

Wastewater testing and the pandemic response at the South Carolina Public Health Laboratory



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CATEGORY: **Epidemiology and Laboratory Capacity (ELC)**

CATEGORY: **Partnership and Innovation**

The South Carolina Department of Health & Environmental Control Public Health Laboratory (SC DHEC PHL) developed a statewide wastewater program for sustainable COVID-19 surveillance. This allowed them to understand disease prevalence trends at the community level to and to provide appropriate mitigation services in a timely manner.

The “What”

In response to the COVID-19 pandemic, the Centers for Disease Control and Prevention (CDC) launched the National Wastewater Surveillance System (NWSS) to coordinate and build the nation’s capacity to continually track the presence of SARS-CoV-2, the virus that causes COVID-19, in wastewater samples collected across the country. Prior to these efforts, South Carolina’s Department of Health and Environmental Control primarily relied on test results from its clinical providers for symptomatic patients to track the spread of COVID-19 in their communities. This



reliance prevented the Public Health Laboratory (PHL) from accurately capturing disease progression as asymptomatic individuals were not included in most surveillance efforts. In 2022, the SC DHEC PHL utilized Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) Enhancing Detection and Expansion funding to implement wastewater testing on over 450 specimens provided by nine wastewater treatment facilities spanning the state. To decrease the amount of time needed to concentrate wastewater samples for testing, the PHL transitioned to more efficient testing workflows and created additional laboratory space for its wastewater collection program. The PHL also hired a dedicated wastewater laboratory technologist in 2022 under ELC funding and maintained bi-monthly meetings via conference calls between the PHL and Epidemiology to improve wastewater surveillance best practices. Currently, ELC funding supports wastewater testing for 18 samples per week and one full-time laboratorian. ELC funding also allows the PHL to provide molecular testing to long-term care facilities, for free, in response to SARS-CoV-2 outbreaks.



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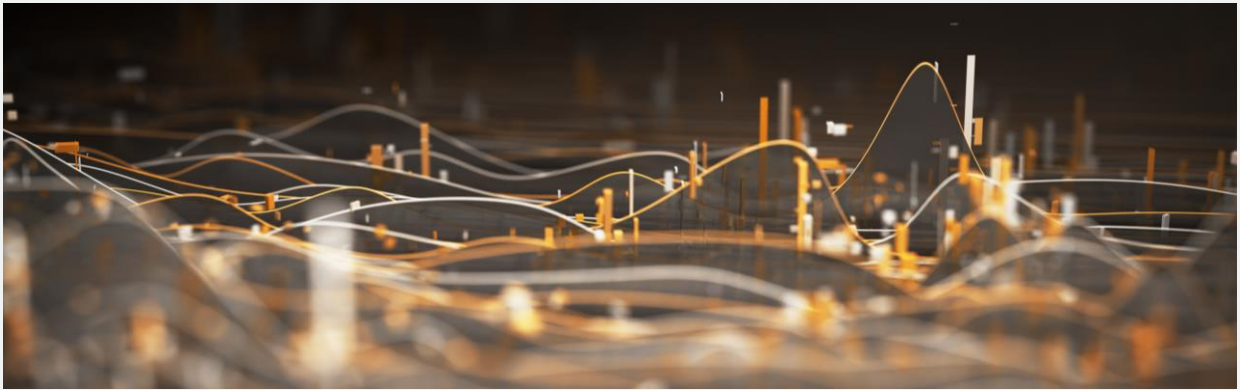
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The “So What”

Wastewater surveillance provides the DHEC PHL with an early warning of COVID-19’s spread in South Carolina. People infected with SARS-CoV-2 can shed the virus in their feces, even if they are asymptomatic. The virus can then be detected in wastewater, enabling SC’s wastewater surveillance system to capture the presence of SARS-CoV-2 shed by people with and without symptoms. Once the SC PHL is aware of COVID-19’s spread within a population, communities can act quickly to prevent a larger COVID-19 outbreak. Data from wastewater testing also supports SC DHEC’s public health mitigation strategies by providing additional crucial information about the prevalence of COVID-19 in a community.




The “Now What”

SC DHEC, in partnership with the CDC’s NWSS, is transforming independent local efforts into a robust, sustainable statewide surveillance system. The SC PHL utilizes wastewater testing to understand disease prevalence trends in the community. Moreover, data from wastewater testing are meant to complement existing COVID-19 surveillance systems by providing: 1) an efficient community

sample, 2) data for communities where timely COVID-19 clinical testing is underused or unavailable and 3) data for different communities within a county. SC’s wastewater testing efforts will continue to provide a long-term solution for the rapid detection and continued surveillance of COVID-19 spread amongst SC residents. Financial support for these testing efforts will be an ongoing need for the SC DHEC wastewater surveillance program.

Key contributors to this project include Christy Greenwood; Megan Davis; Katie Waites; and Nicolas Epie, PhD, all with the South Carolina Department of Health & Environmental Control Public Health Laboratory.

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