



# OHIO WATER RESOURCES CENTER

*2018-2019 ANNUAL REPORT*



# EXECUTIVE SUMMARY

The Ohio Water Resources Center (Ohio WRC) is the federally-authorized and state-designated Water Resources Research Institute for the State of Ohio. Our mission is to enable and conduct state-relevant water-related research; foster collaboration among academic investigators, governmental bodies, and water professionals; train the next generation of water scientists; and educate the public on water resources issues in Ohio. With evidence-based scientific information, we form links between water researchers and those who manage and use water.



Ohio WRC Co-Director, Dr. Linda Weavers, visiting Capitol Hill

## 2018-2019 ACTIVITIES

### Water Technology Sample Ohio WRC Projects

- 1 Creating design standards for emerging drinking water treatment technologies will allow communities in Ohio to install more appropriate and cost-effective technologies. **Drs. Bohrerova and Weavers, OSU**, are working with Ohio EPA, utilities and design engineers to develop these design standards.
- 2 Source water protection is critical for drinking water treatment plants to maintain safe drinking water. **Drs. Weavers and Bohrerova, OSU**, are collaborating with drinking water professionals to field test ultrasound to suppress algal blooms in drinking water reservoirs.
- 3 Another issue drinking water plants face from algal blooms is the cyanotoxins these blooms sometimes produce. **Dr. Lenhart, OSU**, is testing activated carbon to remove cyanotoxins to provide guidance to utilities ensuring that treatment goals are met.



Ohio WRC preparing water column for ultrasound treatment



On the cover (clockwise from bottom left) — Ohio WRC researchers collecting water samples; World Water Day; Volunteers participating in the Adopt Your Waterway program

# ADVISORY BOARD

The distinguished members of our Advisory Board provide critical expertise and guidance for advancing our work across all areas.

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Water Science Center

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## 2018-2019 ACTIVITIES



### Water Quality Sample Ohio WRC Projects

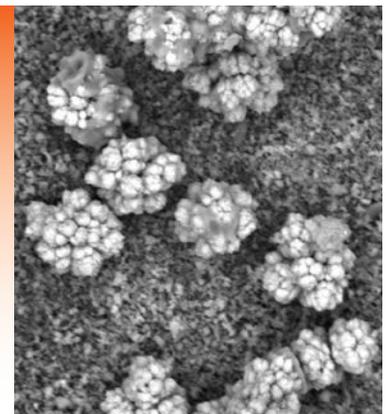
- 4 **Dr. McCarthy, WrsU**, is conducting research that will provide important results needed to resolve and constrain the fates of agriculturally and domestically sourced nitrogen inputs and their associations with the cyanobacterial bloom in Lake Erie.
- 5 Amphibians are ideal indicators of water quality due to their high sensitivity to aquatic contaminants, but almost nothing is known about the effects of microcystin on these organisms. **Dr. Refsnider, UT**, aims to determine if microcystins produced by HABS in Ohio affect the health of amphibians.
- 6 So called “forever chemicals” (aka PFAS) are found in the majority of human’s blood. **Drs. May and Weavers, OSU**, are measuring PFAS in surface waters, air and soils to determine the spread of PFAS from manufacturing site and pathways that control their distribution.



Ohio WRC graduate researchers collecting water samples (left) and Ohio WRC researchers collecting data on effects of microcystin on organisms

### Water and Energy Sample Ohio WRC Projects

- 7 **Drs. Bakshi and Khanal, OSU**, are assessing fuel use, water use, and plant configuration and operation in the Muskingum watershed. This analysis may help businesses and policymakers to make decisions to improve the sustainability of the watershed.
- 8 Produced water from fracking operations contain a complex mix of chemical additives, heavy metals, salts, and naturally occurring radionuclides, making it hard to clean. **Dr. Gouma, OSU**, is developing novel water purification membranes with an aim to remove pollutants from produced waters.



Fracking wastewater precipitate contaminant on a filter

# THE IMPACTS OF THE OHIO WATER RESOURCES CENTER:

*By the Numbers 2014 to 2018*



**1,070**

Volunteer hours through training and activities

**73**

Students trained for a water resources profession

**\$11,300**

Saved in Professional Development Hour (PDH) Credits earned

For every federal dollar invested **\$10** was leveraged from other sources



The Ohio WRC funded research across Ohio with **34 projects at 7 Ohio Universities**



Ohio WRC research has produced **106 publications, theses, & presentations**



The Ohio WRC leveraged its influence by devoting **570 hours on boards & committees**



<http://wrc.osu.edu>

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