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UT-Austin researchers use poop to predict COVID-19 spikes

Mary Jo Kirisits, civil, architectural and environmental engineering professor, is part of a research team testing wastewater to predict COVID-19 spikes in the Austin area.

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BY LAUREN WOMACK (/AUTHOR/LAUREN-WOMACK)

UT researchers are testing wastewater to predict COVID-19 spikes in the community.

UT's Canary Team is a research team commissioned by Austin Water to test wastewater from water treatment plants for COVID-19, according to a KVUE article (https://www.kvue.com/article/news/health/coronavirus/austin-waste-helping-predict-covid-19-spikes/269-7b79d77c-f10b-4b73-baad-1dcbf906b9f5). Mary Jo Kirisits, a civil, architectural and environmental engineering associate professor, is a researcher on the project and said testing wastewater is not a new method for tracking viruses.

 "I would say, almost immediately, the environmental engineering community started to mobilize around this effort when the (COVID-19) pandemic was declared," Kirisits said.

The first step of the process is the collection of the samples. Kiristis said they test from two treatment plants, one at Walnut Creek and one in South Austin.

Emma Palmer, environmental and water resources engineering graduate student and an advisee of Kirisits, said they test the wastewater in a series of four major steps after collection, beginning with pasteurization and concentration.

"We heat the samples to reduce the infectivity of all the different pathogens within the samples, including SARS-CoV-2 (the COVID-19 virus)," Palmer said. "Then we … (concentrate) the amount of SARS-Cov-2 down to a concentration that is high enough to be detected."

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Kirisits said there are many other components in the samples that have to be removed so only the COVID-19 virus remains.

"Just like human beings have their own DNA signature, the (COVID-19 virus) has its own RNA signature," Kirisits said.

Palmer said the sample can then be used to determine where spikes of COVID-19 are in Austin by the number of copies of the RNA signature.

Palmer said the research can help prevent further spread of COVID-19.

"I think the impact is just being able to, in the future, give a heads up of areas within our community that have a high COVID-19 prevalence, expanding efforts of education outreach or social distancing practices in those areas to reduce the likelihood of seeing huge spikes again," Palmer said.

Kirisits said the next step is to take samples from manholes around Austin to better determine where hotspots are in the city and improve prevention and potential vaccination efforts in the future.

"Hopefully when it gets to the point where we have a vaccine, then if we did see a hotspot emerging, we say, 'Hey, now we need to make sure we're doing a better job of vaccinating people in this particular area,'" Kirisits said.