2016 Agenda

UNDERSTANDING HARMFUL ALGAL BLOOMS:

STATE OF THE SCIENCE

Highlighting current scientific knowledge about algal blooms, their causes, and best management practices

Thursday, September 15, 2016
9:30 a.m. to 7:00 p.m.
Stranahan Theater & Great Hall
4645 Heatherdowns Boulevard, Toledo, Ohio 43614

Sea Grant
Ohio Sea Grant College Program

The Ohio State University

USDA

8:00 a.m.	Registration
9:30 a.m.	Welcome and Introduction

Period I Focus Area: Recent Modeling Studies – From Field to Lake

9:45 a.m.	Plenary I: Using Multiple Models to Guide Setting and Achieving Loading Targets *Dr. Don Scavia, University of Michigan*
10:15 a.m.	CEAP Cropland: Conservation Practice Impacts on Water Quality in Western Lake Erie Basin (2003-06 and 2012) *Dr. Mari-Vaughn Johnson, NRCS-USDA*
10:35 a.m.	Evaluating and Improving Tributary Habitat in the WLEB *Dr. Scott Sowa, The Nature Conservancy*
10:55 a.m.	Forecasting the Harmful Algal Bloom in Lake Erie *Dr. Richard Stumpf, NOAA*
11:15 a.m.	Questions and Discussion
11:30 a.m.	Lunch

Period II Focus Area: Practices – Assessment and Adoption of Management Plans

12:45 p.m.	Plenary II: Using Edge of Field Research to Assess Agricultural Management Practices *Dr. Kevin King, USDA-ARS*
1:15 p.m.	The Heidelberg Tributary Loading Program: Keeping a Finger on the Pulse of Lake Erie's Watersheds *Dr. Laura Johnson, Heidelberg University*
1:35 p.m.	Farmer BMP Adoption: Possible Futures and the Efficacy Gap *Dr. Robyn Wilson, The Ohio State University*
1:55 p.m.	NRCS Western Lake Erie Initiatives *Steve Davis, NRCS*
2:15 p.m.	Outreach to Agriculture to Understand the Nutrient and HAB Linkage and Solutions *Greg Labarge, The Ohio State University*
2:35 p.m.	Break

Period III Focus Area: Public Health and Water Treatment

2:55 p.m.	Plenary III: Detection & Monitoring of Microcystin *Heather Raymond/Amy Klei, OEPA*
3:25 p.m.	Fish Flesh and Fresh Produce as Sources of Microcystin Exposure to Humans *Dr. Stu Ludsin, The Ohio State University*
3:45 p.m.	Using Lake Erie Bacteria to Degrade Microcystin *Dr. Jason Huntley, University of Toledo*
4:05 p.m.	Treatment of Cyanotoxins by UV and Chlorine Technologies *Dr. Dionysius (Dion) Dionysiou, University of Cincinnati*
4:25 p.m.	Lake Erie HABs: Nutrient Cause and Effect *Dr. Tom Bridgeman, University of Toledo*
4:45 p.m.	Summary and Closing

5:15-7:00 p.m.	Student Poster Session highlighting projects funded by the Ohio Department of Higher Education: Harmful Algal Bloom Research Initiative (HABRI) and The Ohio State University's Field to Faucet Program

Bloom: Sources and Movement

1. Preliminary understanding of the impact of nutrients on algal blooms via a stochastic approach. Peter Trowbridge, Elizabeth Crafton, Don Ott, Teresa Cutright and Lan Zhang

2. Preliminary evaluation of PAK27 for treating cyanobacteria blooms in Ohio reservoirs. Anny Gao, Elizabeth Crafton, Don Ott, Lan Zhang and Teresa Cutright

3. Initial investigation of response surface methodology for assessing cyanobacteria and nutrients. Elizabeth Crafton, Anny Gao, Peter Trowbridge, Lan Zhang, Don Ott and Teresa Cutright

4. Understanding the drivers of bloom toxicity by quantifying toxic and non-toxic strains of *Planktothrix* in Sandusky Bay. Taylor Tuttle, Tim Davis, Robert Michael McKay and George Bullerjahn

5. Development of an unmanned aerial vehicle for harmful algal bloom monitoring. Ross Heidersbach, Igor Mrdjen, Matt McCrink, Yuanyuan Jia, Jim Gregory, CK Shum and Jiyoung Lee

6. Removal of phosphorus from anaerobic digestion effluent using flue gas desulfurization gypsum as a novel precipitant. Adam Khalaf, Fuqing Xu and Yebo Li

7. Discerning organic phosphorus signatures in pollutant sources from Lake Erie tributaries. Michael Brooker, Mary Evert and Paula Mouser

8. Examining oxygen isotope ratios to better identify sources of DRP contributing to Lake Erie algal blooms. Melanie Marshall and Kevin McCluney

9. HAB avoidance: vertical distribution of HABs at the Toledo water intake. Joseph Turner and Thomas Bridgeman

10. Mitigating harmful algal blooms using a swarm of aquatic, mobile robots. Brian Trease, Adam Schroeder, Lauren Marshall and Bethany Grayczyk

Produce Safe Drinking Water

11. Evaluating home point-of-use reverse osmosis membrane systems for cyanotoxin removal. Neelam Jagani, Youngwoo Seo and Glenn Lipscomb

12. Effect of water quality and powdered activated carbon dosage on removal of microcystin-LR. Asnika Bajracharya, Yen-Ling Liu and John Lenhart

13. Quantification of microcystins using Orbitrap Fusion Tribrid Mass Spectrometer. Dilrukshika Palagama, Raymond West III and Dragan Isailovic

14. Efficient removal of Microcystin-LR by UV/chlorine advanced oxidation process. Xiaodi Duan and Dionysios Dionysiou

15. Biosensor development for monitoring microcystins in water environment systems. Vasileia Vogiazi, Wei Zhang and Dionysios Dionysiou

16. Selection of Lake Erie bacteria that degrade the microcystin toxin MC-LR. Alison Brandel, Ealla Atari and Jason Huntley

17. Influence of water quality parameters on microcystin-LR degradation by chlorine. Youchul Jeon, Tyler Bryan, Tae-Suh Yun, Rachael Watson, Jake Goetz, Anjali Krishnan, Jen Mou and Youngwoo Seo

18. Influence of potassium permanganate pretreatment on algal cell integrity and toxin releases. Youchul Jeon, Kristina Linders, Lijiao Lui, Mohsen Behbahani and Youngwoo Seo

19. Influence of water quality parameters on microcystin-LR degradation by chlorine. Lijiao Liu, Onekyun Choi and Youngwoo Seo

Protect Public Health

20. Microcystin accumulation in vegetables and soils when irrigated with microcystin-contaminated water. Seungjun Lee, Xuewen Jiang, Manjunath Manubolu, Stu Ludsin, Jay Marin, Ken Riedl and Jiyoung Lee

21. Isolation and characterization of cyanophages infecting *Microcystis aeroginosa* in Lake Erie for potential biological control of HAB. Xuewen Jiang, Seungjun Lee, Tyler Gorham and Jiyoung Lee

22. The potential role of cyanobacterial toxins as liver tumor promoters. Christopher Weghorst, Jiyoung Lee, Thomas Knobloch, Igor Mrdjen, Manjunath Manubolu, Steve Oghumu and Jannifer Ahn-Jarvis

23. Impact of microcystin on pre-existing liver disease. Aaron Tipton, Dalal Mahmoud, Andrew Kleinhenz, Fatimah Khalaf, Shungang Zhang, Erin Crawford, Steven Haller and David Kennedy

24. Characterizing recreational and occupational water use in western Lake Erie basin. E. Messerly, S. Mancuso, T. Jones, A. Ames, B. Fink, B. Saltzman and M. Valigosky

25. Isolation identification and characterization of microcystin degrading bacteria from Lake Erie. Anjali Krishnan, Yuqin Zhao, Jingrang Lu and Xiaozhen Mou

26. Evaluating biofilm formation of Lake Erie microcystin-degrading bacteria. Meaghan Balaban, Anjali Krishnan and Xiaozhen Mou

Educate and Engage

27. Differences in leadership between directive and collaborative social networks in the Maumee watershed. Stian Rice and V. Kelly Turner

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The Ohio State University partners include: College of Food, Agricultural, and Environmental Sciences; Ohio Agricultural Research and Development Center; OSU Extension; Field to Faucet; and Ohio Sea Grant & Stone Laboratory.

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