 30 minutes.



Step 3: Analysis

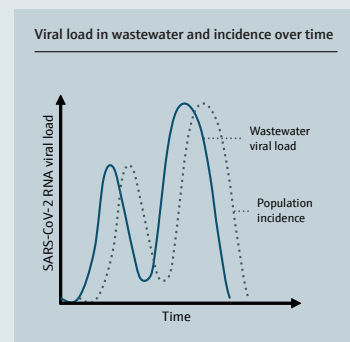
RNA extraction followed by real-time PCR is automatically performed on a special Detection Module which is inserted into the Endress+Hauser BioSense Device.



Step 4: Results

Integrated analysis algorithms automatically classify results into low, medium & high viral load. The quantification of copies per milliliter is shown on the device display.

In the case of SARS-CoV-2 infection, viral RNA is excreted into wastewater in some cases days before the first signs of the disease appear. With the help of wastewater monitoring, the quantitative results of the viral load measurement can already give an early indication of the change in the COVID-19 population incidence.



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