

Jeanne M. VanBriesen

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Education

Ph.D. Civil (Environmental) Engineering, Northwestern University (1998)
M.S. Civil (Environmental) Engineering, Northwestern University (1993)
B.S. Education (Chemistry), Northwestern University (1990)

Professional Experience

Carnegie Mellon University. Department of Civil and Environmental Engineering.
Director, Water QUEST Center (7/05 to present)
Professor (7/08 to present).
Associate Professor (7/05 to 7/08).
Assistant Professor (7/99 to 7/05).
Northwestern University. Department of Civil Engineering.
Visiting Assistant Professor (9/98 to 6/99)
Department of Energy. Center for Risk Excellence at Argonne National Laboratory.
Environmental Engineering Intern, GS-11 (6/98 to 8/98)
Evanston Township High School in IL.
Science Teacher (physics and chemistry) (9/91 to 6/92)
Waverly Junior-Senior High School in NY.
Chemistry Teacher (9/90 to 8/91)

Awards

2009 Selected as Aldo Leopold Leadership Program Fellow.
<http://leopoldleadership.stanford.edu/>
2009 McGraw-Hill/ AEESP Award for Outstanding Teaching in Environmental Engineering and Science
2009 West Chester East High School Hall of Fame (Alma Mater)
2009 Professor of the Year. American Society of Civil Engineers (ASCE) Pittsburgh Chapter
2008 Selected Participant Indo-U.S. Frontiers of Engineering Symposium, Infrastructure
2008 Best Research Paper. Journal of Water Resources Planning and Management (JWRPM) for "Efficient Sensor Placement Optimization for Securing Large Water Distribution Networks."
2007 Pennsylvania Water Environment Association Professional Research Award
2005 Paul Christiano (E 1964, 1965, 1968) and Norene Christiano (MM 1964, 1971) Faculty Fellowship; Carnegie Mellon University
2002 George Tallman Ladd Award for outstanding research and professional accomplishments and potential, College of Engineering, Carnegie Mellon University
2001 National Science Foundation Career Award
1993-1998 Achievement Rewards for College Scientists (ARCS) Foundation annual merit award and summer research stipend

Research Interests

Bioremediation of recalcitrant organic compounds (especially those controlled by speciation), biological treatment processes, modeling environmental systems involving complex biogeochemistry, drinking water distribution system monitoring and modeling, sustainable water and water/energy nexus.

Teaching Experience

Introduction to Environmental Engineering, Environmental Engineering Laboratory, Introduction to Civil and Environmental Engineering, Environmental Organic Chemistry, Biotechnology and Environmental Processes, Environmental Biotechnology Principles, Biological Wastewater Treatment, Biotechnology Applications in Natural Systems.

Professional Service

- AEESP Foundation, Secretary (2008-present)
- Association for Environmental Engineering and Science Professors (AEESP) Membership Committee (2001-2004) Elected Board Member (2007-2010) Secretary (2008-2010).
- Ohio River Basin Consortia for Research and Education (ORBCRE) Executive Committee Member and Trustee (2004-present) Secretary (2008-2009)
- Ohio River Valley Water Sanitation Commission (ORSANCO) Research Committee Member (2007-present)
- Nine Mile Run Watershed Association (NMRWA). Research Committee (2007-present)
- Three Rivers Wet Weather, Inc. Research Advisory Committee (2007-2009).
- University of Pittsburgh Institute of Politics (IoP) Regional Water Management Task Force Technical Advisory Committee (2007-2008)
- Water CAMPWS: UIUC STC: External Advisory Board (2008-2009)
- Specialty Editor for ASCE Journal of Computing in Civil Engineering (2008-present)
- Water works operators of PA David Long Scholarship Selection Committee (2003-present)
- PA Water Environment Association (PWEA) Research Committee Member (2007-2008), Research Committee Chair (2009-present)
- National Research Council (NRC) Committee on Water Quality in Southwestern Pennsylvania (2002-2004)
- American Chemical Society (ACS); Environmental Division; Chair, Book revenue committee (2002-2007); Member-at-Large (2004-2005)
- American Water Works Association (AWWA) Organic Contaminants Research Committee 2002-2004.
- American Association of University Women (AAUW) Selected Professions Fellowship Selection Committee 2003-2004.
- Association for Women in Science (AWIS) Fellowship Selection Committee 2004
- U.S. Environmental Protection Agency (EPA) Science to Achieve Results (STAR) Fellowship Selection Committee 2004.

Training Workshops Attended

OWLS – Leadership Conference for Women Engineering Professors, 2001 and 2003.

LEAD (Leadership Excellence for Academic Diversity). 2008.

Union of Concerned Scientists Media Training. 2008.

Aldo Leopold Leadership Training. 2009.

IDEAL (Institute for the Development of Excellence in Assessment Leadership). 2009.

Professional Affiliations

American Society of Civil Engineers (ASCE); American Water Works Association (AWWA); Water Environment Federation (WEF); American Chemical Society (ACS)
American Society of Microbiology (ASM); Association for Environmental Engineering and Science Professors (AEESP); Association for Women in Science (AWIS); American Association for University Women (AAUW); Achievement Rewards for College Scientists (ARCS), Society of Women Engineers (SWE)

Journal Reviewer

Biodegradation; Biotechnology and Bioengineering; Environmental Engineering Science; Environmental Science and Technology; *Geochimica et Cosmochimica Acta*; Journal of Soil and Sediment Contamination; ASCE Journal of Environmental Engineering; Management Science; Mathematical Biosciences, ASCE Journal of Water Resources Planning and Management.

Proposal Reviewer

- U.S. Department of Energy Environmental Management Science Program
- U.S. Department of Energy, Natural and Accelerated Bioremediation (NABiR) Program
- American Water Works Association Research Foundation (AWWARF)
- National Science Foundation , Hydrological Sciences Program
- National Science Foundation, Integrative Graduate Education and Research Traineeship (IGERT) program
- National Science Foundation Biocomplexity Competition
- National Science Foundation Small Business Innovative Research (SBIR) Program
- National Science Foundation Unsolicited Panel for Division of Bioengineering and Environmental Systems (BES)
- National Science Foundation Science and Technology Centers (STC) Program
- U.S. Civilian Research and Development Foundation Cooperative Grants Program
- U.S. Army Research Center – Chemical Science Division
- Canadian Science Foundation – Water Centers Program

Book Reviewer

McGraw-Hill Publishing
ACS Symposium Monograph Series

University Service

- Civil and Environmental Engineering Undergraduate Curriculum Committee (2001-2003)
- Civil and Environmental Engineering Graduate Curriculum Committee (2001-2003)
- Faculty Search Committee – CEE Water Quality Area and CEE Systems Area (2001)
- Faculty Search Committee – Chair, CIT Molecular Microbiology Area (2005)
- Carnegie Institute of Technology (Engineering College) Dean's Review Committee (2001)
- Faculty Sponsor, Undergraduate Biomedical Engineering Society (2002)
- Meeting of the Minds Undergraduate Research Symposium Judge (2002)
- University Committee – Engineering College (CIT) Dean's Search (2004)
- University Committee – Task Force on Advising (2004)
- University Committee – Ryan Teaching Award Selection Committee (Co-chair 2006-2007)
- University Committee – Vira I Heinz International Scholarship – Selection Committee (2004)
- University Committee – Mulach Scholarship Selection Committee (2004-present)
- Director, Center for Water Quality in Urban Environmental Systems (Water Quest) (2005-present)
- Advisory Committee to Director of Steinbrenner Environmental Education and Research (SEER) Center (2006-present)

- Civil and Environmental Engineering Undergraduate Recruitment Committee (Chair) (2006-2008)
- Civil and Environmental Engineering Strategic Planning Committee (2006-present)
- Civil and Environmental Engineering Facilities Committee (2006-present)
- Civil and Environmental Engineering Graduate Recruiting Committee (2008-present)
- Civil and Environmental Engineering Undergraduate Curricular Outcomes Assessment Committee (Chair) (2008-present)
- Carnegie Institute of Technology (Engineering College) Committee on Promotion and Tenure (2008-2009)
- Director, Undergraduate Minor in Environmental Engineering and Sustainability (2008-present)
- University Committee – Responsible Conduct of Research (2010- present)
- University Committee – Promotion and Tenure (2010- present)

Outreach

- Pittsburgh Teachers Institute
- Society of Women Engineers at Carnegie Mellon University “Engineering Your Future” and High School Day
- Summer Achievement for Minority Scholars (SAMS) at Carnegie Mellon University
- RET: Research Experience for Teachers Program through NSF
- Pittsburgh Science Fair Judge
- ASCE Future Cities Competition: engineering coach to middle school team.
- Individual school visits for grades 1, 3, 7, 9 and 10. Engineering and water quality.

Journal Publications

1. Tebes-Stevens, C., A.J. Valocchi, J.M. VanBriesen, and B.E. Rittmann (1998) "Multicomponent transport with coupled geochemical and microbiological reactions: model description and example simulations," *Journal of Hydrology*, 209: 8-26.
2. Banaszak, J.E., J.M. VanBriesen, B.E. Rittmann and D.T. Reed (1998) "Mathematical Modeling of the Effects of Aerobic and Anaerobic Chelate Biodegradation on Actinide Speciation," *Radiochimica Acta*, 82: 445-451.
3. VanBriesen, J.M. and B.E. Rittmann (1999), "Modeling speciation effects on biodegradation in mixed metal/chelate systems," *Biodegradation* 10:315-330.
4. VanBriesen, J.M. and B.E. Rittmann (2000), "Mathematical description of microbiological reactions involving intermediates," *Biotechnology and Bioengineering* 67(1):35-52.
5. VanBriesen, J.M. , B.E. Rittmann, L. Xun, D.C. Girvin, H. Bolton, Jr. (2000), "The rate controlling form of nitrilotriacetate for biodegradation by *Chelatobacter heintzii*," *Environmental Science and Technology*, 34: 3346-3353.
6. VanBriesen, J.M. (2001) "Thermodynamic Yield Predictions for Biodegradation through Oxygenase Activation Reactions *Biodegradation* 12(4): 265-281.
7. Yuan, Z. and VanBriesen, J.M. (2002) "Yield prediction and stoichiometry of multi-step biodegradation reactions involving oxygenation," *Biotechnology and Bioengineering* 80(1): 100-113.
8. VanBriesen, J.M.. (2002) "Evaluation of methods to predict bacterial yield using thermodynamics," *Biodegradation*, 13:171-190.
9. Sidari FP and VanBriesen J. (2002) "Evaluation of a Chlorine Dioxide Secondary Disinfection System," *Water Engineering and Management*. 149(11):29-33.
10. Rittmann, B.E., Banaszak, J.E., VanBriesen, J.M., and Reed, D.T. (2002) "Mathematical modeling of precipitation and dissolution reactions in microbiological systems," *Biodegradation* 13(4): 239-251.
11. Ailamaki, A.; Faloutsos, C.; VanBriesen, J.M.; Small, M.; Fischbeck, P. (2003) "An environmental sensor network to determine drinking water quality and security," *SIGMOD*, Vol 34: No 2, p 47-52.
12. Sidari, F.P., Stout, J.E., VanBriesen, J.M., Bowman, A.M., Grubb, D., Neuner, A., Wagener, M.M., Yu, V.L. (2004) "Keeping Legionella out of water systems," *American Water Works Association Journal* 96(1): 111-119.
13. Karcher, S.C., Small, M.J., and VanBriesen, J.M., (2004) "Statistical method to evaluate the occurrence of PCB transformations in river sediments with application to Hudson River Data," *Environmental Science and Technology* 38:6760-6766.
14. Xiao, Jinghua and J.M. Vanbriesen, (2006) "Expanded thermodynamic model for microbial yield prediction," *Biotechnology and Bioengineering*. 93:1:110-121.
15. Yuan, Zhiwen and VanBriesen, J.M. (2006) "Intermediate formation in biodegradation of EDTA and NTA," *Environmental Engineering Science*, 23:3: 533-544.
16. Escoriza, M., VanBriesen, J.M., Stewart, S., Maier, J., Treado, P. (2006) "Raman Spectroscopy and Chemical Imaging for quantification of filtered waterborne bacteria," *Journal of Microbiological Methods*, 66:1:63-72.
17. Weber, C.L., VanBriesen, J.M., and Small, M.J. (2006) "A Stochastic Regression Approach to Analyzing Thermodynamic Uncertainty in Chemical Speciation Modeling," *Environmental Science and Technology*, 40(12): 3872-3878.
18. Escoriza, M.F., VanBriesen, J.M., Stewart, S. and Maier, J., (2006) "Studying bacterial metabolic states using Raman spectroscopy," *Applied Spectroscopy*, 60 (9): 971-976.
19. Cao, F., Greve, D.W., Oppenheim, I.J., VanBriesen, J.M. (2006) "Microscale Chloride Sensor," *ECS Transactions*, 3(10): 215-223.

20. Karcher, S., VanBriesen, J.M., and Small, M.J (2007) "Numerical Method to Elucidate Likely Target Positions of Chlorine Removal in Anaerobic Sediments undergoing Polychlorinated biphenyl dechlorination," *ASCE Journal of Environmental Engineering*, 133(3): 278-286.
21. Helbling, D.E. and J.M. VanBriesen (2007) "Free Chlorine Demand and Cell Survival of Microbial Suspensions," *Water Research*, 41(19) 4424-4434.
22. Escoriza, M.F. and VanBriesen, J.M. (2007) "Raman spectroscopic discrimination of cell response to chemical and physical inactivation," *Applied Spectroscopy* 61: 812-823.
23. Yuan, Z and VanBriesen, J.M. (2008) "Bacterial Growth Yields on EDTA, NTA, and their Biodegradation Intermediates," *Biodegradation* 19(2): 41-52.
24. Isovitsch, S. L. and VanBriesen, J. M. (2008) "Sensor placement and optimization criteria dependencies in a water distribution system." *ASCE Journal of Water Resources Planning & Management* 134(2): 186-196.
25. Xiao, Jinghua and J.M. VanBriesen (2008) "Expanded thermodynamic true yield prediction model: adjustment and evaluation," *Biodegradation* 19(1): 99-127.
26. Xu, Jianhua; Fischbeck, P., Small, M., VanBriesen, J., Casman, E. (2008), "Identifying sets of key nodes for placing sensors in dynamic water distribution networks," *ASCE Journal of Water Resources Planning and Management*, 134:4: 378-385. Also, Discussion and Closure. 136(2): 294-296.
27. Helbling, D.E., and J.M. VanBriesen (2008) "Continuous Monitoring of Residual Chlorine Concentrations in Response to Controlled Microbial Intrusions in a Laboratory-Scale Distribution System," *Water Research* 42(12): 3162-72.
28. Krause, A., Leskovec, J., Guestrin, C., VanBriesen, J., Faloutsos, C. (2008) "Efficient Sensor Placement Optimization for Securing Large Water Distribution Networks," *ASCE Journal of Water Resources Planning and Management*, 134(6): 516-526. **Best Research Paper.**
29. Ostfeld, A., Uber, J.G., Salomons, E., Berry, J.W., Hart, W.E., Phillips, C.A., Watson, J.P., Dorini, G., Jonkergouw, P., Kapelan, Z., Pierro, F., Khu, S.T., Savic, D., Eliades, D., Polycarpou, M., Ghimire, S.R., Barkdoll, B.D., Gueli, R., Huang, J.J., McBean, E.A., James, W., Krause, A., Leskovec, J., Isovitsch, S., Xu, J., Guestrin, C., VanBriesen, J., Small, M., Fischbeck, P., Pries, A., Propato, M., Piller, O., Trachtman, G.B., Wu, Z.Y., and Walski, T. (2008). "The Battle of the Water Sensor Networks (BWSN): A Design Challenge for Engineers and Algorithms." in *ASCE Journal of Water Resources Planning and Management*, 134(6): 556-568.
30. Isovitsch, S.L. and VanBriesen, J.M. (2009) "Booster disinfection for response to contamination in a drinking water distribution system." *ASCE Journal of Water Resources Planning and Management*, 135(6): 502-511.
31. Helbling, D.E. and VanBriesen, J.M. (2009) "Modeling residual chlorine response to a microbial contamination event in drinking water distribution systems," *ASCE Journal of Environmental Engineering* 135 (10): 918-927.
32. Isovitsch, S.L. and VanBriesen, J.M. (2009) "Evaluating temporal bias in bacterial indicator samples for an urban watershed," *ASCE Journal of Environmental Engineering* 135(12): 1294-1303.
33. Francis, R.A., Small, M.J., VanBriesen, J.M. (2009) "Multivariate distributions of disinfection byproducts in chlorinated drinking water," *Water Research*. 43(14): 3453-3468.
34. Xu, J., Small, M., Fischbeck, P.S., and VanBriesen, J.M. (2010) "Integrating location models with Bayesian Analysis to inform decision making in deploying sensors in water distribution networks," *ASCE Journal of Water Resource Planning and Management* 136:2: 209-216.
35. Schoen, M., Small, M.J., and VanBriesen, J.M. (2010) "Bayesian Model for Flow-Class Dependent Distributions of Fecal-Indicator Bacterial Concentration in Surface Waters," *Water Research*. 44(2): 1006-1016.

36. Xu, J., Johnson, M.P., Fischbeck, P.S., Small, M.J., and VanBriesen, J.M. (2010) "Robust placement of sensors in dynamic water distribution systems," *European Journal of Operational Research*, 202(3): 707-716.
37. Hughes, A., VanBriesen, J.M., Small, M. (2010) "Identifying candidate pathways for the augmentation of anaerobic polychlorinated biphenyl (PCB) dechlorination patterns," *Environmental Science and Technology*, 44(8): 2842-2848.
38. Francis, R.A., VanBriesen, J.M., Small, M.J. (2010) "Bayesian statistical modeling of disinfection byproduct (DBP) bromine incorporation in the Information Collection Rule (ICR) database," *Environmental Science and Technology*, 44(4): 1232-1239.

Books and Book Chapters

1. Rittmann, B.E. and J.M. VanBriesen (1996) "Microbiological Processes in Reactive Modeling", in "Reviews in Mineralogy" (P.C. Lichtner, C.I. Steefel, and E.H. Oelkers, eds.), Vol. 34: *Reactive Transport in Porous Media*, p. 311. Mineralogical Society of America, 1996.
2. VanBriesen, J. M. and B. E. Rittmann (2000) "Modeling recalcitrant intermediate formation during biodegradation," In G. B. Wickrananayake, A. R. Gavaskar, and M. E. Kelley, editors, *Natural Attenuation Considerations and Case Studies: Remediation of Chlorinated and Recalcitrant Compounds*, Battelle Press, Columbus, Ohio, pp. 25 - 32
3. Nowack, B. and VanBriesen, J.M. (editors) *Biogeochemistry of Chelating Agents*. ACS Books. ACS Symposium Series 910. Oxford University Press for the American Chemical Society, Washington DC 2005.
4. Nowack, B. and VanBriesen, J.M. "Chelating agents in the environment," in "Biogeochemistry of Chelating Agents" (B. Nowack and J.M. VanBriesen, eds.), ACS Symposium Series 910. Oxford University Press for the American Chemical Society, Washington DC 2005. p. 1-18.
5. Yuan, Z. and VanBriesen, J.M. "Analysis of biodegradation intermediates of ethylenediaminetetraacetate (EDTA) and nitrilotriacetate (NTA) by high performance liquid chromatography (HPLC)," in "Biogeochemistry of Chelating Agents" (B. Nowack and J.M. VanBriesen, eds.), ACS Symposium Series 910. Oxford University Press for the American Chemical Society, Washington DC 2005. p. 139-148.
6. Wong-Chong, G.M., and VanBriesen, J.M., "Microbiological Technologies for Treatment of Cyanide," in *Cyanide in Water and Soil: Chemistry, Risk and Management* (D. Dzombak, R. Ghosh, and G. Wong-Chong, editors). CRC Press; Taylor and Francis Group. January 2006.
7. Dzombak, D.A., VanBriesen, J.M. and Tarr, J.A. (2007) "Clean Water for All: The progress of water treatment technology in the 20th Century," in *Proceedings of the 233rd National Meeting of the American Chemical Symposium*, part of the symposium "Going with the Flow: Water Sustainability Past, Present and Future," Division of History, American Chemical Society, Washington DC.
8. VanBriesen, J.M., Small, M.J., Weber, C., Wilson, J. (2010) "Modeling Chemical Speciation: thermodynamics, kinetics, and uncertainty," in Modeling of Pollutants in Complex Environmental Systems, Volume II, Edited by Grady Hanrahan.
9. Dzombak, D.A., VanBriesen, J.M., Garrett, J.H., Soibelman, L. (2010) "Sensing for improved water infrastructure management in 2050," in EWRI Water Resources Environmental Vision, edited by Walter Grayman.
10. VanBriesen, J.M., Isovitsch Parks, S.L., Helbling, D.E. Thompson, S.L. (2011) "Water distribution system chlorine residual management for security, in Protecting Water and Wastewater Systems, edited by Simon Hakim and Paul Seidenstat. In Press.

Conference Proceedings Papers

1. Leskovec, J., Krause, A., Guestrin, C., Faloutsos, C., VanBriesen, J., Glance, N. (2007) "Cost-effective outbreak detection in networks," The 13th International Conference on Knowledge Discovery and Data Mining (KDD), San Jose, California. Aug 2007. **Best Student Paper Award**. P. 420-429
2. Isovitsch, S. L. and VanBriesen, J. M. (2007). "Spatial Analysis of Optimized Sensor Locations using GIS." Proceedings of the World Environmental and Water Resources Congress 2007, ASCE, Tampa, FL.
3. Isovitsch, S. L. and VanBriesen, J. M. (2007). "Integrating SCADA and GIS to Understand the Effectiveness of On-line Chlorine Boosters used in Response to Contamination Incidents within a Water Distribution Network." Proceedings of the 2007 WEF Disinfection Specialty Conference, Water Environment Federation, Pittsburgh, PA.
4. Thompson, S.L., Casman, E., Fischbeck, P., Small, M., and VanBriesen, J.M. (2007). "Vulnerability Assessment of a Drinking Water Distribution System." Proceedings of the 2007 WEF Disinfection Specialty Conference, Water Environment Federation, Pittsburgh, PA.
5. Thompson, S.L., Casman, E., Fischbeck, P., Small, M., and VanBriesen, J.M. (2007). "Vulnerability Assessment of a Drinking Water Distribution System: Implications for Public Water Utilities." Proceedings of the World Environmental and Water Resources Congress 2007, ASCE, Tampa, FL.
6. Francis, R.A., Small, M.J., VanBriesen, J.M. (2008). "Statistical analysis of DBP speciation and formation patterns: A compositionally-based mixture approach." *Proceedings of the UNC Safe Drinking Water Symposium*, 4-6 November, 2008. University of North Carolina-Chapel Hill.
7. Radhika, P., Harini, S., VanBriesen, J.M. and Suraishkumar, G.K. "Reactive oxygen species and chlorine-based microbial inactivation," India 2010: 3rd International Perspective on Current and Future State of Water Resources and the Environment, January 2010.

Published Abstracts

1. VanBriesen, J.M. and B.E. Rittmann (2000) "Modeling Biogeochemical Interactions in Co-Contaminant Systems," American Chemical Society 220th National Meeting Abstracts, August 2000, Washington DC.
2. Yuan, Z. and VanBriesen, J.M. (2002) "Yield Prediction and Modeling for Multi-Step biodegradation catalyzed by oxygenase enzymes," Abstracts of the American Society for Microbiology 102nd Annual Meeting, May 19-23, 2002.
3. Yuan, Z. and VanBriesen, J.M. (2002) "Analysis of intermediates of EDTA biodegradation by HPLC," American Chemical Society 224th National Meeting Abstracts, August 2002, Boston, MA.
4. Rittmann, B.E., VanBriesen, J.M., Schwartz, A. (2002) "Modeling Coupled Biogeochemical Processes," Association for Environmental Engineering and Science Professors Research and Education Conference, Meeting Abstracts, August 2002, Toronto, Canada.
5. Sidari, F.P., Stout, J.E., VanBriesen, J.M., Bowman, A.M., Grubb, D., Neuner, A., Yu, V.L., (2002) "Chlorine Dioxide: A point of entry treatment technology for the control of Legionella in sensitive secondary distribution systems," American Water Works Association Water Quality Technology Conference Proceedings, November 2002, **1st Place in Poster Competition**.
6. Yuan, Z. and J.M. VanBriesen. "Measuring Cell Yields on NTA, EDTA and Their Biodegradation Intermediates Using Batch Reactors," Abstracts of 226th ACS National Meeting, September 2003, New York, NY.

7. Escoriza, M., Stewart, S., Maier, J., VanBriesen, J.M., "Raman spectroscopy and digital imaging for identification and enumeration of bacteria in water," Abstracts of the Biomedical Engineering Society Annual Meeting. October **2004**.
8. Kim, H-J, Dorn, V.L., VanBriesen, J.M., "The efficacy of ethylenediaminetetraacetic acid (EDTA) against biofilm bacteria," Abstracts of the Biomedical Engineering Society Annual Meeting. October **2004**.
9. VanBriesen, J.M., Blough, M., Brown, W., and Minkley, E., "Critical oxygen concentrations for biodegradation of PCBs," Abstracts of the 228th American Chemical Society National Meeting. August **2004**. Extended abstract accepted and published by the Environmental Division.
10. Wang, C., VanBriesen, J.M., Brown, W.E., Minkley, E.G., Jr., "Microbial communities in two river sediments demonstrate distinct anaerobic PCB dechlorination patterns," Abstracts of the 228th American Chemical Society National Meeting. August **2004**. Extended abstract accepted and published by the Environmental Division.
11. Karcher, S.C., Small, M.J., VanBriesen, J.M., "Statistical method to evaluate the occurrence of PCB transformations in river sediments," Abstracts of the 228th American Chemical Society National Meeting. August **2004**. Extended abstract accepted and published by the Environmental Division.
12. Wang, C., Minkley, E., Jr., VanBriesen, J.M., Blough, M., Brown, W., "Characterization of the anaerobic dechlorinating microorganisms in two PCB contaminated river sediments," Abstracts of the 104th Annual Meeting of the American Society of Microbiology. May **2004**.
13. J.Xu, M.Small, P.Fischbeck, J.VanBriesen, E. Casman, Optimization of sensors placement in water distribution systems, Society for Risk Analysis 2005 Annual Meeting, Dec.4-7, **2005**, Orlando, FL.
14. VanBriesen, J.M., "Intermediate formation in the biodegradation of EDTA and NTA," presented at the International conference on Complexing Agents Science, Industry, Authorities in Ascona Switzerland, March **2007**.
15. Helbling, D.E., and J.M. VanBriesen. "Real-Time Monitoring of Free Chlorine Response to Microbial Contamination in a Model Distribution System," ACS Conference, Boston, MA, August 20-22, **2007**.
16. Hughes, A., J.M. VanBriesen and M.J. Small, "Bayesian Modeling of PCB Dechlorination in sediment for remediation decision support," ACS Conference, Boston, MA, August 20-22, **2007**.
17. Thompson, S.L., and VanBriesen, J.M. "Microbial Diversity as a Water Quality Indicator in Drinking Water Distribution Systems." *Proceedings of 107th General Meeting of the American Society of Microbiology*, ASM, Toronto, ON, **2007**.
18. VanBriesen, J.M., "CORON: Collaborative Ohio River Observatory Network," ASCE World Environmental and Water Resources Congress **2007**, Tampa Florida.
19. Thompson, S.L., and VanBriesen, J.M. "Using Autochthonous Bacterial Populations as Biological Indicators in Drinking Water Distribution Systems." *Proceedings of 2007 Association for Environmental Engineering and Science Professors Conference*, AEESP, Blacksburg, VA, July 21, **2007**.
20. Yu, Youngseob, S.L. Thompson, J.M. VanBriesen, E.G.Minkley and W.E. Brown, "Microbial diversity and community profiles in PCB contaminated sediments from Hudson and Grasse Rivers," *Proceedings of 107th General Meeting of the American Society of Microbiology*, ASM, Toronto, ON, **2007**.
21. Hughes, A, J.M. VanBriesen, M.J. Small, "Bayesian Modeling of PCB Dechlorination in sediment for remediation decision support," The Society of Environmental Toxicology and Chemistry (SETAC) North American 28th Annual Meeting. Milwaukee WI, November **2007**.

22. Hughes, A., Jeanne M. VanBriesen and Mitchell J. Small, "Bayesian Modeling of PCB Dechlorination in Sediment for Remediation Decision Support," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 3-5, **2007**
23. Youngseob Yu, Jeanne M. VanBriesen, Edwin Minkley, William Brown "Investigation of Microbial Community Structures and PCB Dechlorination Patterns in River Sediments," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 3-5, **2007**.
24. Thompson, S.L., and VanBriesen, J.M. (**2008**). "Bacterial Diversity as a Biological Indicator in Drinking Water Distribution Systems." *Annual Conference*, Pennsylvania Section - American Water Works Association, Philadelphia, PA. **1st place in Fresh Ideas Poster Competition.**
25. Thompson, S.L., and VanBriesen, J.M. (**2008**). "Bacterial Diversity as a Biological Indicator in Drinking Water Distribution Systems." *Annual Conference and Exposition*, American Water Works Association, Atlanta, GA.
26. Thompson, S.L., VanBriesen, J.M. (**2008**). "A Novel QPCR-Based Method for Detecting Bacterial Contamination in Drinking Water" *American Society of Microbiology Allegheny Branch Meeting*, American Society of Microbiology, Lewisburg, PA.
27. Hughes, A., J.M. VanBriesen, M.J. Small. "Dechlorination Pattern Augmentation and Bayesian Modeling of Polychlorinated Biphenyl (PCB) Dechlorination in Sediment," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 2-4, **2008**.
28. Xu, Y., Yu, Y, Gregory, K., Minkley, E., VanBriesen, J. "Bacterial Communities Analysis with Q-PCR in PCB-contaminated Sediment Core," Environmental Technology Technical Symposium & Workshop, December 2-4, **2008**. Washington, DC.
29. Hughes, A., J.M. VanBriesen, M.J. Small. "Dechlorination Pattern Augmentation and Bayesian Modeling of Polychlorinated Biphenyl (PCB) Dechlorination in Sediment," The Fifth International Conference on Remediation of Contaminated Sediments held by Battelle. Jacksonville, Florida, February 2-5, **2009**.
30. Yan Xu, Youngseob Yu, Kelvin Gregory, Jeanne VanBriesen, "Bacterial Communities Analysis with Q-PCR and DGGE in PCB-contaminated Sediment Core," The Fifth International Conference on Remediation of Contaminated Sediments held by Battelle. February 2-5, **2009**. Jacksonville, Florida, USA.
31. Hughes, A., J.M. VanBriesen, M.J. Small. "Dechlorination Pattern Augmentation and Bayesian Modeling of Polychlorinated Biphenyl (PCB) Dechlorination in Sediment," The Tenth International Symposium on In Situ and On-Site Bioremediation held by Battelle. Baltimore, Maryland, May 5-8, **2009**.
32. Yan Xu, Youngseob Yu, Kelvin Gregory, Jeanne VanBriesen, "Comparison of Bacterial Populations Related to PCB Microbial Biodegradation in PCB-contaminated Rivers," The Tenth International Symposium on In Situ and On-Site Bioremediation held by Battelle. May 5-8, **2009**. Baltimore, Maryland, USA.
33. Karcher, S, J.M. VanBriesen, M.J.Small "Tracker Pair elucidation of congener transformations in PCB contaminated sediment," The Tenth International Symposium on In Situ and On-Site Bioremediation held by Battelle. May 5-8, **2009**. Baltimore, Maryland, USA.
34. Xu, J., J.M. VanBriesen, M. Small, P. Fischbeck, "Decision making under information constraints," World Environmental and Water Resources Congress 2009, May 17-21, **2009**, Kansas City, Missouri, USA.
35. Helbling, D., VanBriesen, J.M. "Modeling chlorine response to microbial contamination in drinking water distribution systems," 11th Annual Water Distribution Systems Analysis Symposium at the World Environmental and Water Resources Congress 2009, May 17-

- 21, **2009**, Kansas City, Missouri, USA.
36. Thompson, S.L. and VanBriesen, J.M. "Bacterial Diversity Methods in Drinking Water Detection," 11th Annual Water Distribution Systems Analysis Symposium at the World Environmental and Water Resources Congress 2009, May 17-21, **2009**, Kansas City, Missouri, USA.
 37. Thompson, S.L., and VanBriesen, J.M. "Bacteria Diversity-Based Method for Detecting Waterborne Pathogens," Association for Environmental Engineering Professors (AEESP) Conference, Iowa City, Iowa, July 28, **2009**.
 38. Thompson, S.A. and VanBriesen, J.M. **2009**. "Using Q-PCR Based autochthonous bacterial indicators to detect contamination in drinking water," Proceedings of the 109th General Meeting of the American Society of Microbiology, ASM, Philadelphia PA.
 39. Wilson, J.M. and VanBriesen, J.M. "Capillary Electrophoresis Analysis of Haloacetic Acids: When does it work?" The 238th ACS National Meeting. Washington, D.C., August 16-20, **2009**.
 40. VanBriesen, J.M., Small, M., Schoen, M. "How many water quality samples are enough?" Three Rivers Wet Weather Annual Conference, Pittsburgh, PA, September 29-30, **2009**.
 41. Hughes, A., J.M. VanBriesen, M.J. Small. "Objective Identification of Structural Properties Associated with Polychlorinated Biphenyl Dechlorination Processes," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.
 42. Hughes, A., J.M. VanBriesen, M.J. Small. "Bayes Monte Carlo Model to Identify the Most Likely Polychlorinated Biphenyl Dechlorination Pathways and Processes," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.
 43. Thompson, S.L., Xu, Y., Gregory, K., and VanBriesen, J.M. "Bacterial Population Shifts Related to Anaerobic Reductive Dechlorination of PCB Tracker Pairs in Hudson and Grasse River Sediment," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.
 44. Xu, Y., Thompson, S.L., Gregory, K. and VanBriesen, J.M. "Reductive dechlorination of polychlorinated biphenyls (PCBs) Tracker Pairs in Hudson and Grasse River Sediment Microcosms," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.
 45. Mitchell, A., Hughes, A., Karcher, S.C., Small, M.J. , and VanBriesen, J.M. "PCB analytical method uncertainty and evaluation of PCB transformations in natural systems," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.
 46. VanBriesen, J.M., Small, M., Karcher, S. "Evaluation of reductive dechlorination of polychlorinated biphenyls (PCBs) in Sediment Core Samples using Tracker Pairs," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 1-3, **2009**.

Presentations

1. VanBriesen, J.M. "Model Demonstration and Analysis," presented at the DOE Workshop on "Integrating Modeling and Experimentation on Coupled Biodegradation and Chemical Reactions Involving Metal-Chelate Complexes," held at Northwestern University, March 22-23, **1995**.
2. VanBriesen, J.M., B.E. Rittmann, and A.J. Valocchi "Modeling of Coupled Processes in Subsurface Transport of Reactive Contaminants," presented at DOE Subsurface Science Program Co-Contaminant Chemistry Research Subprogram meeting, Gaithersburg MD, January 23-25, **1996**.

3. VanBriesen, J.M. "Modeling Coupled Processes Involving Reactive Co-Contaminants," presented at Pacific Northwest National Laboratory, February 13, **1996**.
4. VanBriesen, J.M. "Modeling Chemical and Biological Reactions in Real-World Systems," presented at Environmental Health Engineering Seminar, Northwestern University, October **1996**.
5. Banaszak, J.E., J.M. VanBriesen, and B.E. Rittmann in collaboration with G. Joshi-Tope and A.J. Francis, "Mathematical Modeling of Speciation Dependent Biodegradation," Presented at *Mathematical Issues in Bioremediation*, Los Alamos National Laboratory, June 11-13, **1997**.
6. VanBriesen, J.M., J.E. Banaszak, J.Quinn, D.T. Reed, and B.E. Rittmann. "A Systematic Study of Coupled Chemical and Biological Reactions in the Aerobic Degradation of Nitrilotriacetic Acid by *Chelatobacter heintzii*." Presented at the *Symposium on the Influence of Coupled Processes on Contaminant Fate and Transport* at the Soil Science Society of America Annual Meeting, Anaheim CA, October 26-30, **1997**.
7. VanBriesen, J.M. "Modeling Intermediate Formation in Biological Degradation Reactions," presented at Environmental Health Engineering Seminar, Northwestern University, March 11, **1998**.
8. VanBriesen, J.M. "Modeling Intermediate Formation in Reactions Involving Biological Catalysts," poster presented *New Frontiers in Environmental Catalysis: chemical processing, emissions treatment, and the natural environment*, the 1998 Annual Scientific Meeting, Center for Catalysis and Surface Science, Northwestern University, September 9, **1998**.
9. VanBriesen, J.M., B.E. Rittmann, H. Bolton, Jr., D.C. Girvin. "Model Analysis of Intermediate Formation in the Biodegradation of Nitrilotriacetic Acid by *Chelatobacter heintzii*," Presented at the *21th Annual Environmental Chemistry Workshop*, University of Michigan, October 18, **1998**.
10. VanBriesen, J.M., "Modeling Complex Biogeochemical Reactions: An exploration of controlling factors in the biodegradation of synthetic chelating agents" presented at Oak Ridge National Laboratory, January 11, **2000**.
11. VanBriesen, J.M., and B.E. Rittmann, "Modeling Recalcitrant intermediate formation during biodegradation," 2nd International Conference on the Remediation of Chlorinated and Recalcitrant Compounds (Monterey, CA May 22-25, **2000**).
12. VanBriesen, J.M., "Intermediate Formation in the Biodegradation of Anthropogenic Compounds," presented at Graduate seminar in Department of Biology, Duquesne University, April 7, **2000**.
13. VanBriesen, J.M. "Risk Issues in the U.S. Department of Energy," presented for graduate seminar in Engineering and Public Policy Program, Carnegie Mellon University, April 18, **2000**.
14. VanBriesen, J.M., "Putting Graduate Research in Perspective," presented at Regional Duquesne University Chemistry Symposium, Invited Keynote Speaker. August 11, **2000**.
15. VanBriesen, J.M. and B.E. Rittmann, "Modeling Biogeochemical Interactions in Co-Contaminant Systems," American Chemical Society (Washington, DC, August 21st, **2000**).
16. VanBriesen, J.M., "Teaching and Research: What's the Connection," Presented to Research Experience for Teachers, at Johns Hopkins University, July 14, **2001**.
17. VanBriesen, J.M., "Putting Graduate Research in Perspective," presented at Graduate Womens' Connecting Lunch, Carnegie Mellon University Fall **2001**.
18. VanBriesen, J.M. "Biodegradation of Recalcitrant Organics," Presented at graduate seminar in Environmental Engineering, Stanford University, December 3, **2001**.
19. VanBriesen, J.M. "Biodegradation of Recalcitrant Organics," Presented at Environmental

- Science Seminar, Chatham College, January 16, **2002**.
20. Yuan, Z. and VanBriesen, J.M. "Yield Prediction and Modeling for Multi-Step biodegradation catalyzed by oxygenase enzymes," Poster presentation American Society for Microbiology 102nd Annual Meeting, May 19-23, **2002**, Salt Lake City, UT.
 21. Yuan, Z. and VanBriesen, J.M. "Analysis of intermediates of EDTA biodegradation by HPLC," Poster Presentation at American Chemical Society Annual Meeting, August **2002**, Boston, MA.
 22. Rittmann, B.E., VanBriesen, J.M., Schwartz, A. "Modeling Coupled Biogeochemical Processes," Association for Environmental Engineering and Science Professors Research and Education Conference, August **2002**, Toronto, Canada.
 23. Yuan, Z. and J.M. VanBriesen. "Measuring Cell Yields on NTA, EDTA and Their Biodegradation Intermediates Using Batch Reactors." Poster Presentation at American Chemical Society (ACS) National Meeting. September **2003**, New York, NY.
 24. VanBriesen, J.M. "Advisors, Mentors, Friends." presented at Graduate Women's Connecting Lunch, Carnegie Mellon University, November 18, **2003**.
 25. VanBriesen, J.M. "Biodegradation of Chelating Agents," presented at Environmental Engineering Graduate Seminar, Carnegie Mellon University, April **2004**.
 26. VanBriesen, J.M., "Smart Women's Job Search: The two body problem," presented at Graduate Women's Connecting Lunch, Carnegie Mellon University, Invited Guest Speaker, April **2004**.
 27. VanBriesen, J.M. "Pittsburgh Water Quality Data," presented at "Water: Assets and Liabilities," a conference sponsored by the Engineering Society of Western Pennsylvania. May 4, **2004**.
 28. VanBriesen, J.M., Blough, M., Brown, W., and Minkley, E., "Critical oxygen concentrations for biodegradation of PCBs," 228th American Chemical Society National Meeting. August **2004**.
 29. Escoriza, M., Stewart, S., Maier, J., VanBriesen, J.M. "Raman spectroscopy and digital imaging for identification and enumeration of bacteria in water," Poster Presentation at Biomedical Engineering Society Annual Meeting. October **2004**.
 30. Kim, H-J, Dorn, V.L., VanBriesen, J.M., "The efficacy of ethylenediaminetetraacetic acid (EDTA) against biofilm bacteria," Poster Presentation at Biomedical Engineering Society Annual Meeting. October **2004**.
 31. VanBriesen, J.M. "Biodegradation of Chelating Agents," presented at Lehigh University, Graduate Seminar, February **2005**.
 32. VanBriesen, J.M. "Biodegradation of Polychlorinated Biphenyls – can we realize the potential," presented at Arizona State University, March **2005**.
 33. VanBriesen, J.M. "Control of pathogenic biofilms on medical devices using EDTA," presented at Arizona State University, Biodesign Institute, March **2005**.
 34. VanBriesen, J.M. "Southwestern PA Water Quality," presented to the Departmental Graduate Research Seminar, Civil and Environmental Engineering, Carnegie Mellon University. April **2005**.
 35. VanBriesen, J.M., Small, M.S., Brown, W., Minkley, E., Karcher, S. , Wang, C. "Collaborative Statistical and Molecular Microbiological Research to Elucidate Complex Systems involving Polychlorinated Biphenyls," presented at the Association of Environmental Engineering and Science Professors (AEESP) conference. Clarkson University, Potsdam NY. July **2005**.
 36. Yuan, Z. and VanBriesen, J.M., "Intermediate formation in the biodegradation of chelating agents," "Poster presentation and poster brief presented at the Association of Environmental Engineering and Science Professors (AEESP) conference. Clarkson University, Potsdam NY. July **2005**.

37. VanBriesen, J.M. "Southwestern PA Water Quality – the National Research Council Study," presented to the Science Advisory Board, Three Rivers Wet Weather, Inc. September **2005**.
38. VanBriesen, J.M. "Water Quality in Southwestern PA – where do we go from the NRC study," presented at the Ohio River Basin Consortia for Research and Education (ORBCRE) Meeting. Marshall University. West Virginia. October **2005**.
39. VanBriesen, J.M. "Biodegradation of Polychlorinated biphenyls – can we realize the potential," presented at Cornell University, November **2005**.
40. VanBriesen, J.M. "Biodegradation of Polychlorinated biphenyls – can we realize the potential," presented at Washington University in St. Louis, February **2006**.
41. VanBriesen, J.M. "Raman Spectroscopy for enumeration and viability assessment of pathogens in drinking water," presented at University of Illinois, Urbana-Champaign, February **2006**.
42. VanBriesen, J.M. "Control of pathogenic biofilms on medical devices using EDTA," presented at Carnegie Mellon University, Biomedical Engineering Department Seminar, February **2006**.
43. VanBriesen, J.M. "Water Supply and Distribution System Vulnerabilities," presented at Carnegie Mellon University Homeland Security Briefing, Washington DC, February **2006**.
44. VanBriesen, J.M. "Water QUEST: State of the Center," presented at Annual Steinbrenner Institute for Environmental Education and Research retreat, March **2006**.
45. VanBriesen, J.M. "Water Supply and Distribution System Vulnerabilities," presented at University of Cincinnati, April **2006**.
46. VanBriesen, J.M. "Water QUEST: An introduction," presented at the Ohio River Valley Water Sanitation Commission (ORSANCO), April **2006**.
47. VanBriesen, J.M. "Water QUEST: An introduction," presented at the Carnegie Mellon University, Department of Civil and Environmental Engineering Seminar for Visiting Students, April **2006**.
48. VanBriesen, J.M. "Water Supply and Distribution System Vulnerabilities," presented to University Research Administrators Meeting, Carnegie Mellon University, April **2006**.
49. VanBriesen, J.M. "Water Distribution System Vulnerabilities and Sensor Networks," presented at Ohio State University, April **2006**.
50. VanBriesen, J.M. "Water QUEST: an introduction," presented to the Pittsburgh Water and Sewer Authority, July **2006**.
51. VanBriesen, J.M. "Water QUEST: an introduction," presented to the Southwestern PA Water Quality Roundtable, July **2006**.
52. VanBriesen, J.M., "Battle of Water Sensor Networks," presented at the Water Distribution System Conference, Cincinnati Ohio, August **2006**.
53. VanBriesen, J.M. and Faloustos, C., "KDD: Water quality sensors tutorial," presented at the Knowledge Discovery in Databases (KDD) Conference, Philadelphia PA, August **2006**.
54. VanBriesen, J.M., "Water QUEST: an introduction," presented at the Three Rivers Wet Weather Annual Conference, Mars, PA, September **2006**.
55. VanBriesen, J.M. "The NRC Report on Southwestern PA," presented to the Southwestern PA Water Quality, October **2006**.
56. VanBriesen, J.M., "Water QUEST: an introduction," presented at the Ohio River Basin Consortia for Research and Education (ORBCRE) annual meeting in Murray, Kentucky, October **2006**.
57. VanBriesen, J.M., "CORON: Collaborative Ohio River Observatory Network," presented at the Ohio River Basin Consortia for Research and Education (ORBCRE) annual meeting in Murray, Kentucky, October **2006**.

58. VanBriesen, J.M., "CLEANER: cyberinfrastructure planning for the environment," presented at the Ohio River Basin Consortia for Research and Education (ORBCRE) annual meeting in Murray, Kentucky, October **2006**.
59. VanBriesen, J.M., "Panther Hollow Bacterial Water Quality," presented at the Ohio River Basin Consortia for Research and Education (ORBCRE) annual meeting in Murray, Kentucky, October **2006**.
60. VanBriesen, J.M., "Statistical and Molecular Microbiological Research to Elucidate Complex Systems involving Polychlorinated Biphenyls," presented at University of Texas, Austin, November **2006**.
61. VanBriesen, J.M., "Water QUEST: an introduction," presented to the Carnegie Mellon University Alumni Group in Austin, Texas, November **2006**.
62. Yu, Y., J.M. VanBriesen, E.G. Minkley Jr., and W.E. Brown. "Identification of microbial diversity in PCB contaminated sediments from Hudson and Grasse rivers by various molecular biology tools", Environmental Technology Technical Symposium & Workshop, Washington, D.C., November 28-30, **2006** (Poster presentation).
63. Hughes, A., J.M. VanBriesen, M.J. Small. "Bayesian Modeling of PCB Dechlorination in Sediment for Remediation Decision Support," Environmental Technology Technical Symposium & Workshop, Washington, D.C., November 28-30, **2006** (Poster presentation).
64. VanBriesen, J.M., "Sensors for drinking water distribution systems," presented at NSF workshop on Sensor Networks, December **2006**.
65. VanBriesen, J.M., "Intermediate formation in the biodegradation of EDTA and NTA," presented at the International conference on Complexing Agents Science, Industry, Authorities in Ascona Switzerland, March **2007**.
66. VanBriesen, J.M., "Water supply and distribution system vulnerabilities," presented to Regional University Research Administrators Meeting, March **2007**.
67. VanBriesen, J.M*, Montgomery, J., Haas, C., Minsker, B., Schnoor, J., "Integrated Hydrologic Science and Environmental Engineering Observatory: A preliminary program plan for the WATERS Network," Engineering Sustainability Conference, Pittsburgh PA, April **2007**.
68. VanBriesen, J.M., "Global Water Sustainability: urban issues in clean water," Global Academic Partnership Workshop, Research in Sustainable community Development, sponsored by the Center for Latin American Studies and the Mascaro Sustainability Initiative, Pittsburgh PA April **2007**.
69. VanBriesen, J.M., "CORON: collaborative Ohio River observatory network," ASCE World Environmental and Water Resources Congress **2007**, Tampa Florida.
70. Escoriza, M.F., VanBriesen, J.M., Stewart, S., Maier, J., Treado, P., "Raman spectroscopy for detection, identification, quantification and viability assessment of bacteria in water," Association of Environmental Engineering and Science Professors (AEESP) Biannual Meeting, July **2007**.
71. VanBriesen, J.M., "Bacterial Thermodynamics and Yield Prediction," presented to Biotechnology Seminar Series University of Minnesota, October **2007**.
72. Xu, Yan, J.M. VanBriesen and K. Gregory, "Physical Source Tracking Using Multiple Molecular Microbial Methods in Pine Creek Watershed, Allegheny County PA," Ohio River Basin Consortia for Research and Education Meeting, October **2007**.
73. VanBriesen, J.M. and Walker, D. and Brainsteitter, A. "Case Study: Bacterial Monitoring and Contaminant Source Tracking in Pine Creek Watershed," Proceedings of the 9th Annual Three Rivers Wet Weather Sewer Conference, October **2007**.
74. VanBriesen, J.M. "Source Tracking in Pine Creek," Presented at PADEP/3RWW Volunteer Appreciation Event, October **2007**.

75. VanBriesen, J.M. "Assertiveness and communication in graduate school," Grad Women's Connecting Lunch at Carnegie Mellon, September **2007**.
76. Youngseob Yu, Jeanne M. VanBriesen, Edwin Minkley, William Brown "Investigation of Microbial Community Structures and PCB Dechlorination Patterns in River Sediments," Environmental Technology Technical Symposium & Workshop, Washington, D.C., December 3-5, **2007** (Poster).
77. VanBriesen, J.M. "Water Infrastructure in the 21st Century," presented at the Indo American Frontiers of Engineering Meeting, February **2008**.
78. VanBriesen, J.M. "Urban Water and Global Implications," presented at Ohio River Basin Consortia for Research and Education Annual Meeting, October **2008**.
79. VanBriesen, J.M., "Work Family Balance and Juggling," presented at Graduate Women's Connecting Lunch, Carnegie Mellon University, Invited Guest Speaker, November **2008**.
80. Yan Xu, Jeanne VanBriesen, Kelvin Gregory, "Physical Source Tracking in Pine Creek Watershed, Allegheny County, PA." Ohio River Basin Consortium for Research and Education Annual Meeting, October 25-26, **2008**. Pittsburgh, PA, USA
81. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at the University of Nevada – Reno, November 13, **2008**.
82. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at University of Pittsburgh, January **2009**.
83. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at Villanova University, February **2009**.
84. VanBriesen, J.M. "Lecturing at the College Level," presented to the Future Faculty Series at Carnegie Mellon University, March 3, **2009**.
85. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at the University of Arizona, April **2009**.
86. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at the University of Maryland, Baltimore-County, April **2009**.
87. Karcher, S, J.M. VanBriesen, M.J.Small "Tracker Pair elucidation of congener transformations in PCB contaminated sediment," The Tenth International Symposium on In Situ and On-Site Bioremediation held by Battelle. May 5-8, **2009**. Baltimore, Maryland, USA.
88. Xu, J., J.M. VanBriesen, M. Small, P. Fischbeck, "Decision making under information constraints," World Environmental and Water Resources Congress 2009, May 17-21, **2009**, Kansas City, Missouri, USA.
89. Helbling, D., VanBriesen, J.M. "Modeling chlorine response to microbial contamination in drinking water distribution systems," 11th Annual Water Distribution Systems Analysis Symposium at the World Environmental and Water Resources Congress 2009, May 17-21, **2009**, Kansas City, Missouri, USA.
90. Thompson, S.A. and VanBriesen, J.M. "Bacterial Diversity Methods in Drinking Water Detection," 11th Annual Water Distribution Systems Analysis Symposium at the World Environmental and Water Resources Congress 2009, May 17-21, **2009**, Kansas City, Missouri, USA.
91. Thompson, S.A., and VanBriesen, J.M. "Bacteria Diversity-Based Method for Detecting Waterborne Pathogens," Association for Environmental Engineering Professors (AEESP) Conference, Iowa City, Iowa, July 28, **2009**.
92. VanBriesen, J.M., Small, M., Schoen, M. "How many water quality samples are enough?" Three Rivers Wet Weather Annual Conference, September 29-30, **2009**.
93. VanBriesen, J.M. "Water Infrastructure in the Digital Age," presented at the Missouri Science and Technology, October **2009**.
94. VanBriesen, J.M. "Urban Water and Global Climate Change," US NSF and Chinese NSF

- Workshop, October **2009**.
95. VanBriesen, J.M., "Teaching and Research: What's the Connection," Presented to teachers and students at the Siemens Math, Science and Technology Competition, at Carnegie Mellon University, November 20th, **2009**. Hands on activity.
 96. VanBriesen, J.M. "Regional Water Quality," Presented to teacher workshop, November 21, **2009**.
 97. VanBriesen, J.M. "Water 2050: cyberinfrastructure for water systems," presented at the University of Michigan, February 3rd, **2010**.
 98. VanBriesen, J.M. "Why water matters," presented at the organizing committee for Water Matters conference for World Environment Day, March 11, **2010**.
 99. VanBriesen, J.M. "Water 2050: Challenges and Opportunities in Drinking Water Infrastructure," presented at Duke University, March 31, **2010**.
 100. VanBriesen, J.M. "Sensing at Engineered and Natural Water System Interfaces," Webinar for CUAHSI, April 2, **2010**.
 101. VanBriesen, J.M. "River Alert Information Network," presented at Fifth Annual Monongahela River Summit, Morgantown, WV, April 19, **2010**.
 102. VanBriesen, J.M. "Water 2050: Challenges and Opportunities in Drinking Water Infrastructure," presented at Johns Hopkins University, April 27, **2010**.
 103. VanBriesen, J.M. "Water for Marcellus Shale development," panel presentation at the PEC Marcellus Shale Policy Conference, May 3, **2010**.
 104. VanBriesen, J.M. "Engineered and Natural Water Systems: Sensing and Modeling at the Interfaces," CUAHSI bi-annual meeting, Boulder, Co, July 20, **2010**.
 105. VanBriesen, J.M. "Water 2050: cyber-physical infrastructure needs for water," 6th International Conference on Sustainable Water Environment, Newark, De, July 29-31, **2010**.
 106. VanBriesen, J.M. "Water Quantity and Quality Issues in Unconventional Gas Development," Panel Presentation at Marywood University Forum on Marcellus Gas, August 19, **2010**.
 107. VanBriesen, J.M. "Water Consortium for SW Pennsylvania," ASCE Pittsburgh Section Meeting, September 9, **2010**.
 108. VanBriesen, J.M. "Source Water Bromide and brominated DBPs in the Monongahela River Basin," State of the Monongahela River, Pittsburgh, PA, September 16, **2010**.
 109. VanBriesen, J.M. "Source Water Bromide and brominated DBPs in the Monongahela River Basin," ORSANCO Ohio River Users Group, Cincinnati OH, September 29, **2010**.
 110. VanBriesen, J.M. "Water 2050: Challenges and Opportunities in Drinking water Infrastructure," presented at Howard University, September 30, **2010**.
 111. VanBriesen, J.M. "Water Consortium for SW Pennsylvania," Ohio River Basin Consortium for Research and Education Annual Meeting, October 18, **2010**.
 112. VanBriesen, J.M. "Surrogates, Lumped Terms and Decision Making," University of Delaware, November 19, **2010**.

Students Supervised 2000-2010

Ph.D. Students

1. Zhiwen Yuan, "The role of oxygenation and intermediate formation in the biodegradation of chelating agents," May 2004. Supported by the National Science Foundation.
2. Sandra Karcher, "Statistical analysis of PCB biodegradation through intermediates," May 2005. Co-advised with Mitchell Small (CEE/EPP) Supported by the Packard Foundation. Returned for post-doctoral work 2008.
3. Maria Escoriza, "Detection waterborne pathogens using raman chemical imaging and spectroscopy," May 2006. Co-advised with David Dzombak (CEE). Supported by the Pennsylvania Infrastructure Technology Alliance (PITA). Now with Occidental Petroleum Argentina.
4. Christine Wang, "Application of molecular biology to identify and enumerate microorganisms involved in PCB biodegradation," August 2006. Co-advised with Edwin Minkley (Biological Sciences) and William Brown (Biological Sciences). Supported by the Packard Foundation.
5. Jinghua Xiao, "Thermodynamics of Yield Prediction," August 2006. Supported by the National Science Foundation. Now with Pinto Engineering Inc. in York, PA, USA.
6. Stacia Thompson, "Decision support for drinking water distribution system sensors," December 2008. Co-advised with Mitchell Small (CEE/EPP) and Paul Fischbeck (EPP/SDS). Supported by Department of Homeland Security Fellowship. Returned for post-doctoral work 2009; now in Department of Engineering and Public Policy.
7. Damian Helbling "Biosensors for the detection of pathogens in drinking water systems," May 2008. Co-advised with Mitchell Small (CEE/EPP). Supported by the National Science Foundation. Currently a post-doctoral researcher at EAWAG, Switzerland.
8. Shannon Isovitsch, "Sensor networks for water distribution system modeling and security," August 2008. Supported by the National Science Foundation. Currently with Alcoa, Inc.
9. Royce Francis, "Disinfection by-products in drinking water," August 2009. Supported by National Science Foundation Fellowship. Co-advised with Mitch Small (CEE/EPP) Currently a post-doctoral researcher at Johns Hopkins University.
10. Mary Schoen, "Volunteer data collection in watersheds: implications for TMDLs," May 2008. Supported by Three Rivers Wet Weather, Inc. Co-advised with Mitch Small (CEE/EPP). Currently a post-doctoral researcher at EPA labs in Cincinnati, Ohio.
11. Amanda Hughes, "Decision support for PCB remediation in sediments," expected completion December 2010. Co-advised with Mitch Small (CEE/EPP). Supported by DOD SERDP.
12. Yan Xu, "Microbial populations and geochemistry in PCB contaminated sediments," expected completion May 2011. Co-advised with Kelvin Gregory (CEE). Supported by DOD SERDP.
13. Jessica Wilson, "Effects of speciation on brominated disinfection by products in drinking water from the Monongahela River," expected completion May 2012. Supported by Dean's Fellowship, SEER Fellowship, and Colcom Foundation.
14. Mohan Jiang, "Life cycle assessment of water quality impacts of unconventional natural gas exploration," expected completion May 2014. Co-advised with Chris Hendrickson (CEE). Supported by Dean's Fellowship and Department award.
15. Leneve Ong, "Integration of pipe condition and water quality data for asset management in drinking water distribution systems," expected completion May 2014. Co-advised with Jim Garrett (CEE) and Lucio Soilbelman (CEE). Supported by Dean's Fellowship and Ellegood Fellowship.

16. Sichu Shrestha, "Wastewater treatment under energy restricted conditions in Nepal," expected completion May 2014. Co-advised with Dave Dzombak (CEE). Supported by Fullbright Fellowship and Dean's Fellowship.

Master's Students

1. Frank Sidari, "Evaluation of chlorine dioxide as a *Legionella*-specific disinfectant in potable water." May 2002. Thesis. Supported by the Veterans' Administration Research Fund. Currently at Malcolm-Pirnie Pittsburgh Office.
2. Vanessa Brisson, "Synergy Between Ethylenediaminetetraacetic Acid (EDTA) and Vancomycin Against a *Staphylococcus epidermidis* Biofilm." August 2003. Thesis. Supported by a National Science Foundation Fellowship. Currently a PhD student at the University of California, Berkeley.
3. Yamira Izzara, "Bacterial Contamination in the Allegheny County Watersheds." May 2003. Project. Self-supported.
4. Maria Escoriza, "Raman Chemical Imaging Spectroscopy for Evaluation of Biological Agents in Water." December 2003. Project. Co-advised with David Dzombak (CEE). Supported by the Pennsylvania Infrastructure Technology Alliance (PITA). Continued for PhD. Currently at Occidental Petroleum Argentina.
5. Chris Weber, "Fate and transport of ethylenediaminetetraacetic acid (EDTA) and its effect on eutrophication." December 2004. Thesis. Co-advised by Scott Matthews. Supported by National Science Foundation CAREER project. Continued for PhD. Currently Research Faculty at Carnegie Mellon University.
6. Shannon Isovitsch, "Sensor networks for water distribution system modeling and security." May 2005. Thesis. Self-supported. Continued for Ph.D. Currently with Alcoa, Inc.
7. Meghan Smith, "Natural growth variance and reproducibility of reactor biofilms," May 2006. Thesis. Biomedical Engineering. Self-supported. Currently with Johnson and Johnson, Inc.
8. Kristen Wright, "Evaluating bacterial monitoring methods in Panther Hollow Lake," May 2006. Project. With support from Pittsburgh Parks Conservancy and Three Rivers Wet Weather, Inc.
9. James Gower, "Urban stream restoration survey," May 2008. Project. Self-supported.
10. Tanya Spellman, "Drinking water pilot plant survey," August 2009. Project. Self-supported.
11. Amanda Mitchell, "Uncertainty in PCB analytical methods," May 2009. Thesis. Supported by Water QUEST.
12. Harini Venugopal, "Monongahela River Modeling with HSPF," Aug 2009. Project. Self-supported.
13. Charan Rajan, "Effect of produced water on wastewater treatment," May 2010. Project. Self-supported.
14. Tarun Anumol, "Produced water effects on sludge quality," May 2010. Project. Self Supported.
15. Xiaodi Duan, "Determination of decay constant for bacterial self-oxidation," May 2010. Project. Self-supported.
16. Zheng Wang, "Historical Monongahela River Water Quality," May 2010. Project. Self-supported.
17. Balaji Seshasayee, "Effect of chlorine boosters on DBP speciation in urban water system." Thesis. Expected Graduation December 2010. Self-supported.
18. Ali Oppfelt, "Desalination options for Australia," December 2010. Project. Self-supported.

Undergraduate Students

1. Hyo-Jin Kim, "Effect of EDTA against Biofilm Bacteria." Poster presentation at May 2004 Meeting of the Minds. Supported by the Winters Foundation. Completed August 2004.
2. Dacia Young, "Bacterial measurement methods." CIT freshman supported through Intel Freshman Year Research Experience (IFYRE). Completed project May 2004.
3. Nur Azlina Abdul Aziz, "Statistical Analysis of Cell Counting Methods." Junior in BME. Completed project Summer 2004.
4. Raihan Rozlee, "Statistical distributions for cell enumeration techniques," Junior in BME. Completed project Fall 2004.
5. Meghan Smith, "Biofilms and exopolymeric substances," Senior in CEE. Completed project Fall 2004.
6. Therese Medalle, "EDTA and Biofilm prevention," Senior Research Project. May 2006.
7. Alan Eaton, "Bacterial Monitoring in Panther Hollow Watershed," Summer 2006 Supported by Pittsburgh Parks Conservancy.
8. Amanda Mitchell, "Bacterial Monitoring in Panther Hollow Watershed," Summer 2006 Research Experience for Undergraduates (NSF). Continued for MS degree.
9. Elena Goldstein, "Bacterial Monitoring in Panther Hollow Watershed," Summer 2006 Supported by Pittsburgh Parks Conservancy.
10. Meenah Park, "Bacterial Monitoring in Panther Hollow Watershed," Summer 2006 Research Experience for Undergraduates (NSF).
11. Erika Carter, "Water Quality on Carnegie Mellon's Campus," Spring and Summer 2007.
12. Marco Arienzo, "Drinking Water Quality on Carnegie Mellon's Campus," Spring and Summer 2007.
13. Galit Fryndman, "Water Quality in Hot Dog Dam in Schenley Park, Pittsburgh PA," Biology undergraduate research project, 2007.
14. Alison Retotar, "Population diversity in relation to disinfection by-products in drinking water," Biology undergraduate research project, 2009.
15. Nicholas Doiron, "Cyberinfrastructure for Dunkard Creek," CEE research project, 2010.
16. John Sourbeer, "Monongahela River Modeling in GIS," CEE research project, 2010.

Post-Doctoral Researchers

1. Youngseob Yu, "Sediment microbial community response to PCBs: effective characterization for decision support." March 2006-December 2008. Supported by DOD SERDP.
2. Stacia Thompson, "Population diversity in PCB sediments," February 2009 – September 2010. Supported by DOD SERDP.
3. Sandra Karcher, "EPA/NSF colabration on the development of the Waters Network," March 2009 - present. Supported by NSF Waters Network and EPA.

Research Funding Sources (2000-2010)

Sole Principal Investigator

1. "CAREER: Coupled Processes and Intermediate Formation in the Biodegradation of EDTA," Principal Investigator, National Science Foundation. \$375,000. February 2001 – January 2006.
2. REU (Research Experience for Undergraduates) Supplement to CAREER. Principal Investigator, National Science Foundation. \$6000. May 2004-December 2005.
3. RET (Research Experience for Teachers) Supplement to CAREER. Principal Investigator, National Science Foundation. \$20,000. June 2001-August 2001.
4. "Bacterial Thermodynamics for Modeling Biodegradation of Anthropogenic Compounds," Principal Investigator, National Science Foundation. \$330,000. April 2003-March 2006.
5. "Waters Network Support Activities," Principal Investigator. Subcontract from UCSB for \$26,000 and subcontract from UIUC for \$124,000 and contract from Shaw Environmental for \$100,000. October 2008 to March 2011.
6. "RAPID: cyberinfrastructure development for Dunkard Creek watershed," Principal Investigator. National Science Foundation. \$99,000. January 2010- December 2010.
7. "Panther Hollow Water Quality Assessment," Principal Investigator. Pittsburgh Parks Conservancy. \$14,000. May 2006 – April 2008.
8. "CASIAU: Complexing Agents: Science, industry, authorities: Conference travel support," Principal Investigator. National Science Foundation. \$15,000. January 2007 – May 2007.
9. "Synergy of EDTA and antibiotics against medical implant biofilm infections," Principal Investigator, Sam and Emma Winters Foundation. \$8,500. September 2003 – August 2004.
10. "Measuring bacterial biomass for evaluation of yield," Principal Investigator, Berkman Faculty Development Fund. \$5,000. December 2002 – December 2003.
11. "Measuring Complexing Agents in Natural Systems," Principal Investigator, Carnegie Mellon Faculty Development Fund, \$6,900, January 2000-December 2000.

Lead Principal Investigator

1. "IGERT: Education at the interface: Nanomaterial Environmental Impacts and Policy" Lead Principal Investigator. Co-principal investigators are Greg Lowry (CEE at CMU), Liz Casman (EPP at CMU), Kim Jones (CEE at Howard), and Lorraine Fleming (CEE at Howard). National Science Foundation. \$3,200,000. July 2010 – June 2015.
2. "Modeling and decision support tools based on the effects of sediment geochemistry and microbial populations on contaminant reactions in sediments," Lead Principal Investigator. Co-principal investigators are Mitchell Small (EPP/CEE), Greg Lowry (CEE), Ned Minkley (Biology), and Kelvin Gregory (CEE). Collaborative with ERDC. DOD SERDP. April 2006 to June 2010. \$933,000 to Carnegie Mellon.
3. "Placement and operation of an environmental sensor network to facilitate decision making regarding drinking water quality and security," Lead Principal Investigator. Co-Principal Investigators are Christos Faloutsos (SCS), Anatassa Ailamki (SCS), Paul Fischbeck (SDS and EPP), and Mitchell Small (CEE and EPP). National Science Foundation. August 2003-July 2006. \$1,500,000.
4. "REU: Sensors and sensor networks," Lead Principal Investigator. Supplement to NSF project. National Science Foundation. June 2005-July 2006. \$6,000.
5. "Creating public understanding of water quality impacts from shale gas production in PA," Lead Principal Investigator. Co-principal investigator is Kelvin Gregory (CEE). Colcom Foundation. \$100,000. July 2009 to December 2010.
6. "Evaluation of the potential for citizen group monitoring of microbial indicators in a pilot watershed in Pittsburgh," Lead Principal Investigator. Co-principal investigators Dave

- Dzombak (CEE) and Mitchell Small (CEE/EPP). Three Rivers Wet Weather, Inc. \$85,000. January 2007 – May 2008.
7. "Cyberinfrastructure for Water Quality Evaluation and Educational Activities using a Ship of Opportunity in the Pittsburgh Region." Co-principal Investigator with David Dzombak (CEE). Collaborative with Pittsburgh RiverQUEST (formerly Pittsburgh Voyager). The Heinz Endowments. \$56,000. May 2007 – June 2009.
 8. "PITA: Inhibition of pathogenic biofilm formation on re-usable medical devices using ethylenediaminetetraacetate (EDTA)," Lead Principal Investigator. Co Principal Investigator Todd Przybycien (BME). Collaborative with Derick Brown, Lehigh University. PA Company: Medrad, Inc. Pennsylvania Infrastructure Technology Alliance (PITA) \$55,000. January 2005 - December 2005.
 9. "PITA: Raman Chemical Imaging Spectroscopy for Evaluation of Biological Agents in Water," Lead Principal Investigator. Co-Principal Investigator David Dzombak (CEE). Pennsylvania Infrastructure Technology Alliance (PITA) October 2002-May 2005. \$49,007 for 2002/2003 and \$49,995 for 2003/2004 and \$44,158 for 2004/2005.
 10. "SEER: Development of Novel Contaminant Source Tracking with Molecular Microbiology," Lead Principal Investigator. Co-Principal Investigators David Dzombak (CEE) and Mitchell Small (CEE/EPP). SEER Fellowship Student Support. \$30,000. January-December 2007.
 11. "SEER: Brominated DBPs in Mon River," Lead Principal Investigator. Co-principal Investigators Kelvin Gregory (CEE) and Mitchell Small (CEE/EPP). SEER Fellowship Student Support. \$30,000. January-December 2009.

Co-Principal Investigator

1. "Effects of sediment biogeochemistry on the environmental fate and persistence of polychlorinated biphenyls (PCBs)," Co-Principal Investigator with David Dzombak (CEE – Lead PI), Mitchell Small (CEE and EPP), Edwin Minkley (CMRI, now BME), and William Brown (Biology). Packard Foundation Interdisciplinary Science Program. \$1,000,000. September 2001 – August 2004.
2. "Effect of Dissolved Organic Carbon (DOC) on Regrowth and Disinfection of *Legionella* in Water Distribution Systems," Co-Principal Investigator with Dr. Victor Yu (Special Pathogens Section, Veterans Administration Medical Center and the University of Pittsburgh), U.S. Veterans Administration, \$48,118, September 2000-May 2002.
3. "Technical Support Services for Risk-Related Material," Co-Principal Investigator with Mitchell Small (EPP/CEE), Argonne National Laboratories, \$10,000, February 2000-December 2000.
4. "The Interaction of Biodegradation and Sorption in the Fate and Transport of Mixed Waste Contaminants," Co-PI with David Dzombak (CEE) and Scott Brooks (Oak Ridge National Laboratory), Carnegie Mellon Seed Fund, \$35,000, October 1999-September 2000.
5. "Role of reactive oxygen species in microbial chlorine resistance," Co-principal Investigator with G.K. Suraishkumar (IIT-Madras). Indo US Frontiers of Engineering Support. \$25,000. July 2008 – June 2010.

Participating Researcher

1. "Center for Environmental Implications of Nanotechnology (CEINT)." NSF center at Duke, Carnegie Mellon, VaTech, and Howard. Participant. Total award at Carnegie Mellon \$2.5M.
2. "Comparing Laboratory predicted performance of sorbent amended sediment caps with measured field performance," Participant. CICEET: the cooperative institute for coastal and estuarine environmental technology. \$225,185. Sept 2005 – Aug 2008.
3. "PITA: Characterization of Integrated Chloride and Chlorine Sensor," Participant PA Infrastructure Technology Alliance (PITA) \$50,000. January 2006 – March 2007.