Curriculum Vita for Daryl F. Dwyer

Personal: University of Toledo, Department of Environmental Sciences
2801 West Bancroft Street, Toledo, OH 43606-3390
Tel: (419) 530-2661; email: daryl.dwyer@utoledo.edu
Languages: English, German

Curriculum: Ph.D. (1986) Microbiology
M.A. (1981) Environmental Biology
B.S. (1978) Biology, Psychology

Employment:

2008	Associate Professor, Department of Environmental Sciences, and Director, Stranahan Arboretum, The University of Toledo, Toledo, OH
2001	Associate Professor, Department of Environmental Sciences, The University of Toledo, Toledo, OH
1993	Associate Professor, Department of Civil Engineering, University of Minnesota, Minneapolis, MN
1988	Project Leader in Applied Microbial Ecology, Federal Institute for Biotechnological Research (GBF), Germany
1987	Maitre d'Assistant, University of Geneva, Switzerland
1986	Research Assistant, University of Geneva, Switzerland
1981	Research and Teaching Assistant, Michigan State University
1978	Research and Teaching Assistant, State University of New York at Buffalo
1976	Laboratory and Teaching Assistant, Wilkes College, PA

Education:

1987	NSF Postdoctoral Fellowship: "Genetic analysis of the response of soil bacterial ecosystems to 2,4-dichloro-phenoxyacetic acid and other xenobiotic ether compounds"
1986	Ph.D. (Michigan State Univ.), Thesis: "Anaerobic biodegradation of ether compounds by ether bond-cleaving bacteria and methanogenic consortia", Advisor: Prof. James M. Tiedje
1981	M.A. (SUNY/Buffalo), Thesis: "Synergistic effect of light, temperature and copper on the growth of *Scenedesmus quadricauda"*, Advisor: Prof. John F. Storr. Activities: Graduate Council Representative
1978	B.S. (Wilkes College), Activities and Awards: Academic Standing Co., Curriculum Co., President's Council on Teacher Effectiveness, President of American Institute of Biological Sciences Chapter, Wilkes College Biological Research Award, Sigma XI, Who's Who in American Colleges and Universities, Student Council Representative

Professional Societies:

American Chemical Society, American Society for Microbiology, Sigma Xi

Research Experience:

Restoration Ecology, Water Quality/Beach Health, Bioremediation, Phytoremediation, Natural Attenuation of Environmental Pollutants, Applied Microbial Ecology and Physiology, Design and Risk Assessment of Genetically Engineered Microorganisms, Molecular Biology, Anaerobic Microbiology

Research Projects

Projects center on developing strategies for the bioremediation of polluted environments (prior to arrival at the University of Toledo):

1. Addition of non-indigenous bacteria, including genetically engineered microorganisms, to a contaminated aquifer. This project is in cooperation with the U.S. Geological Survey at the U.S.G.S. Groundwater Contamination Study Site (Cape Cod, MA). Primary goals are to define:

   (a) *in situ* conditions that are conducive to rapid degradation of target pollutants by non-indigenous microorganisms, and

   (b) ecological and bioremediative effects which follow addition of genetically engineered microorganisms to aquifers.

2. Development of techniques using molecular biology to identify and track target microbes in the environment and to measure the effect of man's activities on the structure and activity of indigenous microbial ecosystems.

3. Genetic and physiological analysis of diaryl ether-degrading bacteria. Genes encoding a dioxygenase responsible for the catalytic cleavage of diaryl rings have been cloned and sequenced. Bacteria with genetically modified catabolic pathways capable of degrading recalcitrant pesticides are being developed and their fate and activities analyzed in soils polluted with phenoxybenzoate-based chemicals.

4. Modeling natural attenuation of TCE in a marshland receiving TCE-contaminated groundwater. Additional objectives are to analyze the potential for oxidation of TCE by methanotrophs and to observe any influence on the rate of degradation of TCE by vegetation.

5. Analysis of biostimulation of indigenous microorganisms used to accelerate the removal of organic wastes from a contaminated aquifer that threatens to impact the Cedar River (IA). The organic compounds were waste products from a former manufactured gas plant.

6. Development of an organo-solv process for the recovery of industrial products from oat hull residues. This project was done in cooperation with and funded by the Biological Process Technology Institute, University of Minnesota.

Projects centered on environmental restoration and health (University of Toledo):

7. Assessing the source(s) and fate of *Escherichia coli* in Maumee Bay, Lake Erie. The influence of applying sewage sludge to agricultural fields is a top priority with respect to fecal contamination-induced beach closings at Maumee Bay State Park, Ohio. The project has evolved to where wetlands are being built, according to our design, to protect the State Park's public swimming beaches from fecal contamination.

8. Bioremediation of the King Road Landfill, Sylvania, Ohio. Long-term goals for the landfill include its restoration to a natural area and the containment/removal of organic and metallic wastes. The project has resulted in an exemption granted by the EPA to allow for implementation of our design of an evapotranspiration cover for the KRL and similar, older landfill sites.

9. Development of a passive, biological treatment process for arsenic contaminated water and soil. Native plant species were identified that take up arsenic. Creation of a wetland with these plant species to treat arsenic contaminated waste was put on hold when a new company purchased the industrial company with which we worked.

10. Rehabilitation of wetlands and riverine habitat for the treatment of phosphorus, sediment and *Escherichia coli* in surface water runoff. This project resulted in a unique design for both a wetland and a settling basin constructed in Maumee Bay State Park to improve water quality for Berger Ditch as part of a delisting effort for beneficial use impairments at the Lake Erie swimming beaches.

11. Production of a phosphorus sorbent and controlled-release fertilizer. The product of this research works as a quick and cheap sorbent for phosphorus and is under study for application on a large scale that results in reduction of phosphorus entering Lake Erie and control of harmful algal blooms.

Courses Taught

University of Toledo

Course Number	Title	Semester	Year
EEES 49/6980-001	Phytoremediation (3 cr)	Spring	2002,
		Summer	2007
EEES 49/6980-002	Environ Microbiol (3 cr)	Spring	2002, 3, 4, 11
EEES 49/6980-002	Bioremediation (3 cr)	Fall	2002, 3, 6,
EEES 41/51/7150	Evolution/Organic (3 cr)	Spring	2003, 4
EEES 2150	Biodiversity (4 cr)	Spring	2017, 18
		Fall	2003 - 5, 8 - 17
EEES 2160	Biodiversity Lab (1 cr)	Fall	2005
EEES 69/8980	Restoration Ecology (3 cr)	Spring	2005 - 10
		Fall	2011
EEES 66/8600	Foundations Ecology (4 cr)	Fall	2010
EEES 3900	Lit/Commun Env Sci (3 cr)	Spring	2011 – 18

EEES 4980 Microbiol Environ Sci (2 cr) Fall 2017

University of Minnesota

Course Number and Title:

CE 3500 Introduction to Environmental Engineering
CE 5501 Analysis and Design of Wastewater Systems
CE 5507 Environmental Engineering Laboratory*
CE 5515 Water and Wastewater Microbiology
CE 8508 Groundwater Microbiology*
CE 8509 Environmental Microbiology*
*Courses having a laboratory component

Technical University of Braunschweig

Laboratory Course in Ecology and Physiology of Microorganisms

University of Geneva

Microbiology for Medical Students

Michigan State University

Microbial Ecology

Graduate Student Supervision

University of Toledo

Completed Ph.D. Degrees

Jordan Rofkar: "An ecologically engineered system for remediation of arsenic-contaminated water: selecting plant species for northwest Ohio." Ph.D. Start date: 1/06. Defense date: 4/10

Kris Barnswell: "Determining preliminary components for a landfill evapotranspiration cover." Ph.D. Candidate. Start date: 1/06. Defense date: 4/10.

Completed M.S. Degrees (Research Theses)

Jordan Rofkar: "Arsenic accumulation by plant species selected for growth in northwest Ohio." MS Candidate in Ecology. Start date: 9/03. Defense date: 8/05.

Kris Barnswell: "Phytoremediation potential at an inactive landfill in northwest Ohio." MS Candidate in Ecology. Start date: 9/03. Defense date: 8/05.

Jona Scarbro: “Microbial transport through the vadose zone of a biosolid amended cropland: implications for land application of class B biosolids and surface water quality.” Start date: 8/04. Defense date: 8/06.

Pamela Struffolino: “Identifying Sources of *Escherichia coli* to Maumee Bay, Oregon, Ohio.” Start date: 5/03. Defense date: 8/07.

Matthew Gorr: “Arsenic remediation using constructed treatment wetlands.” Start date: 9/09. Defense date: 12/11.

Ryan Jackwood: Predicting fate and transport of fecal bacteria through soils using an advection-dispersion model.” Start date: 08/11. Defense date: 11/13.

Danielle Long: “The role of retention time and soil depth on the survival and transport of *Escherichia coli* and *Enterococcus spp*. in biosolid amended agricultural soil.” Start date: 08/11. Defense date: 03/14.

Candice Brothers: “The Efficiency of Orthophosphate Absorption by Five Different Biochars and Biochar-Soil Mixes". Co-Advised with Alison Spongberg. Start date: 08/11. Defense date: 05/14.

Completed M.S. Degrees (Non-research Theses)

Harrison Murbi: “Use of geospatial technology to map invasive species in the Great Lakes Region.” Start date: 8/04. Defense date: 6/06.

Sara Mierzwiak: “Enhanced in situ bioremediation of a TCE hotspot using a dilute vegetable oil emulsion.” Co-Advised with J. Martin-Hayden. Start date: 9/05. Defense date: 8/06.

Matthew Mayher: Effectiveness of an in-stream sedimentation pond in reducing the mass of bed sediment, concentrations and loading of suspended solids, phosphorus, and *Escherichia coli* in Wolf Creek, Oregon, OH. Start date: 6/14. Defense date: 5/16.

University of Minnesota

Completed Ph.D. Degrees

Rolf Halden: "Soil microcosm studies designed to determine the fate and activity of non-indigenous, diaryl ether degrading bacteria." Started 1/4/93. Defense May 1997. Presently employed as research associate, Lawrence Livermore Laboratories, Berkeley, CA.

Marc Von Keitz: "Resource recovery in the food processing industry: simultaneous production of dietary fiber and xylose for xylitol fermentation from oat hulls." Started 9/15/94. Defense June 2000. Presently employed as research assistant, BioProcess Technology Institute, University of Minnesota, MN.

Don E. Richard: “Natural attenuation of manufactured gas plant (MGP) residuals in a shallow aquifer at the site of the Waterloo Coal Gassification Plant.” Started 9/15/97. Defense September 2003. Presently employed as Principal Investigator, Barr Engineering, Minneapolis, MN.

Completed M.S. Degrees (Research Theses)

Erik Peters: "Fate and activity of *Pseudomonas pseudoalcaligenes* strain POB310 in soils contaminated with phenoxybenzoates." Started 9/15/93. Defense May 1997. Presently employed by Bonestroo Rosene Anderlik & Associates, Inc.

Gary Mundfrom: "Development of nucleic acid probes for detection of genes encoding the 16S rDNA and 4POB-dioxygenase of *Pseudomonas pseudoalcaligenes* strain POB310 in environmental samples." Started 1/4/93. Defense August 1997. Presently employed by Delta Environmental Consultants.

Keith Anderson: "Parameters affecting the transport of bacteria in aquifer sediment columns." Started 9/15/93. Defense August 1997. Presently employed by Minnesota Extension Service, Water Resources Branch.

Sandra Tepp: "Survival and activity in soil of *Pseudomonas* sp. strain B13 (pPOB): a bacterium designed for the degradation of phenoxybenzoates." Started 9/15/95. Defense January 1998. Presently employed by Remediation Technologies, Inc.

Julie Sullivan: Modeling the subsurface transport of genetically engineered microorganisms in a sand-gravel aquifer, Cape Cod, MA. Started 6/15/96. Defense August 1999. Presently employed by Barr Engineering, Co.

Jamie Bankston: Bioattenuation of trichloroethylene by methanotrophic bacteria in a TCE-contaminated marshland. Started 9/15/97. Defense August 1999. Presently employed by Camp, Dresser and McKee, Inc.

Troy Twesme: Modeling natural attenuation of a TCE plume in subsurface sediments and a wetland ecosystem. Started 6/15/98. Defense August 1999. Presently with the U.S. Air Force, Korea.

Completed M.S. Degrees (Non-research Theses)

Zelma Zieman: "*In situ* bioremediation of a contaminated site: A proposed evaluation plan." 1994.

Rolf Ulrich Halden: "Biotransformation of polychlorinated dibenzo-p-dioxins, dibenzofurans, and diphenyl ethers." 1994.

Scott Abrams: "Data analysis of off-gas from an air-sparged landfill to be used for determining rates of biodegradation." 1997.

William Raatz: "Use of genetically engineered microorganisms for in situ bioaugmentation." 1999.

Dean Langenfeld: "Modification of the Twesme subsurface contaminant-transport model for use in heterogenous environments." 2000.

Jennifer Kersten: " Polycyclic Aromatic Hydrocarbons (PAHs): Bacteria and Their Target Compounds. 2001.

Gesellschaft fur Biotechnologische Forschung (Germany):

Completed Ph.D. Degrees

Mary Lou Krumme: "Development of aquifer microcosms and *in situ* methods to test the fate and function of pollutant-degrading microorganisms." 1993.

Jörg Egestorff: "Establishment and standardization of aquifer microcosms used to predict *in situ* survival, function and ecological effects of GEMs designed to degrade environmental pollutants." 1993.

Uwe Dehmel: "Genetic analysis of the catabolic pathway for 4-phenoxybenzoate in *Pseudomonas pseudoalcaligenes* strain 310." 1994.

Completed M.S. Degrees

Klaus Nüßlein: "Development of activated sludge microcosms for predicting the *in situ* fate of microorganisms." 1990.

Maren Brunke: "Kinetic analysis of the microbial degradation of substituted aromatic compounds in a microcosm." 1991.

Research Funding:

Projects funded at the University of Toledo:

HAB Associated Health Effects and Airborne Microcystin Levels Among Recreational Lake Users. ($269,268). 2018-2020. Ohio Department of Higher Educaton. PI: April Ames. Co-PI: Michael Valigosky, Barbra Saltzman, Daryl F. Dwyer and Kevin Czajkowski.

Nine Element Watershed Plan Update. ($25,000). 2016-2017. Ohio Environmental Protection Agency/Partners for Clean Streams/Lucas County. PI: Daryl F. Dwyer.

I-Corps: Beneficial Reuse of Water Treatment Spent Lime. ($50,000) 2016-2017. National Science Foundation. PI: Daryl F. Dwyer.

Determining Components for a phosphorus interceptor to reduce harmful algal blooms in the western Lake Erie basin. ($7,087). 2016-2017. Ohio Water Resources Center. PI: Daryl F. Dwyer

Explore the cost-effectiveness of lime products related to phosphorus sorption in the Maumee River watershed. 2016. ($10,191). Graymont Inc., PI: Daryl F. Dwyer.

Using new tools to better understand and predict harmful cyanobacterial algal blooms in Lake Erie and Ohio inland lakes. 2016-2017. ($113,649). Ohio Water Development Authority. PI: Daryl F. Dwyer.

Lake Erie Bathing Beach Monitoring. 2013-2017. (~$11,500 each year). Ohio Department of Health. PI: Daryl F. Dwyer.

Reduction of Sediment and Bacteria Loadings to Public Beaches at Maumee Bay State Park via Enhanced Riparian Habitat. ($472,491). 2012-2014. USEPA. PI: Daryl F. Dwyer

Phytoremediation of Brownfields in Toledo, Ohio. ($478,276). 2012-2013. US Forest Service, Ohio Department of Natural Resources. PI: Daryl F. Dwyer.

Bathing Beach Monitoring Project, Maumee Bay State Park. ($13,146). 2012. Ohio Department of Health. PI: Daryl F. Dwyer.

Maumee AOC, Wolf Creek: Passive Treatment Wetland to Improve Nearshore Health and Reduce Nonpoint Source Pollutants. ($1,348,945). 2011-2013. USEPA. PI: Daryl F. Dwyer.

Prevention of Surface Water Contamination from Biosolids Application. ($550,228). 2010-2013. USEPA. PI: Kevin Czajkowski, co-PI's Daryl Dwyer, Allison Spongberg, Von Sigler

Lake Erie wetlands and shoreline restoration: MBSP phytoremediation. ($504,504). 2009-2012. U.S. Department of Agriculture. PI: Daryl F. Dwyer.

Monitoring agricultural sewage sludge application, OH. ($836,503). 2008-2011. U.S. Department of Agriculture. PI: Kevin Czajkowski, Co-PI's: Michael Bisesi, Robert Vincent, Sherri Milz, Von Sigler, Alison Spongberg, Daryl F. Dwyer, Ashok Kumar, Sadik Khuder, Brian Fink, Farhang Akbar, Hiro Iseki, Brian Alam, Brian Harrington.

Phytoremediation and plant research, OH: Wetlands. ($537,221). 2008-2012. U.S. Department of Agriculture. PI: Daryl F. Dwyer, Co-PI's: Von Sigler, Alison Spongberg, Defne Apul.

Stream gage installation, Maumee River GIS. ($120,038). 2007- 2010. Natural Resources Conservation Service. PI: Daryl F. Dwyer.

Phytoremediation, Design of treatment wetlands. ($511,475). 2007-2008. U.S. Department of Agriculture. PI: Daryl F. Dwyer, Co-PI's: David Krantz, Timothy Fisher, Kevin Egan, Alison Spongberg.

Sewage sludge application. ($845,017). 2007-2008. U.S. Department of Agriculture. PI: Kevin Czajkowski, Co-PI's: Alison Spongberg, Von Sigler, Daryl F. Dwyer, Robert Vincent, and Michael Bisesi.

Remediation of sites containing mixed contaminants. ($721,853). 2006-2010. U.S Department of Agriculture. PI: Daryl F. Dwyer, CO-PI's Kevin Czajkowski and Jonathan Bossenbroek.

Maumee Bay State Park shoreline and wetland restoration plan. ($14,649). 2006-2007. Ohio Department of Natural Resources. PI: Daryl F. Dwyer, Co-PI: Kevin Egan.

Monitoring Agricultural Sewage Sludge, Ohio. ($1,192,586). 2006-2010. U.S. Department of Agriculture. PI: Kevin Czajkowski, Co-PI's: Alison Spongberg, Daryl F. Dwyer, and Von Sigler.

Development of a passive phytoremediation treatment system for arsenic contaminated water. 2005-2009. ($728,882), U.S. Department of Agriculture. PI: Daryl F. Dwyer; Co-PI's: Johan Gottgens, James Martin-Hayden, Defne Apul.

Monitoring of agricultural sewage sludge applications and possible health effects in NW Ohio. 2005-2008. ($1,194,995). U.S. Department of Agriculture. PI: Kevin Czajkowski, Co-PI's: Alison Spongberg, Von Sigler, and Daryl F. Dwyer.

Population-based molecular-tracking of fecal coliform reservoirs in Maumee Bay. 2005-2007. ($61,467). Ohio Lake Erie Commission. PI: Von Sigler, Co-PI: Daryl F. Dwyer.

Phytoremediation Plant Research III. 2004-2006. ($532,233). U.S. Department of Agriculture. PI: Daryl F. Dwyer, Co-PI's: Alison Spongberg, David Krantz, and Von Sigler.

Restoration of King Road Landfill, Lucas County, Ohio. 2003-2005. ($595,156). U.S. Department of Agriculture. PI: Daryl F. Dwyer, Co-PI's: Alison Spongberg and David Krantz.

Identification of proximate sources of fecal contamination to Maumee Bay by determining concentrations of Escherichia Coli in sediments. 2003-2005. ($141,414). Ohio Water District Association through TMACOG (Toledo Metropolitan Area Council of Governments). PI: Daryl F. Dwyer

Phytoremediation plant research. 2002-2004. ($282,020). U.S. Department of Agriculture. PI: Daryl F. Dwyer, Co-PI's: Alison Spongberg and Deborah Neher.

Molecular characterization of bacterial communities in contaminated soils. 2002. ($5,000). Ohio Board of Regents. PI: Daryl F. Dwyer.

Selected projects funded prior to coming to the University of Toledo:

Natural Bioremediation of MPG residues at the Waterloo Coal Gassification Plant Site, 1998-2000. ($157,200). MidAmerican Energy Co.

Intrinsic bioremediation of trichloroethylene. 1997-1999. ($72,596). Alliant Engineering, Inc.

In situ bioremediation of aquifers by introduced bacteria. 1994-1998. ($306,195). U.S. Environmental Protection Agency.

Bioremediation of diaryl ethers by *Pseudomonas pseudoalcaligenes* strain POB 310. 1994-1998. ($208,729). National Science Foundation.

In situ biodegradation of diaryl ethers by *Pseudomonas pseudoalcaligenes* POB 310 - II. 1994-1995. ($17,300). Graduate School of the University of Minnesota. PI.

In situ biodegradation of diaryl ethers by *Pseudomonas pseudoalcaligenes* POB 310. 1993-1994. ($17,380). Graduate School of the University of Minnesota. PI.

Establishment of methods for molecular microbial ecology. 1991-1993. (DM 3,850,000) German Ministry for Research and Technology. Written with Prof. Dr. K.N. Timmis and others to establish a general research program in microbial ecology in the Department of Microbiology, GBF.

Genetic engineering of PCB-degrading bacteria and analysis of their biological safety, PCB-degrading activity and gene stability in rhizosphere and river sediment microcosms. 1991-1993. (DM 320,000) European Community Grant. Cooperative project with Prof. F. O'Gara, University College Cork, Ireland.

Analysis of *in situ* behavior of genetically engineered bacteria in standardized microcosms. 1989-1991. (DM 220,000) European Community Grant. Development of activated sludge microcosms for risk assessment concerning introduction of GEMs into the environment. Cooperative project with Dr. J. L. Ramos, CSIC, Granada, Spain.

Development of aquifer microcosms and *in situ* methods to test the fate and function of pollutant-degrading microorganisms. 1988-1991. ($123,344) U.S. Department of Energy. Cooperative project with Prof. J. M. Tiedje, MSU, Michigan and Dr. R. L. Smith, U.S.G.S., Boulder, CO.

Invited Speaker:

1. Laboratory evolution of *Pseudomonas* strains able to decompose environmental pollutants, and their behavior in model ecosystems. 1988. International Pseudomonas-symposium. Lund University, Malmo, Sweden.

2. Detection and enumeration of genetically engineered microorganisms in aquatic microcosms. 1989. Biochemical and gene technological methods in studies in microbial ecology. Danish Research Academy, Copenhagen, Denmark.

3. Problems with the release of genetically altered microorganisms. 1989. ECOINFORMA. Bayreuth, Germany.

4. Einsatz gentechnisch modifizierter Mikroorganismen in der Umwelt, einschliesslich der Freisetzungsproblematik. 1989. GBF Internal Seminar. Braunschweig, Germany.

5. Development and testing of a chloro- and methyl-benzoate degrading *Pseudomonas*. 1990. Gentechnology. Kopenhagen, Denmark.

6. Genetically engineered microorganisms and their potential use in bioremediation processes. 1990. EC Comett Workshop: The Impact of Biotechnology in the 1990's. University College Cork, Cork Ireland.

7. Fate and behavior in an activated sludge microcosm of genetically-engineered microorganisms. 1990. Italian Association of Biologists: Transfer of genetic informations and fate of engineered microorganisms in natural ecosystems. Giardini di Naxos, Italy.

8. Development of genetically engineered microorganisms and testing of their fate and activity in microcosms. Eurocourse: Scientific-Technical backgrounds for Biotechnology Regulation. CEC Joint Research Centre, Ispra, Italy.

9. Application of Biotechnology for Environmental Pollution Treatment. 1991. Dublin, Ireland.

10. Development of genetically engineered microorganisms and testing of their fate and activity in microcosms. 1992. 2nd International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms. Goslar, Germany.

11. Studies used to predict the potential applicability of genetically engineered microorganisms for *in situ* bioremediation. 1994. Department of Microbiology. University of Montana, Bozeman, MT.

12. Bioremediation of contaminated soils and aquifers using genetically engineered microorganisms. 1996. Department of Environmental Engineering Sciences. California Institute of Technology, Pasadena, CA.

13. *In situ* bioremediation of aquifers: Bioaugmentation using genetically engineered microorganisms. 1996. Gordon Research Conference, Environmental Sciences - Water, NH.

14. Bioremediation: Using bacteria in clean-up efforts. 2002. Taking the brown out of brownfields, Legal Institute of the Great Lakes, University of Toledo, OH.

15. Maumee Bay bacterial studies. 2005. Lake Erie Center, University of Toledo, Oregon, OH.

16. Quality and sustainability of the Great Lakes: restoration, legislation and research. 2006. League of Women Voters. Holland, OH.

17. Maumee Bay Bacterial Studies. 2006. SE Michigan Environmental Health Directors' Meeting. Ann Arbor, MI.

18. Restoration for Phosphorus Control. 2017. Land to Lakes Conference. Defiance, OH.

Invited Workshop Participant:

1. Molecular Approaches to Ecosystems Research. 1991. U.S.D.O.E. Workshop. Asilomar, CA.

2. Strategies and Mechanisms for Field Research in Environmental Bioremediation. 1993. American Academy of Microbiology (ASM). San Antonio, TX.

3. EPA Workshop on Environmental Release of Genetically Engineered Microorganisms. 1996. Washington, DC.

4. Phytoremediation and bioremediation of brownfields. 2012. Ohio Brownfield Conference. Columbus, OH. May 2012.

Symposia/Workshops Organized:

Environmental Biotechnology, 1990: EERO-GBF Sponsored Symposium, Braunschweig, Germany.

Molecular Microbial Ecology, 1990: EERO Workshop, Braunschweig, Germany.

Sigma Xi Symposium, 2002-4: Division Chair for Biological Sciences, University of Toledo, Toledo, OH.

Director of the Regional Sigma Xi Symposium, 2005-010, University of Toledo, Toledo, OH

Publications:

1. Lovley, D. R., D. F. Dwyer, and M. J. Klug. 1982. Kinetic analysis of competition between sulfate reducers and methanogens for hydrogen in sediment. Applied and Environmental Microbiology. **43**:1371-1379.

2. Dwyer, D. F. and J. M. Tiedje. 1983. Degradation of ethylene glycol and polyethylene glycols by methanogenic consortia. Applied and Environmental Microbiology. **46**:185-190.

3. Dwyer, D. F., M. L. Krumme, S. A. Boyd, and J. M. Tiedje. 1986. Kinetics of phenol biodegradation by an immobilized methanogenic consortium. Applied and Environmental Microbiology. **52**:345-351.

4. Dwyer, D. F. and J. M. Tiedje. 1986. Metabolism of polyethylene glycol by two anaerobic bacteria, *Desulfovibrio desulfuricans*, and a *Bacteroides* sp. Applied and Environmental Microbiology. **52**:852-856.

5. Dwyer, D. F., E. Aerssens, D. R. Shelton, and J. M. Tiedje, 1988. Bioenergetic conditions of butyrate metabolism by an obligately syntrophic anaerobic bacterium in coculture with hydrogen-oxidizing methanogenic and sulfidogenic bacteria. Applied and Environmental Microbiology. **54**:1354-1359.

6. Dwyer, D. F., F. Rojo, and K. N. Timmis. 1988. Bacteria with new pathways for the degradation of pollutants and their fate in model ecosystems, p. 100-109. *In* W. Klingmueller (ed.), Risk Assessment for Deliberate Releases . Springer-Verlag, Berlin.

7. Dwyer, D. F., S. W. Hooper, F. Rojo, and K. N. Timmis. 1988. Fate of geneticaly-engineered bacteria in activated sludge microcosms, p. 267-276. *In* J. M. Lopez-Pila, E. Seeber, and K. Jander (eds.), Viren und Plasmide in der Umwelt. Gustav Fischer Verlag, Stuttgart, Germany.

8. Timmis, K. N., F. Rojo, J. L. Ramos, M. L. Krumme, and D. F. Dwyer. 1988. Laboratory engineering of bacteria designed to degrade pollutants, p. 251-266. *In* J. M. Lopez-Pila, E. Seeber, and K. Jander (eds.), Viren und Plasmide in der Umwelt. Gustav Fischer Verlag, Stuttgart, Germany.

9. Dwyer, D. F., F. Rojo, and K. N. Timmis. 1988. Fate and behaviour in an activated sludge microcosm of a genetically-engineered micro-organism designed to degrade aromatic compounds, p. 77-88. *In* M. Sussman, C. Collins, F. A. Skinner, and D. E. Stewart-Tull (eds.), Release fo Genetically-Engineered Micro-Organisms. Academic Press, London.

10. Dwyer, D. F. and K. N. Timmis. 1990. Engineering microbes for function and safety in the environment. *In* H. Mooney and G. Bernardi (eds.), Genetically-Designed Organisms in the Environment. John Wiley and Sons, Ltd., New York.

11. Ramos, J. L., C. Michan, F. Rojo, D. Dwyer, and K. N. Timmis. 1990. Signal-regulator interactions. Genetic analysis of the effector binding site of *xylS*, the benzoate-activated positive regulator of *Pseudomonas* TOL plasmid *meta*-cleavage pathway operon. Journal of Molecular Biology. **211**:373-382.

12. Dwyer, D. F., D. Maris, and K. Nuesslein. 1990. Fate and behavior of genetically-engneered microorganisms in an activated sludge microcosm, p. 153-158. *In* S. Dumontet and E. Landi (eds.), Ingegneria Genetica e Rischio Ambientale. Fotolito Moggio, Rome.

13. Krumme, M. L., K. N. Timmis, and D. F. Dwyer. 1991. Development of microcosms designed to evaluate the effects of adding microorganisms to aquifers as bioremedation agents, p. 7-117 to 7-128. *In* C. B. Fliermans and T. C. Hazen (eds.), Proceedings of the

First International Symposium on Microbiology of the Deep Subsurface. Jan. 15-19, 1990, Orlando, FL. WSRC Information Services, Aiken, SC.

14. Krumme, M. L., R. L. Smith, and D. F. Dwyer. 1991. Survival of a model pollutant-degrading microorganism in a sand and gravel aquifer and in microcosms, p. 144-147. *In* G. E. Mallard (ed.), U.S. Geological Survey Toxic Substances Hydrology Program: Proceedings of the Technical Meeting. March 11-15, 1991, Monterey, CA. U. S. Geological Survey Water-Resources Investigations. 91-4034.

15. Wagner-Döbler, I., R. Pipke, K. N. Timmis, and D. F. Dwyer. 1992. Evaluation of aquatic sediment microcosms and their use in assessing possible effects of introduced microorganisms on ecosystem parameters. Applied and Environmental Microbiology. **58**:1249-1258.

16. Pipke, R., I. Wagner-Döbler, K. N. Timmis, and D. F. Dwyer. 1992. Survival and function of a genetically engineered Pseudomonad in aquatic sediment microcosms. Applied and Environmental Microbiology. **58**:1259-1265.

17. Nüßlein, K., D. Maris, K. N. Timmis, and D. F. Dwyer. 1992. Expression and transfer of engineered catabolic pathways harbored by *Pseudomonas* spp. introduced into activated sludge microcosms. Applied and Environmental Microbiology. **58**:3380-3386.

18. Karlson, U., D. F. Dwyer, S. W. Hooper, E. R. B. Moore, K. N. Timmis, and L. D. Eltis. 1993. Two independently regulated cytochromes P-450 in a *Rhodococcus rhodochrous* strain that degrades 2-ethoxyphenol and 4-methoxybenzoate. Journal of Bacteriology. **175**:1467-1474.

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Presentations and Posters (current years):

2017: Regional

Dwyer, Daryl F., R.W. Jackwood. *Predicting Microcystin Levels in Source Water and Beneficial Reuse of Spent Lime.* Toledo Metropolitan Area Council of Governments Public Water Supply Committee, Toledo, OH. September 7, 2017

2016: International

Jackwood, R., Mayher, M., Barnswell, K., Dwyer, D. Remediation and restoration strategies to reduce non-point source pollutants entering Lake Erie. International Association for Great Lakes Research. Guelph, Ontario, Canada, June 6-10.

2016: National

Jackwood, Ryan and Daryl Dwyer. Strategies for Improving Water Quality on a Watershed-Scale: Enhanced Wetland and Riparian Habitat (poster). American Water Works Association – Annual Conference and Exposition. McCormick Place Convention Center, Chicago, IL. July 20. 2016.

2016: Regional

Jackwood, Ryan and Daryl Dwyer. Improving Water Quality with Ecosystem Restoration. Ohio EPA. Northwest District Office, Bowling Green, OH. April 15, 2016.

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Bartos, A., Dwyer, D., Jackwood, R. 2016. Effectiveness of natural and industrial byproducts to adsorb dissolved phosphorus as a water quality management technique in the Maumee River Watershed. University of Toledo Undergraduate Research Symposium, 29 November 2016. Toledo, OH.

2015: National

Jackwood, Ryan and Daryl F. Dwyer. Restoration Projects to Reduce Phosphorus Loadings into Lake Erie: From Concept to Implementation. International Association for Great Lakes Research Annual Conference. University of Vermont, Burlington, VT. May 2015.

2015: Regional

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Struffolino, Pamela, Ryan Jackwood, and Daryl F. Dwyer. I*mproving Water Quality for Maumee Bay: Restoring Ecosystems for Health.* Midwest Workshop for Sanitarians. Ohio Department of Health. Quest Conference Center, Columbus, Ohio. March 19, 2015.

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2014: Regional

Jackwood, Ryan., Daryl F. Dwyer, and Matthew L. Mayher. Natural Treatment Systems to Improve Nearshore Health and Reduce Nonpoint Source Pollution. Lake Erie Binational Public Forum. Oregon, Ohio, Sept. 26 - 27, 2014.

2013: International

Rofkar Jordan R, Daryl F. Dwyer, and William G. Petruzzi. A bioberm for remediation of groundwater at the site of a former manufactured gas plant. 10th International Phytotechnology Conference. Syracuse, NY. 2013.

2013: Regional

Jackwood, Ryan, and Daryl F. Dwyer. Role of Retention Time and Soil Depth on transport and Survival of Esherichia coli. 2013 National Nonpoint Source Monitoring Conference & Workshops. Cleveland, OH, October 28-30, 2013.

Dwyer, Daryl F., Alison L. Spongberg, and Candice E. Brothers. Effectiveness of Rice Hull Biochar on the Adsorption of Soluble Phosphorus in a Batch Equilibrium Study. 125th

Anniversary Meeting of The Geological Society of America . October 27 - 30th. Denver, CO. October 27-30. 2013

Long, D. M. and Daryl F. Dwyer. Restoring Wetlands at Maumee Bay State Park Clean Water, Safe Beaches. Earth Fest. University of Toledo, Toledo OH, April 22nd, 2013.

Long, Danielle M., Ryan W. Jackwood, Jordan .R. Rofkar, Peter M. McLain, and Daryl F. Dwyer Predicting the Roles of Soil Depth and Type on Transport of *Escherichia coli* and *Enterococcus spp*. in Biosolids Using an Advection-Dispersion Model. Midwest Graduate Research Symposium. The University of Toledo, Toledo OH, April 20, 2013.

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2012: International

Barnswell, K.D., Dwyer, D. F., Struffolino, P. S. Increased Accuracy in Predicting Water Quality at Swimming Beaches Using a Time –Adjusted, Environmental Model. International Association of Great Lakes Research, Cornwall, ON Canada, May 2012.

2012: Regional

Pamela Struffolino, Daryl F. Dwyer, and Amie Brady. Continuing Efforts to Improve a Water-Quality Model for a Recreational Beach. 12th Annual Great Lakes Beach Conference Mackinac, MI. October 16 – 18. 2012

2011:National

Pamela Struffolino, Daryl F. Dwyer, Amie Brady, & Kristopher Barnswell. Development of a Predictive Water-Quality Model for Recreational Beaches. EPA's National Beach Conference. Miami, Fl, March 2011.

2010: Regional

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Barnswell, K.D., and Dwyer, D.F. Designing a constructed wetland system to enhance water quality at Maumee Bay State Park. Great Lakes Beaches Association. 10th Annual Conference, Erie, PA, Oct. 19-21. (platform)

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Koloini, Kristopher and Daryl F. Dwyer. Monitoring loadings of *Escherichia coli*, total phosphorus, and total suspended solids entering Maumee Bay via the Wolf Creek Watershed. Posters at the Capitol, Columbus, OH, April 15, 2010.

Struffolino, Pamela, Amie Brady, and Daryl F. Dwyer. Developing a predictive recreation water-quality model for beaches at Maumee Bay State Park. Lake Erie Beach Conference, Parma, OH. January 22, 2010.

2009: International

Barnswell, Kristopher D. and Daryl F. Dwyer. Field water balance of evapotranspiration covers in Northwest Ohio. The 65th International Phytotechnology Conference, St. Louis, MO. December 2-4, 2009.

Barnswell, Kristopher D. and Daryl F. Dwyer. Manufactured soil for a landfill evapotranspiration cover using dredged sediment. Tenth International In Situ and On-site Bioremediation Symposium, Baltimore, MD. May 5-8, 2009.

Choc, Steven, Adam R. Waltz, and Daryl F.Dwyer. Water quality trends and models for the design of wetlands used to treat drainage water entering Lake Erie. International Association of Great Lakes Research, Toledo, OH. May 18-22, 2009.

Duncan, Alexander M., Matthew W. Gorr, Jordan R. Rofkar, Kristopher D. Barnswell, Johan F. Gottgens, and Daryl F. Dwyer. Plant mediated reductions of arsenic levels in flow-through wetlands. International Association of Great Lakes Research, Toledo, OH. May 18-22, 2009.

Gorr, Matthew and Daryl F. Dwyer. Modeling and design of wetland microcosms to use in design of arsenic remediation. The 25th International Conference on Soils, Sediments, Water and Energy, Amherst, MA. October 19-22, 2009.

Krantz, David E., Abby N. Norton, Jessica L. Knapp, Alison L. Spongberg, Timothy G. Fisher, and Jonathan A. Fuller. Upper Quaternary stratigraphy and post-glacial history of western Lake Erie. International Association of Great Lakes Research, Toledo, OH. May 18-22, 2009.

Rofkar, Jordan R., Alexander M. Duncan, Kristopher D. Barnswell, Patricia M. Armenio, Jonathan Frantz, and Scott A. Heckathorn. Effects of nitrogen on boron toxicity in *Azolla caroliniana*. International Association of Great Lakes Research, Toledo, OH. May 18-22, 2009.

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Rofkar, Jordan, Daryl F. Dwyer, Alexander M. Duncan, and Deanna M. Bobak. Effects of silicon on arsenic uptake and toxicity in *Azolla caroliniana*. The 65th International Phytotechnology Conference, St. Louis, MO. December 2-4, 2009.

Stierman, Donald J. and David E. Krantz. Geophysical methods for Quaternary research and environmental investigations in the Great Lakes basin. International Association of Great Lakes Research, Toledo, OH. May 18-22, 2009.

2009: National

Duncan, Alexander M., Johan F. Gottgens, and Daryl F. Dwyer. *Azolla caroliniana*: a model for arsenic remediation. Ecological Society of America Annual Meeting, Albuquerque, NM. August 2-7, 2009.

Shalabi, Jill and Defne Apul. Toward a sustainable treatment system for arsenic-laden wastewater. Air and Waste Management Association 102nd Annual Conference and Exhibition, Detroit, MI. June 16-19, 2009.

2009: Local

Barnswell, Kristopher D. and Daryl F. Dwyer. Field water balance for evapotranspiration covers in northwest Ohio. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. October 24, 2009.

Gorr, Matthew and Daryl F. Dwyer. Modeling arsenic remediation in wetlands. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. October 24, 2009.

Rofkar, Jordan and Daryl F. Dwyer. Effects of silicon on uptake and toxicity of arsenic and copper in *Lemna minor*. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. October 24, 2009.

Sapkota, Pratibha, Defne Apul, and Daryl F. Dwyer. Agent-based model for diffusion in water and porous media. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. October 24, 2009.

2008: International

Choc, Steven and Daryl F. Dwyer. *Escherichia coli* and sediment load monitoring in Berger Ditch with implications for reduction of water quality advisories at Maumee Bay State Park, Oregon, OH. International Association of Great Lakes Research, Peterborough, Ontario. May 19-23, 2008.

Duncan, Alexander and Johan F. Gottgens. Evaluation of the fern *Azolla caroliniana* to phytofiltrate arsenic from contaminated water. Landscape Ecology and Forest Management: Challenges and Solutions International Conference, Chengdu, Sichuan, P.R. China. September 16, 2008.

Rofkar, Jordan and Daryl F. Dwyer. Rates of uptake by plant species selected for phytoextraction of arsenic in northwest Ohio. The Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA. May 19-22, 2008.

2008: National

Choc, Steven and Daryl F. Dwyer. Source identification and monitoring for a wetlands solution to reduce *Escherichia coli* at Maumee Bay State Park, Oregon, OH. American Society for Microbiology, Boston, MA. June 1-5, 2008.

Wright, Robert E., Jr., Andrew G. Heydinger, and Daryl F. Dwyer. An Assessment Of Alternative Cap Covers For The King Road Landfill. GeoCongress 2008: The Challenge of Sustainability in the Geoenvironment, New Orleans, LA. March 9-12, 2008.

2008: Regional

Barnswell, Kristopher D. and Daryl F. Dwyer. Vascular plants of the King Road Landfill, Lucas County, Ohio. Ohio Academy of Science, Toledo, OH. April 12-13, 2008.

de Saint Victor, Colin and Daryl F. Dwyer (given by Steven Choc). *Escherichia coli* in recreational waters of Maumee Bay State Park: source identification and a treatment solution. Ohio Academy of Science, Toledo, OH. April 12-13, 2008.

Krantz, David E., Mario R. Castanada, James Fisher, and Timothy G. Fisher. Stratigraphy and sediment processes of Maumee Bay and the adjacent shoreline, Western Lake Erie, Ohio. Geological Society of America North-Central Section Meeting: Evansville, IN. April 24-25, 2008.

Oyewumi, Oluyinka and Alison L. Spongberg. Comparative study of cadmium, copper and nickel adsorption in three brownfield sites, northwest Ohio. Geological Society of America North-Central Section Meeting: Evansville, IN. April 24-25, 2008.

Rofkar, Jordan and Daryl F. Dwyer. Screening plant species for phytoremediation of arsenic in northwest Ohio. Ohio Academy of Science, Toledo, OH. April 12-13,2008.

2008: Local

Barnswell, Kristopher D. and Daryl F. Dwyer. Manufactured soil for a landfill evapotranspiration cover using dredged sediment. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

Choc, Steven and Daryl F. Dwyer. Water monitoring, hydrologic models and wetland design in Berger Ditch. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

Duncan, Alexander M. and Johan F. Gottgens. Evaluation of the fern *Azolla caroliniana* to phytofiltrate arsenic from contaminated water. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

Nelson Jr., Don E. and Alison L. Spongberg. Polycyclic aromatic hydrocarbons in sediments of recreational boating marinas, Western Basin, Lake Erie, U.S.A. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

Rofkar, Jordan and Daryl F. Dwyer. Uptake kinetics of arsenic in a wetland grass native to northwest Ohio (*Spartina pectinata)*. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008. Best Student Poster: Life Sciences Division award winner.

Sapkota, Pratibha, Defne Apul, and Daryl F. Dwyer. Bromide transport through lysimeters at Stranahan Arboretum. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

Waltz, Adam R., Pam Struffolino, Scott Denham, and Daryl F. Dwyer. Comparison of water quality variables for Maumee Bay State Park. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. November 1, 2008.

2007: International

Saunders, Joshua, Jona Scarbro, and Daryl F. Dwyer. Effect of Class B biosolid application on *E.*

coli survivability. International Association of Great Lakes Research, University Park, PA. May 28-June 1, 2007.

2007: Regional

Gallant, Patricia, Donald J. Stierman, Daryl F. Dwyer, and Timothy Fisher. Linking geophysical signatures to sediment properties in Lucas County, Ohio. Geological Society of America North-Central and South-Central Joint Annual Meeting, Lawrence, KS. April 11-13, 2007. Best Student Poster award winner.

2007: Local

Chowdhury, Raja and Defne Apul. Design of a wetland for the treatment of arsenic laden wastewater – Preliminary studies. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. September 15, 2007.

de Saint Victor, Colin and Daryl F. Dwyer. Microbial contamination in public waters at Maumee Bay State Park. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. September 15, 2007.

*Dwyer, Daryl. Wetlands- Agents for improving water quality and human health. Maumee Bay State Park Wetland Restoration Public Meeting, Maumee Bay State Park Lodge. October 2, 2007.

Egan, Kevin, Daryl Dwyer, and Sebastain Awondo. Evaluating the economic benefits of wetland restoration at Maumee Bay State Park. Maumee Bay State Park Wetland Restoration Public Meeting, Maumee Bay State Park Lodge. October 2, 2007.

Oyewumi, Oluyinka and Alison L. Spongberg. Adsorption characteristics of brownfield soils from Northwest Ohio. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. September 15, 2007.

2006: International

Rofkar, Jordan R., Joseph Hickey, and Daryl F. Dwyer. Screening plant species for uptake of arsenic in northwest Ohio. International Conference on Environmental Science and Technology, Houston, TX. August 19-23, 2006.

Scarbro, Jona, Daryl F. Dwyer, and William Von Sigler. Microbial transport through the vadose zone of a biosolid- amended cropland: implications for Maumee Bay water quality. International Association of Great Lakes Research, Windsor, Ontario, Canada May 22-26, 2006.

2006: Regional

*Dwyer, Daryl F. Maumee Bay bacterial studies. SE Michigan Environmental Health Directors' Meeting. Ann Arbor, MI. May 2006.

*Dwyer, Daryl F. Quality and sustainability of the Great Lakes: restoration, legislation and research. League of Women Voters. Holland, OH. January 2006.

2006: Local

Barnswell, Kristopher D., and Daryl F. Dwyer. Potential use of evapotranspiration covers in northwest Ohio. Oak Openings Region Research Symposium. Toledo, OH. January 20-21, 2006.

Bobak, Deanna M. and Alison L. Spongberg. Polycyclic aromatic hydrocarbon characterization from point and non-point sources in Otter Creek, OH. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 22, 2006. Best Student Presentation: Life Sciences Division award winner.

Hickey, Joseph, Jordan Rofkar, and Daryl F. Dwyer. Uptake of metals by selected plant species in northwest Ohio. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 22, 2006.

Scarbro, Jona and Daryl F. Dwyer. Microbial transport through the vadose zone of a biosolid-amended cropland: implications for land application of Class B biosolids and surface water quality. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 22, 2006.

2005: International

Francy, Donna, Pamela Struffolino, Amie Brady, and Daryl F. Dwyer. Identification of proximate sources of fecal contamination to Maumee Bay, Lake Erie, Ohio by determining concentrations of *Escherichia coli* in water and sediments and identifying related environmental and water-quality factors. International Association of Great Lakes Research Annual Meeting, Ann Arbor, MI. May 23-27, 2005.

Kassem, Issmat, William Von Sigler, and Daryl F. Dwyer. Characterization of the microbial communities in dredge sediment from a confined disposal facility. IUMS XI International Congress of Bacteriology and Applied Microbiology, San Francisco, CA. July 23-28, 2005.

2005: National

Bobak, Deanna M. and Alison L. Spongberg. 2005. A Comparison of Polycyclic Aromatic Hydrocarbon Contamination in Urban and Rural Areas in Northwest Ohio. Soil Science Society of America Annual Conference, Salt Lake City, UT. Nov. 6-10.

Kassem, Issmat, William Von Sigler, and Daryl F. Dwyer. Molecular and enzymatic analysis of the microbial communities in dredged sediments. 105th General Meeting of the American Society for Microbiology, Atlanta, GA. June 5-9, 2005.

2005: Regional

*Dwyer, Daryl F. Maumee Bay bacterial studies. Lake Erie Center, University of Toledo, Oregon, OH. October 2005.

Gallant, Patricia and Don Stierman. Gravity investigation of the King Road Landfill, Lucas County, Ohio. Geological Society of America North-Central Annual Meeting, Minneapolis, MN. May 19-20, 2005.

Wilt, Amy S., Don Stierman, and Daryl F. Dwyer. Geophysical mapping the top of bedrock at the King Road Landfill, Lucas County, Ohio. Geological Society of America North-Central Annual Meeting, Minneapolis, MN. May 19-20, 2005.

2005: Local

Barnswell, Kristopher D. and Daryl F. Dwyer. Vegetation on a non-capped landfill in the Oak

Openings Region. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 15, 2005.

Kassem, Issmat, William Von Sigler, and Daryl F. Dwyer The impact of sediment dredging on the microbial communities in Toledo Harbor. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 15, 2005.

Struffolino, Pamela. and Daryl F. Dwyer. 2005. Source Tracking *Escherichia* Coli to a Public Beach in Northwest Ohio. Sigma Xi Student Symposium at the University of Toledo, Toledo, OH. April 16, 2005.

2004: National

*Francy, Donna, Amie Brady, Pamela Struffolino, and Daryl F. Dwyer. Identification of proximate sources of fecal contamination to Maumee Bay, Lake Erie. Major Accomplishments and Future Directions in Public Health Microbiology, United States Geological Survey, Columbus, OH. February 15-18, 2004.

*Struffolino, Pamela, Von Sigler, and Daryl F. Dwyer. The role of suspended sediments in E. coli transport. Major Accomplishments and Future Directions in Public Health Microbiology at the United States Geological Survey, Columbus, OH. February 15-18, 2004.

Struffolino, Pamela, Von Sigler, and Daryl F. Dwyer. Novel sediment traps reveal role of suspended sediment in E. coli transport. National Beaches Conference, San Diego, CA. October 15, 2004.

2004: Regional

Brady, Amie, Donna Francy, Pamela Struffolino, and Daryl F. Dwyer. Concentrations of *Escherichia coli* in water and bed sediments in Maumee Bay, Toledo and Oregon, Ohio (2003–2005); Great Lakes Beach Conference, Parma, OH; November 30, 2004.

*Dwyer, Daryl F. and Pamela Struffolino. Source tracking of *E. coli* entering Maumee Bay: overview of research from 2003-2004. Maumee Bay Bacterial Task Force Public Meeting. Oregon, OH. December 2004.

*Francy, Donna, Greg Koltun, Amie Brady, Pamela Struffolino, and Daryl F. Dwyer. Source tracking of *E. coli* entering Maumee Bay: future research directions. Maumee Bay Bacterial Task Force Public Meeting. Oregon, OH. December 2004.

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2004: Local

Barnswell, Kristopher D., Jordan Rofkar, and Daryl F. Dwyer. Phytoremediation at the King Road Landfill: current progress and future work. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 24, 2004.

Kassem, Issmat, William Von Sigler, and Daryl F. Dwyer. Structural and functional assessment of microbial communities at King Road Landfill. Sigma Xi Graduate Research Symposium at the University of Toledo, Toledo, OH. April 24, 2004.

Previous to 2004 there are over one hundred abstracts for presentations.