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COVID-19 wastewater monitoring project posts preliminary data

LANSING, Mich. – The Michigan Department of Health and Human Services (MDHHS) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE) today posted preliminary results from four of the counties and one of the universities participating in a statewide monitoring program for the COVID-19 virus in wastewater. The early results indicate that COVID-19 can be reliably tested for in wastewater, and the results appear to mirror the presence and spread of the disease in the population.

The county-level results made available today are from testing conducted by Dr. Joan Rose’s laboratory at Michigan State University and represent sites in Genesee, Marquette, Macomb and Manistee counties, starting at the beginning of October through the end of November.

From early October through the end of November, the virus was detected in 100 percent of 18 samples collected from one site in Genesee County, 100 percent of 25 samples from one site in Marquette County, and 100 percent of six samples from one site in Macomb County. At five sites within a single community in Manistee County, the virus was detected in 48.6 percent of the 35 samples collected. In general, the detection of SARS-CoV-2 in wastewater from these sites initially appears to mirror documented transmission within individual sites and communities.

Additionally, most sampling sites detected an increasing trend in the amount of virus present in samples collected from October through November.

Fifteen universities across the state are participating in the pilot project and using environmental surveillance of wastewater in their response to COVID-19 on campus. For instance, the University of Michigan is collecting samples from nine campus buildings and has had positive detections at seven of those sites this fall. Of those samples, 17.7 percent, or 39 of 220 samples, were positive for the virus.

“These initial results show promise for the field of COVID-19 wastewater monitoring in Michigan,” said Sarah Lyon-Callo, director of the Bureau of Epidemiology and Population Health at MDHHS. “This project has demonstrated the feasibility of this laboratory method and local partnerships for a longer-term wastewater surveillance system. Participating laboratories continue to adjust methods to produce the most

reliable results, and state and local public health agencies are beginning to interpret the data and incorporate the results into public health responses, when appropriate.”

More detailed analysis of these data is pending, including comparisons to confirmed COVID-19 cases in the corresponding communities during this timeframe. The data are not yet normalized to account for factors that could affect the amount of virus present in samples, such as flow rate and population size. Therefore, these data should be considered preliminary. More information is needed to compare data across wastewater treatment plants or sample sites and to understand the average amount of SARS-CoV-2 shed by people in their feces.

The data cannot currently be used to determine the total number of infected persons in a community or the percent of the population that is infected.

Nineteen laboratories across the state of Michigan are participating in a standardized and coordinated network of COVID-19 wastewater monitoring systems. These labs have been working with local partners to collect and test wastewater samples for the SARS-CoV-2 virus that causes COVID-19 disease. The samples are collected from over 270 testing sites, including sewers and wastewater treatment plants. Most local projects are still validating their laboratory testing protocols or are in the early stages of reporting results to local partners.

Monitoring wastewater for the SARS-CoV-2 virus can provide an early warning sign for the presence of disease in a community. This virus is shed in human feces, including in people who are infected but not ill or have not yet become ill, and can be detected in wastewater up to seven days before infections lead to increases in clinical cases. A significant increase in the virus detected in wastewater over time can show that cases may be increasing in a community.

This type of surveillance can be used to detect possible outbreaks in communities and at congregate living facilities, such as college dorms and long-term care facilities, before clinical cases are identified. In the future, local public health agencies can use this wastewater surveillance data, along with corresponding clinical case data, to inform public health decisions to prevent further spread within a community. Wastewater monitoring may also be of use in evaluating future immunization efforts. The state of Michigan is fortunate to have internationally recognized scientific leaders in this area in multiple institutions in the state.

This project is only conducting surveillance for the SARS-CoV-2 virus in wastewater and sewage, not drinking water. It is important to note that there is no risk of the SARS-CoV-2 virus being found in properly treated drinking water from either regulated drinking water treatment plants or private wells that are properly installed and maintained.

These preliminary data are available on the [State of Michigan Coronavirus Data website](#) as part of the December 15, 2020 slide deck. For more details about this project, visit the [EGLE pilot project website](#) and the [State of Michigan website](#) on wastewater surveillance.

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