

World Sustainable Development Summit 2020

Thematic Track

'Monitoring of community wastewater for early signalling the spread of COVID-19'

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Background

The Novel Coronavirus (COVID 19) outbreak caused by infection of severe acute respiratory syndrome coronavirus 2 (SARS- CoV-2) turned out to be one of the worst pandemics of the century spreading across to 216 countries with more than 48.88 million cases recorded and 1.23 million deaths till date. The outbreak of this lesser known yet fast spreading virus soon declared as a public health emergency of international concern on 30 January 2020, has gripped governments in both developed and developing nations alike. While a high test rate has been recommended for reducing the impact of the pandemic, several research studies have highlighted the importance of Wastewater-based epidemiology (WBE) that has the potential to indicate the concentration of SARS-CoV-2 in human population through wastewater monitoring. WBE or testing waste/sewage water for the presence of pathogens including viruses has been used for several decades and successfully monitored during past outbreaks of Poliovirus, Hepatitis A and Norovirus.

Since the outbreak of the pandemic across the globe have applied WBE for studying the spread of the pandemic. Several scientific reports have emphasized the detection of, SARS-CoV-2 RNA in wastewater in countries like Switzerland, Australia, Italy, Spain, United States, China, France, Israel, Japan, Netherlands and India. In India, the presence of three SARS-CoV-2 genes were detected in wastewater sampled from old Pirana WWTP at Ahmedabad, Gujarat in July 2020 (Kumar et al, 2020). Number of gene copies in this study were found comparable to that reported in the untreated wastewaters of Australia, China, and Turkey and lower than that of the USA, France, and Spain. Another study was conducted with wastewater samples from hospitals and WWTPs of Jaipur, Rajasthan, a pandemic hotspot (red zone) since April 2020. There are various advantages of wastewater surveillance. WBE can be used in developing an early warning system as the SARS-CoV-2

RNA can be detected in human faeces a few days to a week before symptoms appear and even that in case of infected but

asymptomatic persons. Thus, WBE is a cost-effective approach for understanding the status of the disease outbreak in particular catchment as opposed to the costs involved in individually testing large number of patients. Moreover, one wastewater sample can provide data on the average infection rate of thousands of people, and the aggregated data can be useful for areas with low clinical testing rates. The approach can be used as early warning tool for the disease outbreak in community for informed and effective public health interventions. Continuous wastewater monitoring can help in understanding trends of current outbreaks and identify new outbreaks so as to prevent the occurrence of the second and third waves of the pandemic.

This thematic track titled '**Monitoring of community wastewater for early signalling the spread of COVID-19**' is being organised at an opportune policy juncture at the World Sustainable Development Summit 2021, which is hosted by The Energy Resources Institute (TERI), New Delhi. A study on the same title has been conducted by TERI, SRM Institute of Science & Technology (SRMIST) and Mu Gamma Consultants Pvt Ltd (MGC) which aimed to fill the gap in the estimation of total community disease spread in the absence of a larger coverage in testing of population by using non-invasive and economical alternatives. This thematic track event aims to share the results of the research study undertaken and discuss the policy relevance and way forward.

Key questions:

1. What does the results of monitoring community wastewater for early signalling of the spread of COVID-19 reveal for policy action?
2. How can the results of wastewater-based-epidemiology (WBE) along with clinical surveillance be utilized for mitigating the spread of the COVID-19 pandemic?
3. How can WBE be an important tool for future pandemics?