

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

‟Wastewater Surveillance of SARS-CoV-2 in Three Clemson Area Sewersheds”

**Presented By**

**David L. Freedman, Ph.D.**

***Professor and Chair, EEES***

**Abstract**: Wastewater-based epidemiology (WBE) provides an opportunity for near real-time, cost-effective monitoring of community level transmission of SARS-CoV-2, the RNA virus that causes COVID-19. Detection of SARS-CoV-2 RNA in wastewater can identify the presence of COVID-19 in the community. This seminar will describe an on-going program to monitor virus levels in three sewersheds: the Clemson University campus; the area serviced by the Cochran Road wastewater treatment plant (WWTP) within the City of Clemson; and the Pendleton/Clemson WWTP that services the Town of Pendleton and part of the City of Clemson. In addition, monitoring on the campus has extended “upstream” to 14 manholes that service various residence halls.

Initial monitoring of the campus wastewater during May and June 2020 indicated levels close to or below detection (<103 RNA copies per liter). This was consistent with significantly reduced activity on campus at that time and provided a baseline for comparison to activity once undergraduate students returned in mid-September. Monitoring of the Cochran Road and Pendleton/Clemson WWTPs beginning in mid-June revealed a different situation: SARS-CoV-2 RNA were in the range of 105 to 106 copies per liter, levels that are found in communities with active transmission of the virus. When undergraduates returned to campus, virus levels at the campus WWTP rose rapidly and have recently hovered in the 106 copies per liter range. Based on the mass rate at which virus copies reach the WWTPs and the mass rates at which infected individuals shed the virus, the number of infected individuals has been estimated. Predicted infections were compared to confirmed cases identified by the South Carolina Department of Health and Environmental Control for the same time period and geographic area. Predicted case counts and confirmed active case counts reveals a strong association. The unreported rate for COVID-19 is approximately 12 times that of confirmed cases. On-going monitoring of wastewater will continue to provide a community level view of the extent of virus transmission and will provide a valuable tool for assessing the effectiveness of vaccines once they are deployed.

**2:30 PM**

**Friday, October 16, 2020**

**Online via Zoom**

<https://clemson.zoom.us/j/5783910968>

***Attendance is mandatory for graduate students enrolled in EES 8610, EES 9610, and GEOL 8510***

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