PILOT PROJECT FOR COLLABORATIVE RESEARCH WITH INDUSTRY AT THE GLOBAL WATER CENTER

Linking University Research, Local Industry, And Municipalities To Put Research Into Action For The Betterment Of Society

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The Global Water Center (GWC) provides an exceptional opportunity to connect MU with industry and public utilities. This proposal outlines a plan to develop collaborative infrastructure at the GWC. This infrastructure plan will involve an initial demonstration project focusing on collaboration among MU, private industry, and the Milwaukee Metropolitan Sewerage District. This plan will be based on wastewater research stemming from MU. We plan to conduct pilot-scale research with partners at the GWC to setup up infrastructure for future projects at the GWC.

MILESTONES

1. **JUNE 2016 - Establish lab resources at the GWC to perform wet experiments to test biochar as a pollutant removal technology.** The graduate student will develop science to maximize use of biochar – an activated carbon like product that can be made from waste products produced at wastewater treatment plants – for removal of chemicals from wastewater treatment plant effluent.

2. **DECEMBER 2016 - Develop a novel sensor for real-time continuous measurements of triclosan in wastewater.** NanoAffix Science, LLC will develop a sensor to continuously measure triclosan in wastewater. This technology can be used to determine how effective biochar is at removing triclosan from wastewater.

3. **JUNE 2017 - Determine the ability of biochar to remove triclosan from wastewater by taking continuous measurements using a sensor.** Both the biochar removal process and the sensor have opportunity for full-scale use. MU will have space at the GWC along with NanoAffix Science, allowing for easy collaboration on this project to help develop technologies that can clean our waters.

ABOUT OUR TEAM

Dr. Patrick McNamara, PI, Project Lead (advisor to Marquette graduate student)
Dr. Brooke Mayer, Co-PI
Lee Kimbell, Marquette University Graduate Student conducting research for this project
Dr. Junhong Chen, NanoAffix Science, LLC. Project lead for development of sensors
Matthew Magruder, Milwaukee Metropolitan Sewerage District, project mentor

Our team brings together University researches with industry and municipality members. Often times problems are too complex to be solved by one entity. Today, chemicals that get flushed down peoples toilets or pass down our sinks are entering our wastewater treatment plants and being discharge to Lake Michigan. We need solid research to understand how to solve this problem, but we also need to integrate our fundamental science with understanding of real-world issues and develop real-world solutions. We hope this university-industry-municipality model will serve as a template for future solution expeditions.

BEYOND BOUNDARIES
Research in Action

The research described will be performed by a graduate student from Marquette, and is driven by motivation of protecting our most precious resource - water. This project is grounded in the **Pursuit of Academic Excellence for Human Well-being**. We have a social responsibility to engineer systems that protect environmental and human health, and at MU we can pursue these goals while simultaneously pursing graduate research eductation. This project will directly **engage with the community** by teaming with Milwaukee Metropolitan Sewage District to provide and protect water quality through Milwaukee. An overarching goal of this project is to develop a plan to engage with the Global Water Center.

CONTACT INFORMATION: *Patrick.mcnamara@mu.edu*

Water and Environmental