



# Smart Management of Microplastic Pollution Newsletter



WAYNE STATE  
UNIVERSITY

A research project led by Wayne State University

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Welcome to our third Microplastic newsletter! This newsletter covers major project updates and accomplishments from March 2020 to September 2020. We are grateful to be able to share this newsletter and hope our readers continue to stay safe during the COVID-19 pandemic.

## EDUCATION & OUTREACH

During the past few months, the project team and community partners have been working on refining the campaign strategies for both Williamston ("Red Cedar River - Heart of Williamston") and Pontiac ("Economic Incentives - What's in Your Water Bill"), with particular emphasis on addressing COVID-19 challenges. In the coming months, project team member Michelle Beloskur will be working with Williamston business owners, the Chamber of Commerce, the Williamston Garden Club, Williamston Kiwanis, and more to foster collaboration on the team's mitigation study in Williamston. Meetings with the Pontiac Department of Public Works to

schedule curb cuts and culvers for GSI construction on Reroot Pontiac properties were delayed due to COVID-19 shutdowns. The remaining physical depressions and subsurface construction were completed over July 2020. To raise additional community awareness surrounding microplastic issues, Reroot Pontiac has commissioned four plastic debris filled sculptures inspired by the 'Recyclesaurus' at MoSI in Tampa, FL. These sculptures will be located in community gathering areas at and around Reroot Pontiac GI

DID YOU KNOW?  
YOU CONSUME ENOUGH PLASTIC TO  
MAKE A CREDIT CARD EVERY WEEK



MICROPLASTICS ARE IN  
OUR FOOD & WATER

Example Social Media Graphic

locations. Lastly, due to COVID-19 and school closures, the team is discussing potential virtual plans for school outreach.



## RESEARCH

Before March 2020, the team utilized a high-speed camera for video streaming and microplastic size/shape analysis. The team has since developed an algorithm that can distinguish beads and fibers according to their shapes. In addition, by working with our collaborator Dr. Eric Wu, the team has modified a commercially-available Raman sensor by adding a fluidic system that can deliver a water sample containing microplastics for Raman scanning.

The team has also been focusing on 1) refining machine learning algorithms to identify microplastics based on both the polymer type and the usage such as water bottles, plastic bags, plastic straws, etc., and (2) improving the fluorescence-tagging method to distinguish plastics from non-plastic materials. The Nile Red (NR) fluorescence tagging method can selectively stain synthetic materials to generate high

fluorescence for easy detection of plastics in environmental samples. Dr. Zhang's research group has also submitted a review paper to the Journal of Current Pollution Report. The information obtained from the reference review (e.g. the source, fate, and transport of microplastics in the environment) will be used to finalize the team's sampling plan and analytical methods of microplastics.

## FOCUS GROUP STUDY

Phase 1 of the team's focus group study led by Dr. Rahul Mitra and his student Lacey Brim has been completed. Preliminary findings from Williamston suggest that the main challenges to pro-environmental actions (such as recycling and prevention of littering that mitigate microplastics pollution) perceived by community leaders are: 1) structural and institutional arrangements (e.g., frequency and type of garbage and recycling

pickup) 2) social-cultural values and discourses (e.g., cultural blitheness about need to recycle as plastics pollution is still seen to be a "faraway" problem 3) the uncertainty (e.g., actual impact of microplastics on humans is unknown; uncertainty and falsification of the scientific process is not well understood; uncertainty about the mitigation measures proposed -- both laundry bags and green stormwater infrastructure require clear elaboration on best use and impact). These findings have been submitted to two conference presentations.

## ADVISORY BOARD PLANNING

Our 3rd advisory board meeting was meant to be held in April 2020, but was cancelled due to COVID-19. We plan to have our next advisory board meeting in February 3rd, 2021 (12:00 - 2:30 pm) with a virtual conference.

### Partnerships



### Investigators:

Yongli Zhang  
Carol Miller  
Mark Chen  
Weisong Shi  
Donna Kashian  
Rahul Mitra

### Team Members:

Michelle Beloskur  
Jonathon Weyhrauch  
Kathleen Sexton  
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### Project Funding



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