REU Site: Engineering research in a liberal arts and entrepreneurship context

Sewage Detection in the Environment

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The release of untreated sewage into the environment due to infrastructure failures represents a significant threat to public health, our communities, and the environment. Of particular concern is the release of sewage-based pathogens into recreational waters where contact may occur. Direct testing of these pathogens is complex for various reasons and is uncommon. Instead, we rely on fecal source tracking using indirect indicators of sewage releases such as the broad fecal indicator bacteria E. coli and Enterococcus which are found in the gut of warm-blooded animals and anthropogenic compounds only found in urban settings such as artificial sweeteners. Each source tracking method has its own unique strengths and weaknesses. This project looks at the viability of using optical brighteners as an indicator of sewage released into the environment. Optical brighteners are common in household products such as toilet paper and laundry detergents but will also degrade over time; therefore, they have the potential to serve as an indicator of local, active sewage releases. The chosen student will advance this research in one or both of the following ways: (1) continued development and calibration of a field-based sensor for optical brighteners, (2) field-studies which compare optical brighteners with other source tracking methods such as fecal indicator bacteria.

Learn more about Prof. Carolyn Rodak