ECOLOGICAL SCIENCES
& ENGINEERING
INTERDISCIPLINARY GRADUATE PROGRAM

THESIS DEFENSE

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LILY 2425

Understanding treatment process effects on PFAS in municipal wastewater solids stream

Per- and polyfluoroalkyl substances (PFAS) are synthetic compounds known for their diverse applications, from everyday products like food wrappers and raincoats to life-saving uses in firefighting foams. However, their pervasive presence in consumer goods leads to their eventual disposal into sewage systems. Recently, PFAS have garnered significant attention due to mounting environmental and health concerns. Unfortunately, conventional wastewater treatment methods struggle to completely eliminate or degrade PFAS, resulting in their accumulation in effluent and biosolids, perpetuating their environmental cycle.

Currently, there is limited understanding of how PFAS behave within the waste stream. To address this gap, there is an urgent need of an optimized method for evaluating PFAS in complicated solid matrices such as biosolids. A new method developed and optimized through this research was used for extracting and analyzing PFAS and the results were utilized to examine how two key wastewater treatment processes affect the transformation of PFAS. This research aims to provide utilities and regulatory bodies with crucial data for informed decision-making regarding treatment processes. Ultimately, this knowledge will facilitate the effective management of PFAS in biosolids, promoting their safe and beneficial utilization.

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BIO

Caroline Alukkal is enrolled in the Ecological Science and Engineering (ESE) graduate program pursuing a Doctoral Degree in Environmental and Ecological Engineering. She has an MS in Environmental Engineering and a BS in Biotechnology Engineering. Her research helps to understand the changes in PFAS due to two important municipal sewage treatment processes in the solid stream, which will impact the PFAS content in the final product, biosolid. This will indirectly help in better management of biosolids.

Dr. LINDA LEE

Advisor

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