

# MARC PAUL VERHOUGSTRAETE

## CURRICULUM VITAE

The University of Arizona, Mel and Enid Zuckerman College of Public Health  
1295 N. Martin, Drachman Hall, Tucson, Arizona 85724  
(520) 621-0254 • [mverhougstraete@email.arizona.edu](mailto:mverhougstraete@email.arizona.edu)

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### CHRONOLOGY OF EDUCATION

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| 2001-2005 | Lansing Community College, Lansing, MI, Associates Degree: Natural Science – Magnum Cum Laude  |
| 2005-2007 | Michigan State University, East Lansing, MI, College of Natural Science, Department of Zoology: B.S.: Environmental Biology and Zoology  |
| 2007-2012 | Michigan State University, East Lansing, MI, College of Agriculture and Natural Resources, Department of Fisheries and Wildlife: Ph.D.<br>Advisor: Joan B. Rose<br>Dissertation title: Measuring microbial water quality responses to land and climate using fecal indicator bacteria and molecular source tracking in rivers and near-shore surface waters of Michigan. |

### CHRONOLOGY OF EMPLOYMENT

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| 2005- 2010   | Professional Assistant: State of Michigan, Department of Environmental Quality. Water Bureau, P.O. Box 30273, Lansing, Michigan 48909                      |
| 2007- 2012   | Research Assistant: Michigan State University, Department of Fisheries and Wildlife. 480 Wilson Road, East Lansing, MI 48824                               |
| 2012- 2013   | Post-doctoral Research Associate: University of North Carolina at Chapel Hill, Institute of Marine Sciences. 3431 Arendell Street, Morehead City, NC 28557 |
| 2013-2015    | Post-doctoral Research Associate: The University of Arizona, College of Public Health. 1295 N. Martin, Tucson, AZ 85724                                    |
| 2015-Present | Assistant Professor: The University of Arizona, College of Public Health. 1295 N. Martin, Tucson, AZ 85724   |

### HONORS AND AWARDS

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| 2010 | International travel award (Michigan State University) |
| 2012 | Travel grants (Montana Rural Drinking Water)           |
| 2014 | University of Arizona Open Access Publishing Award     |

## **SERVICE/OUTREACH**

### **Local/State Outreach**

2016-2017	CONSERVE (COordinating Nontraditional Sustainable watER use in Variable climatEs), A Center of Excellence at the Nexus of Sustainable Water Reuse, Food, and Health. Extension Advisory Committee member.
2016	Water Resources Research Center annual meeting student poster judge.
2014-2017	Park-Euclid/7th Street & Arizona Avenue Water Quality Assurance Revolving fund Site Community Advisory Board. Arizona Department of Environmental Quality. Committee Chair.

### **National/International**

#### *Manuscript Reviewer*

2016	Critical Reviews in Environmental Science and Technology
2016	Current Environmental Engineering
2015-2016	International Journal of Environmental Research and Public Health
2012-2016	Environmental Monitoring and Assessment
2012-2015	Journal of Water and Health
2012-2014	Environmental Science and Technology
2012-2014	Journal of Great Lakes Research
2013	Encyclopedia of Agricultural, Food, and Biological Engineering
2013	North Pacific Research Board
2012	Water Science and Technology

#### *Proposal Reviewer*

2014	National Science Foundation
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### **Departmental Committees**

2016-2017	Graduate student admissions review
2016	Sabbatical review committee (2 associate professors)
2016	Peer review committee

### **College Committees**

2016-2017	Research Advisory Council
2016-2017	Public Health Research Poster Forum. Faculty advisor.
2016	Faculty mentoring development
2014	Mel and Enid Zuckerman College of Public Health Graduate Research Poster Forum Judge
2009-2012	Michigan State University, Department of Fisheries and Wildlife seminar committee

#### *Guest Lectures*

2017	CPH 575 (Environmental and Occupational Health)
2016	CPH 400 (Contemporary Community Health Problems)
2016	EPID 660 (Infectious Disease Epidemiology)
2016	CPH 575 (Environmental and Occupational Health)
2016	EPID 479 (Infectious Disease Epidemiology)
2015	CPH 375 (Introduction to Environmental and Occupational Health)
2015	EPID 479 (Infectious Disease Epidemiology)

2014	CPH 603 (Applied Analysis of Environmental Data)
2014	CPH 585 (Fundamentals of Industrial and Environmental Health)
2014	CPH 609 (Evaluating Public Health Literature)
2014	CPH 459 (Principles of Infectious Disease Epidemiology)
2014	CPH 575 (Environmental & Occupational Health)

### University Committees

2014-Present	One Health Consortium member
2013-Present	Food Safety Consortium member

### Professional Memberships

2016	American Association for the Advancement of Science
2007-Present	American Society for Microbiology
2007-Present	Great Lakes Beach Association
2009-Present	Health Related Water Microbiology
2009-Present	International Water Association
2008-2012	Michigan State University Fisheries and Wildlife Graduate Student Organization
2008-2012	Grand Traverse Watershed Beach Monitoring Stakeholders group
2007-2012	Michigan Branch of the American Society for Microbiology
2004-2011	Blue Lake-Cold Springs Lake Civic Association, Michigan
2008-2010	International Association of Great Lakes Research

## PUBLICATIONS/CREATIVE ACTIVITY

### Chapters in Scholarly Books and Monographs

**Verhougstraete, M.P.,** J. Sexton, and K. Reynolds. (2015). Recreational Water Exposure. In. J. Bartrum. (Ed.). *Handbook for Water and Health*. EarthScan.

### Refereed Journal Articles (accepted)

**Verhougstraete, M.** and K. Reynolds. (2016). Use of a portable air disinfecting system to remove seeded coliphage in hospital rooms. *American Journal of Infection Control* 44 (6) 714-715.

**Verhougstraete, M.** (2016). On Tap: Water Issues: Global Concerns and Global Issues. *Water Conditioning & Purification International*. Trade journal article peer reviewed by a technical advisory committee.

<http://www.wcponline.com/2016/01/15/on-tap-water-issues-global-concerns-and-global-issues/>

Lamparelli, C.C., K. Pogreba-Brown, **M. Verhougstraete**, M.I.Z. Sato, T. Wade, and J.N.S. Eisenberg. (2015). A prospective cohort study of risks associated with beaches in Brazil. *Water Research* 87: 59-68.

<http://www.sciencedirect.com/science/article/pii/S004313541530213X>

**\*Verhougstraete, M.,** S. Martin, A. Kendall, D. Hyndman, and J. Rose. (2015). Microbial responses to land, physical, chemical, environmental, and hydrological factors. *PNAS* 112(33): 10419-10424.

<http://www.pnas.org/content/112/33/10419.full>

Lothrop, N., S. Wilkinson, **M.P. Verhougstraete**, A. Sugeng, M. Loh, W. Klimecki, and P. Beamer (2015). Home Water Treatment Habits and Effectiveness in a Rural Arizona Community. Water. Multidisciplinary Digital Publishing Institute. DOI:10.3390/w7031217  
<http://www.mdpi.com/2073-4441/7/3/1217/htm>

**Verhougstraete, M.P.**, S. Brothers, W. Litaker, and R. Noble. (2015). Lessons learned from implementing a wet laboratory molecular training workshop for beach water quality monitoring. PLOS ONE. DOI: 10.1371/journal.pone.0121214  
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0121214>

\***Verhougstraete, M.P.** And J. Rose. (2014). Microbial investigations of water, sediment, and algae mats the mixed use watershed of Saginaw Bay, Michigan. Journal of Great Lakes Research 40: 75-82.  
<http://www.sciencedirect.com/science/article/pii/S0380133013001718>

\***Verhougstraete, M.P.**, M.N. Byappanahalli, R.L. Whitman, and J.B. Rose. (2010). *Cladophora* in the Great Lakes: Impacts on beach water quality and human health. Water Sci. and Tech.62: 68-76.  
<http://www.iwaponline.com/wst/06201/wst062010068.htm>

\* Indicates manuscript substantially based on work done as a graduate student

## Technical Reports

**Verhougstraete, M.P.**, K., Reynolds, A. Tamimi, and C. Gerba. 2016. Cost benefit of point-of-use devices in reduction of health risks from drinking water. For Water Quality Research Foundation.

Lothrop, N., K. Bright, J. Sexton, K. Reynolds, **M.P. Verhougstraete**. 2016. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. For Center for Produce Safety.

**M.P. Verhougstraete** and K. Reynolds. 2014. Hospital Field Study of T1 Air Disinfectant Recirculator Efficacy Against Viral Tracers. For Aerobiotix, Inc. and Brent Lloyd and David Kirschman.

**M.P. Verhougstraete** and J.B. Rose. 2010. Investigation of Water Quality and Source Tracking at Grand Traverse Bay and Mitchell Creek Grand Traverse County, Michigan. For The Watershed Center Grand Traverse Bay and Sarah U'Ren.  
<http://cws.msu.edu/projects/documents/TraverseCityReportFinal.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking in Gull Lake Watershed, Michigan. For the Four Township Water Resources.  
<http://cws.msu.edu/projects/documents/GullLakereportfinal.pdf>

**M.P. Verhougstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Caseville County Park Beach Huron County, Michigan. For the Huron County Health Department and the Michigan Department of Environmental Quality.

<http://cws.msu.edu/projects/documents/CasevilleFinal7-10-09.pdf>

**M.P. Verhougstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Port Crescent State Park day use Beach Huron County, Michigan. For the Huron County Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/PortCrescentFinal7-10-09.pdf>

**M.P. Verhougstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Bay City State Recreation Area Beach Bay County, Michigan. For the Bay County Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/BayCityFinal7-10-09.pdf>

**M.P. Verhougstraete**, E.A. Dreelin, and J.B. Rose. 2009. Investigation of Water Quality and Source Tracking at Whites Beach Arenac County, Michigan. For the Central Michigan District Health Department and the Michigan Department of Environmental Quality.  
<http://cws.msu.edu/projects/documents/WhitesBeachFinal7-10-09.pdf>

**M.P. Verhougstraete**, A. Aslan-Yilmaz, and J.B. Rose. 2009. Upper Peninsula Groundwater Sampling Menominee County, Michigan. For the Public Health Delta-Menominee Counties.  
<http://cws.msu.edu/projects/documents/UPGroundwaterfinalreport.pdf>

**M.P. Verhougstraete**, T. Shibata, and J.B. Rose. 2009. Background levels of viable bacteria and fungi in the indoor air and on surfaces in Ingham Regional Medical Center “*before and after*” the UVGI-HVAC installation. For Ingham Regional Medical Center.  
<http://cws.msu.edu/projects/documents/UVGIfinalsummarymv2-2.pdf>

**M.P. Verhougstraete**, S. Singh, and J.B. Rose. 2008. Investigation of water quality in the Coldwater River Watershed.  
<http://cws.msu.edu/projects/documents/ColdwaterCreekFinalreport.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. Barberry Drain at West Lake Preliminary Water Quality Testing. For West Lake Improvement Association.  
<http://cws.msu.edu/projects/documents/WestLakereportFINAL.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. Investigation of water quality and sources associated with the Buck Creek Watershed.  
<http://cws.msu.edu/projects/documents/BuckCreekFinalReport.pdf>

**M.P. Verhougstraete**, S. Srinivasan, R. Ives, and J.B. Rose. 2008. Preliminary report for Pigeon River fish kill.  
<http://cws.msu.edu/projects/documents/Fishkillpreliminaryreportfinal.pdf>

**M.P. Verhougstraete** and J.B. Rose. 2008. A new toolbox for testing Michigan waters.  
<http://cws.msu.edu/projects/documents/CommunitySummary.pdf>

Rose, J.B., **M.P. Verhougstraete**, S. Singh, and T. Shibata. 2007. Study of Silver Lake Water Quality.  
<http://cws.msu.edu/projects/documents/SilverLake2007FinalReport.pdf>

Singh, S., **M.P. Verhougstraete**, and J.B. Rose. 2007. Investigation of water quality and sediment quality associated with the Muskegon County Wastewater Management System. <http://cws.msu.edu/projects/documents/MuskegonWWTPFinalReport.pdf>

## **WORK IN PROGRESS**

### **Refereed Journal Articles (Submitted or in preparation)**

Pearce-Walker, J., K. Bright, K. Reynolds, and **M. Verhougstraete**. (In Preparation). Risk assessment of enteric viruses as new indicators of human and cattle fecal contamination of irrigation waters.

**Verhougstraete, M.P.**, C. Gerba, M. Edwards, and K. Reynolds. (In preparation). Lead in drinking water: Point of use cost benefit analysis. Environmental Health Perspectives.

**Verhougstraete, M.P.**, K. Progreba-Brown, C.C. Lamparelli, M.I.Z. Sato, T. Wade, and J.N.S. Eisenberg. (In preparation). A Quantitative Microbial Risk Assessment of Brazil beaches and comparison with USEPA and WHO recreational water quality guidelines. Environmental Health.

**Verhougstraete, M.**, J. Viswasam, R. Canales, A. Kendall, and J. Rose. (In preparation). Effects of precipitation on water quality and gastrointestinal illness among youth. Journal of Great Lakes Research.

**M.P. Verhougstraete, M.P., K. Brown**, and K. Bright. (In preparation). A summary of surface water used for irrigation in the SW United States. Environmental Science: Processes & Impacts.

Lothrop, N., K. Bright, J. Sexton, K. Reynolds, **M.P. Verhougstraete**. (In preparation). Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. Agricultural Water Management Journal.

Wightman, P., Y. Ornelas, and **M. P. Verhougstraete**. (In preparation). Effects of a public transportation strike on air quality and human health outcomes: A case study in Tucson, Arizona, USA.

### **Grants and Contracts (Submitted or in preparation)**

Co-Principal Investigator. Reducing Healthcare Acquired Infections: Optimization of Cleaning & Monitoring Practices Through Surface Sampling, Behavior Characterization, and Computational Modeling. Agency for Healthcare Research and Quality (\$2,500,000) 2018-2023.

Primary-Investigator. A novel approach to trace listeria movement in a produce facility. Center for Produce Safety (\$88,382) 2018.

Co-Principal Investigator. Management of natural habitat adjacent to agricultural fields to reduce large mammal intrusions into produce fields. Center for Produce Safety (\$190,000) 2018-2019.

Primary Investigator. Environmental investigations and risk assessment of heavy metals and radionuclides in the Rio Grande near Santa Fe, New Mexico. Amigos Bravos (\$20,000) 2016-2017.

Co-Investigator. The Impact of a Persistent Antimicrobial Silver Ion Textile Treatment on Patient Outcomes in a Hospital Setting. National Institutes of Health. (\$1,654,030) 2017-2020.

Co-principal investigator. Identification and evaluation of new viral indicators for agriculture water. US Department of Agriculture (\$500,000). 2017-2020.

Co-Principal Investigator. Sewage Forensics for early detection of biological threats or source tracking. Department of Defense-DTRA (\$750,000) 2017-2020.

Co-Principal Investigator. National molecular public health consortium. National Institute of Health (\$1,000,000) 2017-2020.

Co-Principal Investigator. Collaboration between Planktos Instruments, LLC and the University of Arizona to create a passive water quality monitoring instrument. USDA Small Business Innovation Research Program (SBIR) (\$100,000) 2017-2018.

## **MEDIA**

Use of portable air disinfecting system to remove seeded coliphage in hospital rooms, 13 April 2016, Association of Schools & Programs of Public Health.

Great Lakes Echo, Septic tanks flush water quality down the tubes, 24 September 2015: <http://greatlakesecho.org/2015/09/24/septic-tanks-are-flushing-water-quality-down-the-tubes/>

KJZZ Tucson, University of Arizona Study Will Help Produce Farmers Reduce *E. coli*, 10 September 2015: <http://science.kjzz.org/content/189765/university-arizona-study-will-help-produce-farmers-reduce-e-coli>

KNST Tucson, University of Arizona researchers help keep food safe, 09 September 2015

University of Arizona, UA Public Health Researchers Work to Keep U.S. Food Crops Safe, 26 August 2015: <http://uahs.arizona.edu/news/ua-public-health-researchers-work-keep-us-food-crops-safe>

Infection Control Today, Septic Tanks Aren't Keeping Human Sewage Out of Rivers and Lakes, 5 August 2015: <http://www.infectioncontrolday.com/news/2015/08/septic-tanks-arent-keeping-human-sewage-out-of-rivers-and-lakes.aspx>

Laboratory Equipment, Septic Tanks Don't Help Rivers, Lakes Stay Clean, 4 August 2015: <http://www.laboratoryequipment.com/news/2015/08/septic-tanks-dont-help-rivers-lakes-stay-clean>

Science Daily, Septic tanks aren't keeping feces out of rivers, lakes, 3 August 2015: <http://www.sciencedaily.com/releases/2015/08/150803154850.htm>



Water Online, Septic Tanks Aren't Keeping Poo Out Of Rivers And Lakes, 3 August 2015: <http://www.wateronline.com/doc/septic-tanks-aren-tkeeping-poo-rivers-lakes-0001>

Michigan State University, Septic tanks aren't keeping poo out of rivers and lakes, 3 August 2015: <http://msutoday.msu.edu/news/2015/septic-tanks-arent-keeping-poo-out-of-rivers-and-lakes/>

Nature, Mixed reviews for US Clean Water Act, 14 November 2012: <http://www.nature.com/news/mixed-reviews-for-us-clean-water-act-1.11809>

North Carolina Science Now- UNC-TV, Rapid Water Test, September 2013: <http://science.unctv.org/content/rapid-water-test>

## CONFERENCE PRESENTATIONS

### Colloquia Invited

**M. Verhougstraete.** Practical tips for effective water sampling. December 6, 2016. Washington State Fruit Tree Association annual meeting. Winancee, Washington, USA.

**M. Verhougstraete.** Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. June 30, 2016. Center For Produce Safety annual meeting, Seattle, Washington, USA.

**M. Verhougstraete, S. Martin, A. Kendall, D. Hyndman, and J. Rose.** Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. February 4, 2016. Arizona Department of Environmental Quality. Maricopa, Arizona, USA.

**M. Verhougstraete, S. Martin, A. Kendall, D. Hyndman, and J. Rose.** Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale. November 30, 2015. Michigan Department of Environmental Quality. Lansing, Michigan, USA.

**M. Verhougstraete, K. Bright, K. Reynolds, C. Rock.** Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. June 23, 2015. Center for Produce Safety annual meeting, Atlanta, Georgia, USA.

**M. Verhougstraete, S. Martin, A. Kendall, D. Hyndman, and J. Rose.** Microbial tipping points of *Escherichia coli* and human specific bacteria in Great Lakes river systems. *May 19, 2014.* Joint Aquatic Sciences Meeting, Portland, Oregon, USA.

Martin, S., E. Luszcz, **M. Verhougstraete, A. Kendall, and D. Hyndman.** Estimating statewide septic system locations and linkages to pathogens. *March 21, 2013.* Michigan Environmental Health Association annual education conference, Rochester, Michigan, USA.

**Verhougstraete, M.P.** and R.T. Noble. Ambient water quality in the Southeastern US: Trends and advancements in water quality management. *November 12, 2012.* 33<sup>rd</sup> Annual Society of Environmental Toxicology and Chemistry meeting, Long Beach, California, USA.



## Colloquia Submitted

**M. Verhoughstraete**, N. Lothrop, J. Pearce-Walker, J. Sexton, K. Reynolds, K. Bright. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. May 18, 2016. University of North Carolina Water Microbiology conference, Chapel Hill, North Carolina, USA.

J. Eisenberg, C. Lamparelli, M. Zanolli-Sato, K. Pogreba Brown, **M. Verhoughstraete**, and T. Wade. Recreational water risks in the tropics: A prospective cohort study of risks associated with beaches in Brazil. *October 13, 2014*. Water and Health Conference, Raleigh, North Carolina, USA.

J. Viswasam, **M. Verhoughstraete**, R. Canales, A. Kendall, J. Rose. Investigating the links between precipitation, water quality, and GI illness. *August 12, 2014*. The University of Arizona Minority Health Disparities Program, Tucson, Arizona, USA.

**M. Verhoughstraete**, K. Pogreba-Brown, C.C. Lamparelli, and J.N.S. Eisenberg. A prospective cohort study of risks associated with beaches in Brazil. *May 5, 2014*. 2014. Water Microbiology Conference, Raleigh, North Carolina, USA.

K. Lauer, **M. Verhoughstraete**, D. Blackwood, and R. Noble. Quantitative analysis of fecal contamination in stormwater conveyance systems in Wrightsville Beach, NC. *May 5, 2014*. 2014 Water Microbiology Conference, Raleigh, North Carolina, USA.

D. Blackwood, S. Brothers, **M. Verhoughstraete**, W. Litaker, and R. Noble. Training the Next Generation of Water Quality Professionals: Lessons Learned from Workshops on Rapid, qPCR-based Methods. *May 5, 2014*. 2014 Water Microbiology Conference, Raleigh, North Carolina, USA.

B.A. Froelich, R.A. Gonzalez, A.D. Blackwood, R.P. Boyles, A.H. Snedecker, **M.P. Verhoughstraete**, and R.T. Noble. Multi-year changes in *Vibrio* populations in the Neuse River Estuary of North Carolina, USA. *April 1, 2014*. Vibrio 2014 Conference, Edinburgh, Scotland.

Froelich, D., R. Gonzalez, D. Blackwood, M. Greene, R. Guajardo, S. Brothers, **M. Verhoughstraete**, R. Luettich, H. Paerl, J. Oliver, and R. Noble. Pathogenic *Vibrio* species in the Neuse River Estuary. *October 25, 2012*. Research Coordination Networks symposium, Oregon, USA.

**Verhoughstraete, M.P.** and J.B. Rose. Microbial responses to land, physical, chemical, environmental, and hydrological factors. *October 18, 2012*. 12<sup>th</sup> Annual Great Lakes Beach Association Conference. Mackinac Island, MI, USA

**Verhoughstraete, M.P.** and J.B. Rose. Saginaw Bay ‘muck’: Current understanding, research, and protective measures. *March 16, 2012*. 2012. Saginaw Bay Watershed Conference, Bay City, MI, USA

**Verhoughstraete, M.P.** Public Health Issues of the 21<sup>st</sup> Century Workshop. *February 22, 2012*. 33<sup>rd</sup> Annual Montana Rural Water Systems, Great Falls, Montana, USA

**Verhougstraete, M.,** S. Martin, A. Kendall, D. Hyndman, and J. Rose. A Biological Survey: Understanding Water Quality Using a Process Based Approach. *September 19, 2011*. 16<sup>th</sup> International Symposium on Health-Related Water Microbiology-International Water Association. Rotorua, New Zealand

**Verhougstraete, M.P.,** Y. Huang, and J.B. Rose. Public Health Tipping Points for Water Quality. *April, 19, 2011*. NOAA and EPA Tipping Point Project meeting. Chicago, IL, USA

**Verhougstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *October 20, 2010*. 10<sup>th</sup> Annual Great Lakes Beach Association Conference. Presque Isle, Pennsylvania, USA

**Verhougstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *October 9, 2010*. Michigan Branch of the American Society for Microbiology fall meeting. East Lansing, Michigan, USA

**Verhougstraete, M.P.** and J.B. Rose. A Water Quality Comparison between Grand Traverse Bay and Saginaw Bay, Michigan, United States. *September 20, 2010*. International Water Association World Water Congress and Exhibition. Montreal, Quebec, Canada

Aslan, A. and **M. Verhougstraete**. Climate Change and Water Quality. *April 26, 2010*. Bioeconomy and Global Climate Change, Climate Change Vulnerabilities and Opportunities: Michigan and Beyond Symposium. East Lansing, Michigan, USA.

**Verhougstraete, M.P.** and J.B. Rose. Microbial and Molecular Survey of Grand Traverse Bay Watershed. *April 6, 2010*. Michigan Branch of the American Society for Microbiology spring meeting. Kalamazoo, Michigan, USA

J.B. Rose and **M.P. Verhougstraete**. Source Tracking in the Saginaw Bay and Great Lakes Application. *October 26, 2009*. Fourth Annual Ottawa County Water Quality Forum. Grand Rapids, Michigan, USA

**Verhougstraete, M.P.,** J.B. Rose, and S. U'Ren. Healthy Beaches Program Grand Traverse Bay Region. *September 30, 2009*. 9<sup>th</sup> Annual Great Lakes Beach Association Joint Conference. Milwaukee, Wisconsin, USA

**Verhougstraete, M.P.** and J.B. Rose. The Muck and Human Health. *July 1, 2009*. Michigan Farm Bureau Regional Policy Development Meeting. Frankenmuth, Michigan, USA

**Verhougstraete, M.P.** and J.B. Rose. Using Fecal Indicator Bacteria And Source Tracking Markers During Spatial And Temporal Sampling Of Sediments, Swash Zone, Swimming Water, And Muck To Assess Saginaw Bay, Michigan, United States. *June 1, 2009*. 15<sup>th</sup> International Symposium on Health-Related Water Microbiology-International Water Association. Naxos, Greece

**Verhougstraete, M.P.** and J.B. Rose. Recreational water quality assessment of Saginaw Bay beaches using fecal indicator bacteria and source tracking methods on samples from shallow

and deep waters, sediment, and muck. *May 19, 2009*. International Association of Great Lakes Research 52<sup>nd</sup> Annual Conference on Great Lakes Research. Toledo, Ohio, USA

**Verhougstraete, M.P.** and J.B. Rose. Water Quality and Fecal Contamination of Saginaw Bay, Michigan. *March 19, 2009*. Michigan Environmental Health Association. Traverse City, MI, USA

**Verhougstraete, M.P.** and J.B. Rose. Water Quality of Saginaw Bay. *March 12, 2009*. Huron County Water Quality Forum. Port Austin, Michigan, USA

**Verhougstraete, M.P.** and J.B. Rose. Water Quality and Pollution Characterization of Saginaw Bay. Michigan. *February 13, 2009*. Michigan State University Department of Fisheries and Wildlife Graduate Student Symposium. East Lansing, Michigan, USA

**Verhougstraete, M.P.** and J.B. Rose. Using a toolbox approach to investigate Cladophora, muck, sediment, and water around Saginaw Bay. *September 6, 2008*. Great Lakes Beach Association Annual meeting. Portage, Indiana, USA

**Verhougstraete, M.P.** and J.B. Rose. Saginaw Bay and *Escherichia Coli*. *September 5, 2008*. Saginaw Bay Coastal Initiative Speaker Series. Bay City, Michigan, USA

McNinch, R.M, **Verhougstraete, M.P.**, and J.B. Rose. Using Fecal Indicator, Source Tracking, and GIS Tools to Assess Fecal Contamination in Michigan's Waters. *May 20, 2008*. International Association of Great Lakes Research 51<sup>st</sup> Annual Conference on Great Lakes Research. Peterborough, Ontario, Canada

Srinivasan, S., **M.P. Verhougstraete**, and J.B. Rose. *S. Bacteroides*, a new alternative indicator. *April 12, 2008*. Michigan Branch of the American Society for Microbiology spring Meeting. Mt. Pleasant, Michigan, USA

Shibata T., **M. Verhougstraete**, and J. Rose. Background Levels of Viable Bacteria and Fungi in the Indoor Air and on Surfaces in a Hospital before a UVGI-HVAC Installation. *October 13, 2007*. Michigan Branch of the American Society for Microbiology fall meeting. Traverse City, Michigan, USA

### **Courses instructed**

Co-Instructor. CPH 696. Environmental and Occupational Health seminar. Spring 2017.

Co-Instructor. CPH 696. Environmental and Occupational Health seminar. Fall 2016.

Instructor. CPH 375. Introduction to Environmental and Occupational Health. Fall 2016. 130 enrolled students.

### **Seminar Invited**

**M. Verhougstraete**. Current state of microbial research for produce safety. October 17, 2016. The University of Arizona, School of Animal Comparative Biomedical Sciences (ACBS), Tucson, Arizona, USA.

**M. Verhougstraete.** Students for Sustainability Environmental Health Panel. November 1, 2016. The University of Arizona, Students for Sustainability, Tucson, Arizona, USA.

**M. Verhougstraete.** Microbial water quality in the Great Lakes. *September 3, 2014.* The University of Arizona, College of Public Health, Environmental Health Sciences seminar series, Tucson, Arizona, USA.

K. Pogreba-Brown and **M. Verhougstraete.** Large cohort study of illness associated with beach exposure in Brazil. *February 6, 2014.* The University of Arizona, College of Public Health, Epidemiological Seminar Series, Tucson, Arizona, USA.

### **Symposia organization**

2016-Present	International Risk Institute. Founding member
March 2013	Molecular Training Facility Rapid Methods Assessment
November 2013	Molecular Training Facility Rapid Methods Assessment
2012	Montana Rural Water Systems annual conference: Our water; Our health
2011-2012	NOAA Sea Grant climate change workshop
2008, 2009, 2011	CAMRA (Center for Advancing Microbial Risk Assessment) Summer Institute
2009	Center for Water Sciences: Stormy Weather and Stormwater Impacts workshop series
2007	Center for Water Sciences: Waterborne Pathogens Workshop Series

### **Symposia participation**

2016	Cochise County public health emergency preparedness infectious disease workshop, Sierra Vista, Arizona, USA
2013	Quantitative Microbial Risk Assessment Innovation Institute, Sao Paulo, Brazil
2010	International Joint Commission experts meeting, Milwaukee, Wisconsin, USA
2009	Multiple Stressors in Saginaw Bay: Navigating the Issues, Ann Arbor, Michigan, USA
2008	Beach Health Steering Committee-USGS, Portage, Indiana, USA
2007	Center for Advancing Microbial Risk Assessment Institute, East Lansing, Michigan, US

### **Symposia speaker**

2012	Saginaw Bay Watershed Conference
2009	Ottawa County Water Quality Forum
2009	Huron County Water Quality Forum
2008	Saginaw Bay Coastal Initiative Speaker Series

## **AWARDED GRANTS**

### **Federal**

2015-2016	Co-Principal Investigator. Responder Safety and Health. Funded by: Center for Disease Control and Prevention through the Arizona Department of Health Services under the Hospital Preparedness Program
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and Public Health Emergency Preparedness Cooperative Agreements.  
Total cost: \$240,000; 40% effort

2008-2014 Contributing investigator. Collaborative Research: Linkage of Bacterial Pathogens to Human infectious Disease in an Estuary Subjected to Extreme Climatic Events. Funded by: National Science Foundation. Total cost: \$1,541,139; 50% effort

2012-2013 Co-Principal Investigator. Quantifying the impacts of projected climate changes on the Grand Traverse Bay region: An adaptive management framework. Funded by: NOAA Michigan Sea Grant. Total cost: \$106,613; 50% effort

2010-2012 Co-Principal Investigator. Land use change and agricultural lands indicators and tipping points. Funded by: NOAA and EPA. Total cost: \$119,748; 50% effort

## State

2016-2017 Principal Investigator. A novel approach to quantify climate changes effects on drinking water quality. Funded by: University of Arizona. Total cost: \$8,955; 5% effort

2016-2017 Co-Principal Investigator. Pathogen Transport to Produce via Irrigation. Funded by: Arizona Department of Agriculture (\$60,000). 10% effort

2016-2017 Principal Investigator. Identifying new surrogates for irrigation water. Funded by: Arizona Department of Agriculture (\$65,441).

2015-2017 Principal investigator. Determining Data Gaps in Risk Assessment for use in Produce Safety. Funded by: Arizona Department of Agriculture. Total cost: \$50,000; 13% FTE

2016 Principal Investigator. HydroSphere enhancement for improved water quality monitoring. Water, Environment, Energy Sustainability (WEES). Total cost: \$6,000

2015-2016 Principal investigator. Determining Data Gaps in Risk Assessment for use in Produce Safety. Pending: Arizona Department of Agriculture. Total cost: \$50,000; 15% effort

2015 Co-Principal Investigator. Equipment Grant Award. Funded by: University of Arizona, Water, Environment, and Energy Solutions at The University of Arizona. Total cost: \$16,407

2015-2016 Principal investigator. Optimal strategies for monitoring irrigation water quality and the development of guidelines for the irrigation of food crops. Funded by: Center for Produce Safety, University of California Davis. Total cost: \$117,201; 5% effort

2015-2016	Co-Principal Investigator. Enteric viruses as new indicators of human and cattle fecal contamination of irrigation waters. Funded by: Center for Produce Safety, University of California Davis. Total cost: \$221,340; 5% effort
2014-2015	Co-Principal Investigator. Spatial/Temporal Sampling of Irrigation Water. Funded by: Arizona Department of Agriculture – Specialty Crop Program. Total cost: \$60,000; 5% effort
2012-2013	Co-investigator. Training Workshops at Molecular Training Facility in Eastern North Carolina. Funded by: North Carolina Biotechnology Center, Presidential Initiative Award. Total cost: \$40,000; 50% effort
2009-2011	Co-Principal Investigator/Lead investigator. Assessment of water quality and health risk in Grand Traverse Bay Watershed. Funded by: Michigan Department of Environmental Quality. Total cost: \$31,955; 50% effort
2009	Lead investigator. Beach monitoring in Grand Traverse Bay. Funded by: Michigan Department of Environmental Quality through the BEACH Act. Total cost: \$5,000; 10% effort
2008-2009	Lead investigator. Screening level source tracking of <i>E. coli</i> and phosphorus in the Saginaw Bay watershed. Funded by: Michigan Department of Environmental Quality. Total cost: \$23,913; 20% effort
<b>Industry</b>	
2016	Co-Principal Investigator. Cost benefits of point of use devices in reduction of health risks from drinking water. Funded by: Water Quality Association (WQA). Total cost: \$60,000; 15% effort
2016	Co-Principal Investigator. Impact of Safeguard on fecal bacterial load on humans and household fomites. Funded by: Procter & Gamble Co. Total cost: \$80,000; 20% effort
2016	Co-Principal Investigator. Controlled Laboratory Chamber Study of Antimicrobial Efficacy over Long-term Use. Funded by: XStream Infection Control, LLC. Total cost: \$33,911; 25% effort
2014	Co-Principal Investigator. Hospital Field Study of T1 Air Disinfectant Recirculator Efficacy Against Viral Tracers. Funded by: Aerobiotix Inc. Total cost: \$23,427; 20% effort
<b>Private Foundation</b>	
2009	Lead investigator. Improving Grand Traverse Bay water quality through Healthy Beaches campaign. Funded by: The Watershed Center Grand Traverse Bay. Total cost: \$15,600; 10% effort

2009-2010	Lead investigator. Investigation of water quality and source tracking in Gull Lake watershed, Kalamazoo County, Michigan. Funded by: Four Township Water Resources Council. Total cost: \$3790; 10% effort
2008	Lead investigator. Investigation of water quality and sources associated with the Buck Creek Watershed. Funded by: City of Kentwood, Michigan. Total cost: \$4860; 10% effort
2008	Lead investigator. West Lake Improvement Association Barberry Drain at West Lake preliminary water quality testing. Funded by: West Lake Improvement Association. Total cost: \$1000; 5% effort
2007-2008	Lead investigator. Investigation of water quality in the Coldwater River Watershed. Funded by: Coldwater River Watershed Council. Total cost: \$3840; 5% effort

## **LIST OF COLLABORATORS (LAST 5 YEARS)**

### **Grants and Publications**

Arora, M., The University of Arizona  
 Ashbolt, N., University of Alberta  
 Aslan, A., University of Georgia Southern  
 Bartholic, J., Michigan State University  
 Bartram, J., University of North Carolina  
 Bassett, J., John Bassett Consulting  
 Beamer, P.I., The University of Arizona  
 Blackwood, A.D., University of North Carolina – Chapel Hill  
 Briggs, S., State of Michigan Department of Environmental Quality  
 Bright, K., The University of Arizona  
 Brothers, S., University of North Carolina – Wilmington  
 Boyles, R.P., University of North Carolina – Chapel Hill  
 Bruni, A.C., Environmental Company of Sao Paulo State  
 Byappanahalli, M.N., United State Geological Survey, Lake  
 Canales, R., The University of Arizona  
 Carlo, L., The University of Arizona  
 Davey, A., University of Delaware  
 Dreelin, E.A., Michigan State University  
 Edwards, M., Virginia Polytechnic and State University  
 Eisenberg, J.N.S., The University of Michigan  
 Froelich, B.A., University of North Carolina – Chapel Hill  
 Gerba, C., The University of Arizona  
 Gonzalez, R.A., University of North Carolina – Chapel Hill  
 Granillo, B., The University of Arizona  
 Greene, C., NSF International  
 Haas, C., Drexel University  
 Hanrahan, I., Washington State Tree Fruit Associate  
 Hoffmann, M., Food and Drug Administration  
 Huang, Y., Michigan State University



Hyndman, D., Michigan State University  
 Ives, R., Michigan State University  
 Kahn-Rivadeneira, P., The University of Arizona  
 Kendall, A., Michigan State University  
 Klimecki, W., The University of Arizona  
 Lamparelli, C.C., Environmental Company of Sao Paulo State  
 Larson, Marilyn A., University of Nebraska Medical Center Department  
 Lauer, K., University of North Carolina – Chapel Hill  
 Litaker, W., National Oceanic and Atmospheric Administration  
 Loh, M.M., Institute of Occupational Medicine  
 Lothrop, N., The University of Arizona  
 Lutz, E., The University of Arizona  
 Martin, S., Michigan State University  
 Medema, G., Delft University of Technology  
 Meschke, J., University of Washington  
 Miller, J., NSF International  
 Noble, R., University of North Carolina – Chapel Hill  
 Ozevin, D., University of Illinois at Chicago  
 Progreba-Brown, K., The University of Arizona  
 Pruden, A., Virginia Polytechnic and State University  
 Ravishankar, S., The University of Arizona  
 Reynolds, K., The University of Arizona  
 Rivadeneira, P., The University of Arizona  
 Rock, C., The University of Arizona  
 Roiko, A., Griffith University  
 Rose, J., Michigan State University  
 Sato, M.I.Z., Environmental Company of Sao Paulo State  
 Sexton, J., The University of Arizona  
 Snedeker, A.H., University of North Carolina – Chapel Hill  
 Sugeng, A., The University of Arizona  
 Viswasam, J., Georgia State University  
 Wade, T., United States Environmental Protection Agency  
 Weber, M., The University of Arizona  
 Weir, M., The University of Ohio  
 Whitman, R.L., United State Geological Survey  
 Wilkinson, S.T., The University of Arizona

### **Student advising**

2017	Modhi Alshammari (PhD committee member), The University of Arizona
2016-2017	Elkana Kurgart (PhD), The University of Arizona
2016-2017	Dametreea Carr (MPH), The University of Arizona
2016-2017	Amanda Wilson (Masters), The University of Arizona
2016-2017	Daniel Troup (Masters), The University of Arizona
2016-2017	Kimberley Munoz (MPH committee member), The University of Arizona
2016	Jeannie Pearce-Walker (Independent study), The University of Arizona
2016	Valerie Madera-Garcia (PhD), The University of Arizona
2015-2016	Modhi Alshammari (Masters committee member), University of Arizona
2015	Kyle Brown (Masters), The University of Arizona
2014-2015	Steven Hadeed (Ph.D.), The University of Arizona

2014	Jonathan Viswasam (Undergraduate), The University of Arizona
2013	Kellen Lauer (Masters), University of North Carolina at Chapel Hill
2012	Sara Posey (Undergraduate), University of North Carolina at Chapel Hill
2008, 2009, 2011	Christian Beato Melendez (Undergraduate), Michigan State University
2008-2010	Mustafa Mazher (Masters), Michigan State University
2008-2009	Benjamin Schmidt (Masters), Michigan State University