

MEDIA FACT SHEET

PUB's ROLE IN WASTEWATER SURVEILLANCE DURING COVID-19 PANDEMIC

Singapore is one of the many countries that benefited from Professor Medema's work. At the onset of COVID-19, PUB alongside National Environment Agency (NEA)'s Environmental Health Institute (EHI) and other collaborators from the local universities and research institutes started to explore the testing of wastewater for SARS-CoV-2.

Support for Singapore's Wastewater Surveillance Efforts

2 The EHI initiated the wastewater surveillance for SARS-CoV-2 at the inlets to PUB's Water Reclamation Plants (WRPs) and workers' dormitories as part of the national surveillance effort to monitor and manage COVID-19 transmission in the community. With the number of cases at the workers' dormitories increasing significantly in March 2020, the wastewater samples from the workers' dormitories were analysed to affirm if there was shedding of the viral genetic materials, and if so, swab tests would be stepped-up as part of the Inter-Agency Task Force's strategy to rapidly identify and segregate affected individuals, as well as to clear dormitories that were COVID-19 free.

3 Since the start of the COVID-19 pandemic, PUB provided wastewater samples at the inlets to all our WRPs, as well as assisted with sampling within the sewer network. PUB had also supported EHI in identifying and providing access to suitable sampling locations within our sewer network for wastewater surveillance. As the surveillance activities expanded, PUB helped to identify more sewer manholes from residential areas across Singapore as well as government quarantine facilities and workers' dormitories. PUB also advised on suitable equipment and protocols for sampling at different depths within the sewer network and resolved any site issues encountered by EHI. Since then, EHI has ramped up its coverage to hundreds of sites across Singapore, including residential areas, town centres, student hostels, and welfare homes.

Ensuring the Safety of the Sanitary System, Treated Wastewater and Operators

4 As the national water agency, PUB manages the entire water loop and is responsible for the collection, production, distribution and reclamation of water in Singapore. Knowing that SARS-CoV-2 could be shed in the faeces of both symptomatic and asymptomatic cases and thus be present in wastewater, the main response and actions taken by PUB during the COVID-19 pandemic was to ensure that we were able to address i) the public concern on the safety of our NEWater which is produced from the reclamation of wastewater; ii) whether COVID-19 could be transmitted through the sanitary system; and iii) the safety of operators who were in charge of the conveyance of the wastewater and its treatment in our WRPs. The actions taken to address these areas included the following:

- i) To safeguard the conveyance of wastewater from high-risk premises, PUB administrated the installation of disinfection units for premises like community care and recovery facilities, quarantine facilities and gazetted isolation areas under the Infectious Diseases Act.

- ii) To minimise the risk of transmission through the sanitary system, PUB worked alongside the Ministry of Health (MOH) and NEA to investigate the possible routes of COVID-19 transmission in public housing and hotels. PUB advised on the sampling and testing methodology and carried out thorough checks on the sanitary system, such as identifying defects and leaks from sanitary pipes, or any obstruction in discharge stack connection, etc. We concluded that there is no direct risk of infection from the sanitary system.

- iii) To monitor the occurrence of SARS-CoV-2 in the influent to our WRP, understand its removal through different wastewater treatment processes, and to conduct risk assessment, PUB commissioned a joint study with a local research institute [Nanyang Environment and Water Research Institute (NEWRI) of Nanyang Technological University (NTU)], focusing on wastewater-based epidemiology (WBE) of COVID-19 and related markers in Singapore. The results from the viral removal / inactivation studies concluded that viral RNA in raw sewage were mostly removed by secondary treatment steps.

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