



THE WATER RESEARCH COMMISSION LAUNCH A PROGRAMME TO MONITOR THE SPREAD OF COVID-19 IN COMMUNITIES USING A WATER AND SANITATION-BASED APPROACH

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On 20 May 2020, the Water Research Commission of South Africa launched a special programme on surveillance of COVID 19 in wastewater, sanitation and health that will be using sanitation-based approaches. The programme supports the South African government's effort and interventions aimed at curbing the spread of COVID -19 such as rapid identification, testing and isolation of symptomatic people for treatment, tracing of contact cases and regular issuing of regulations on travel and social distancing and the recent community-wide COVID-19 testing initiative. The virtual launch was targeted at Government, Water Utilities, Science/Research Councils, Consultants, Universities, Research laboratories, Commercial laboratories, Pathology laboratories and attracted over 200 participants from South Africa and beyond the SA borders. In addition to presentations by the WRC core team, the programme also included remarks by the Minister of Human Settlement, Water and Sanitation of South Africa, Minister Lindiwe Sisulu, South African partner institutions i.e. the South African Medical Research Council (Professor Angela Mathee), Bloem Water (Dr Limakatso Moorosi), the South African Local Government Association (Councillor Thami Ngubane) and an international perspective by the Water Research Foundation (Dr Peter Grevatt).

The surveillance programme is aimed at facilitating knowledge sharing, stimulating research and innovations on water quality, sanitation and health and the programme objectives will be achieved through the following initiatives:

- Pilot and full-scale implementation of wastewater surveillance as a non-invasive approach for monitoring the spread of COVID-19 in communities.
- Research work and capacity building on COVID-19 in relation to water and sanitation and health.
- Knowledge dissemination through webinars and workshops.

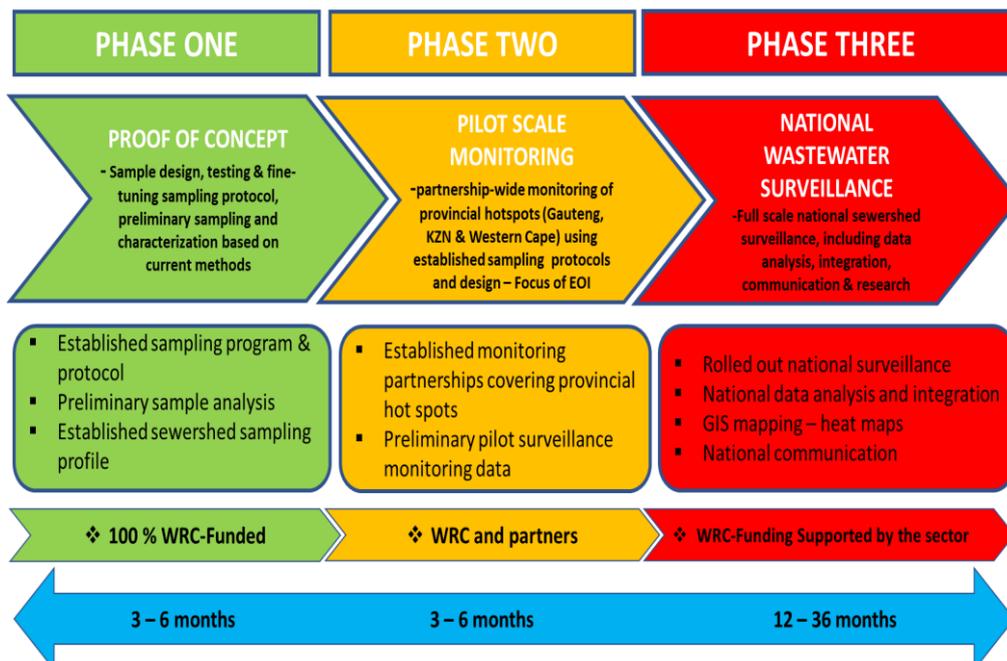
There is a lot we do not know on the COVID 19 virus, and several research initiatives are being undertaken internationally to answer the same concern we all have regarding how long the virus can survive in the wastewater and sanitation environment and under what conditions. If the virus does survive in wastewater and sanitation samples, understanding the level of risk posed to communities and implementing key strategies that involve an early warning alert of potential communal spread will be critical.

To date, the wastewater-based epidemiology approach is being piloted in developed countries where there is wide coverage of waterborne sanitation, such as the Netherlands, United States of America, Canada and Australia. While the developed world's focus is that of safety of water services personnel and using this virus as a marker to determine the prevalence and health of their residents, for a developing country like South Africa understanding the fate of the virus in water is of significance as many of our communities in rural, dense and informal settlements are highly vulnerable. Intermittent water supply, environments with limited or no drainage infrastructure as well as inadequate and improper non-Sewered sanitation systems places these communities at increased exposure to risk from the virus. The South African approach will look at both wastewater and off-grid faecal sludge samples to cover both urban communities with centralised wastewater services and the marginalised communities in informal, rural and water constrained settlements that use a

combination of on-site and non-Sewered sanitation systems. The COVID-19 surveillance data from wastewater and sanitation systems could provide South Africa with the requisite knowledge on viral prevalence and infectivity to manage the risk effectively.

In view of the prevailing water and sanitation services delivery and wastewater treatment plant operation challenges in South Africa, the country, through the Water Research Commission, is in a unique position to pioneer the development and piloting of an all-encompassing water and sanitation-focused approach for the surveillance of COVID-19 spread in water and sanitation environments of less developed communities. In this regard, an investigation of the role of water and sanitation environments in the possible transmission of SARS-CoV-2 through exposure to contaminated surface water sources, poorly treated municipal wastewater, poorly managed domestic greywater, urine and faeces of infected people is necessary. Surveillance of wastewater treatment plants therefore offers an opportunity for near-real-time outbreak data and as an early warning for resurgence of the outbreak.

The programme will be implemented in three phases, the first being the establishment of the proof of concept of presence of COVID-19 in wastewater and sanitation samples, as well as establishing sample collection and testing protocols so that monitoring results can be reliable and compared. The second phase will establish wider capacity of laboratories in South Africa and put into operation more communities into surveillance. This will be followed by the final phase facilitating the establishment of a national surveillance scale monitoring activities supported by hotspot mapping.



The expected outputs of the programme are as follows:

- Novel water and sanitation-based approach for the surveillance of COVID-19 spread in less developed communities.
- Real time tracking of COVID-19 spread and resurgence in communities.
- Understanding the fate of the virus in the water, sanitation and wastewater environment.

The successful implementation of the programme will require a collaborative approach including key local and international partnerships. Improving the techniques of wastewater monitoring as a mechanism for the long-term surveillance of COVID-19 in our population and communities will have far-reaching impact

on our capacity and resources in dealing with the disease. The idea of creating a country-wide GIS based heat map to first act as a triage mechanism to better direct the resources of the Department of Health for on-the-ground testing as a low cost community level indicator is very attractive. It will also play a valuable role in monitoring the progress of the disease and the efficacy of the interventions as part of the long-term surveillance.

Please contact Mr Jay Bhagwan at Jayb@wrc.org.za for more information on the programme or wish to partner with the WRC at any phase of the programme