WILLIAM G. LOWRIE DEPARTMENT OF CHEMICAL AND BIOMOLECULAR ENGINEERING Autumn 2024 seminar series

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# Food Supply Chains and Circular Economy – What Can We Learn From Systems-Level Approaches?

## Thursday, October 24th, 11:30 AM 130 Koffolt Lab, CBEC 151 W. Woodruff Ave. Reception at 11:00 AM – CBEC Lobby

### Abstract

Food supply chains have become increasingly complex and are characterized by large distances between production and consumption. Further, food systems are highly linear following the “take, make, waste” model with detrimental impacts on ecosystems. The first part of this talk will describe an optimization-based model to track the US beef supply chain network at the county level with a focus on mapping virtual water and nitrogen impacts. The second part of this presentation will discuss a novel AnMBR (anaerobic membrane bioreactor) platform for resource recovery from high strength wastewater streams. Life cycle assessment and techno-economic analysis of the AnMBR platform will be discussed with implications for developing a circular economy of water.

### bio

Dr. Khanna received his PhD and MS from the Ohio State University, both in Chemical Engineering. His research interests are in the areas of sustainability science and engineering, impacts of emerging technologies, and modeling of complex systems. His group develops systems-level methods for understanding the environmental sustainability of engineered and natural systems. Current areas of study include food-energy-water systems, circular economy, resource recovery systems, and ecosystem goods and services.

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