

ProSample for COVID RNA Detection

SIMPLIFYING WASTEWATER SURVEILLANCE WITH AUTOMATIC SAMPLING



Singapore has initiated a pilot WSP for selected buildings / complexes to screen for COVID RNA, an indication of COVID infection in a population.

While the world continues to search for a vaccine against COVID-19, the spread of the virus for the moment can only be limited through “prevention,” “early detection,” and “control.”

Given the high degree of asymptomatic spread of the COVID-19 virus, testing individuals with symptoms isn't enough to stem the spread, nor is it physically viable or cost-effective to test all individuals in a community on an ongoing basis.

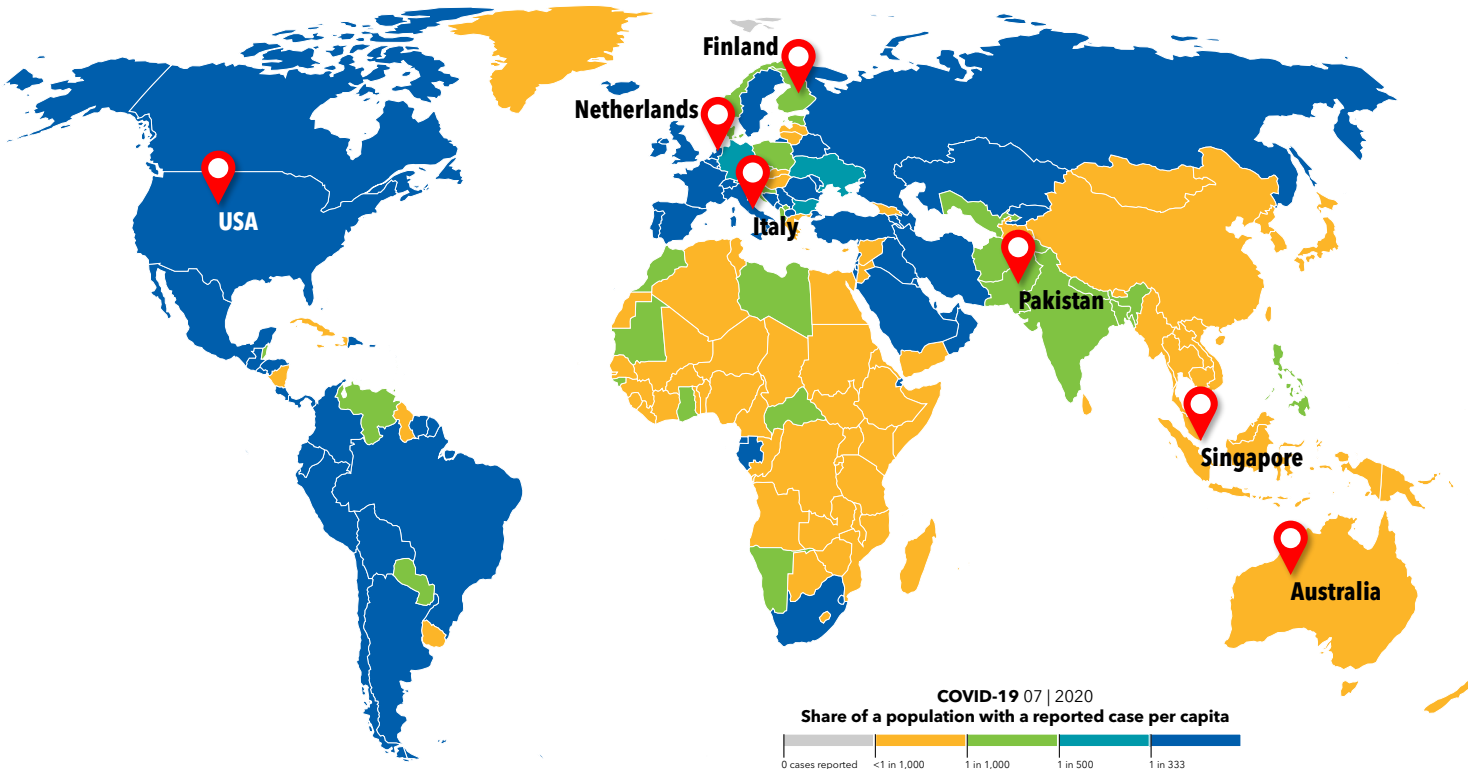
A more coherent strategy is “surveillance.” People infected with SARS-CoV-2 shed the virus in their stool even before they show symptoms of COVID-19. Through a Wastewater Surveillance Program (WSP), the amount of viral material in wastewater can reveal the level of COVID-19 spread in a population, and trigger necessary response plans and mitigation actions, such as individual testing and isolation. This Wastewater Based Epidemiology (WBE) is a critical tool in containing and mitigating COVID-19 outbreaks. At the time of publishing this application note, numerous countries, such as Australia, Italy, Finland, Netherlands, USA, and Pakistan, have implemented WSPs.



Automatic sample collection directly from the sewer.



Countries with Wastewater Surveillance Programs

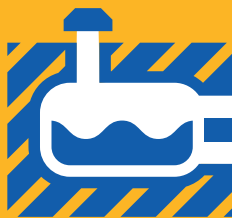


“...along with Singapore numerous countries, such as Australia, Italy, Finland, Netherlands, USA, and Pakistan, have implemented Wastewater Surveillance Programs.”

Wastewater Surveillance Program



1
Human waste is flushed into sewage system.



2
Collection of samples occurs at the central sewer outflow location from the building or complex.



3
These samples are then collected and analysed by a lab for the presence of COVID RNA.



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Project Scope

Singapore has initiated a pilot WSP for selected buildings/ complexes to screen for COVID RNA, and it intends to expand its surveillance network to the general population. The extensive wastewater network in Singapore not only serves the whole country, but lateral pipes serve individual buildings, making WSP the perfect preventative measure against the spread of COVID-19 at a very defined community level.

With 12 programmable settings, which is rarely available in most other automatic samplers, users can configure the instrument to collect wastewater samples, which provides the most accurate representation of the residents in the building and the potential presence of COVID-19.

Solution

The YSI ProSample is a lightweight automatic sampler with 12 programmable settings that allow users to easily configure, deploy, sample, and move between locations. The collection of water samples in the sewer system is accomplished by deploying auto-samplers intake tubes in manholes adjacent to buildings/ complexes, at the central sewer outflow location from that building/ complex. These samples are then collected and analyzed by a laboratory for the presence of COVID RNA.

The sampler can collect composite samples (multiple samples in a single bottle) as well. With 12 programmable settings, which is rarely available in most other automatic samplers, users can configure the instrument to collect wastewater samples, which provides the most accurate representation of the residents in the building and the potential presence of COVID-19. Singapore is fine-tuning its sampling methodology by sampling during peak hours in the morning and evening.



YSI ProSample display panel with field battery 12V/7.2Ah. The battery can be easily upgraded to 12V/11Ah or more. Otherwise, a solar panel is recommended for intensive WSP, which collects hourly samples.



YSI ProSample kept in a cabinet to guard against theft and vandalism.



Wastewater samples are collected by a field team and sent to a laboratory for COVID RNA testing.



Wastewater samples collected using a composite sampling program by YSI ProSample.

APPLICATION NOTE XA00133

Result

Conducting this efficient sampling solution saves time and money and focuses efforts on COVID-19 detection. Water sampling at a sewer node associated with a specific building allows authorities to either detect the virus or declare the building COVID free. In the event of a positive COVID RNA test, health authorities can conduct an intensive swabbing strategy on residents of the building to eliminate or minimize the spread of the virus.

Singapore is a global leader in the detection of COVID-19 and halting its potential spread throughout society. Despite the massive potential to stem the spread of

COVID-19 using WSP, many countries are still putting such plans into action while Singapore is rapidly increasing its surveillance. Besides improving spatial sampling methodology, the country is testing temporal sampling methodologies to improve the ability to track the virus's transmission.

Singapore Xylem Analytics will provide training, support, and spare parts for the YSI ProSample units so that these instruments continue to perform effectively and efficiently in the field. At the same time, the analytics team will also be assisting our customers in plans to extend their geographic coverage.



Don't get your hands dirty.

Automatic sample collection directly from the sewer.



ProSample P and ProSample P-12

ProSample PM and ProSample PM-12



Rapidly deploy portable units for targeted outbreak monitoring



Protect your team from hazardous sampling conditions



Automatically collect samples at times of peak water usage



Avoid bias in your sampling with consistent processes

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