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EDUCATION

PhD University of California, Santa Barbara
Mechanical and Environmental Engineering
November 1995
Dissertation Title: The Desorption of Hexachlorobenzene from Detroit River Sediments

MS University of California, Santa Barbara
Mechanical and Environmental Engineering
April 1993
Thesis Title: The Adsorption of Hexachlorobenzene to Detroit River Sediments

BS University of California, Davis
Chemistry, minor in Environmental Toxicology, September 1988

RESEARCH INTERESTS

Water quality

- Understanding microbial community structure of biological systems by analyzing Bacterial and Algal Signature lipid biomarkers
- Fate and transport of endocrine disrupting compounds in agricultural drainage systems and wastewater treatment plants
- Chemical speciation of selenium in algae
- Scientific support of Dissolved oxygen TMDL in San Joaquin River

Bioremediation

- Detection of chemical changes in phospholipid fatty acids during stress response of metal reducing bacteria
- Accelerating biodegradation in municipal solid waste landfills
- Phenotypic characterization of metal reducing bacteria

FELLOWSHIPS AND AWARDS

Department of Energy Outstanding Mentor, 2002
Mini-grant, Earth Sciences Division-LBL, 2002
Lawrence Postdoctoral Fellowship, 1996-1999
Graduate Dissertation Fellowship, 1995
Graduate Research Mentorship Program, 1993-1994
Graduate Opportunity Fellowship, 1992-1993

Engineering in Training Certificate, (EIT), 1995
SPOT award for Laboratory Women's Forum participation, 2004

PROJECTS

San Joaquin River dissolved oxygen study, 2004-2008 (in renewal)
Pesticide Best Management Practices, 2005-2008
Wetland TOC management, 2005-2007
Water Quality during VAMP flows, 2008
Riparian Zone Characterization, 2007-2009
Vernalis Adaptive Management Plan Water Quality Study, 2008
Genomes to Life, Virtual Institute for Microbial Stress and Survival, 2002-
NABIR, Bioremediation of Cr contaminated sediments, 2003-
Laboratory Directed Research and Development Grant, Endocrine disruptors, 2003-2007
Laboratory Directed Research and Development Grant, Landfill Bioreactors, 2000-03
USBR Land Disposal of Selenium contaminated sediments, 1998-2001
DOE, Chaotic analysis of fluid flow in fractures, 1997-1999
Laboratory Directed Research and Development Grant, Ferromagnetic Fluids, 1996-99

PROFESSIONAL RESEARCH AND TEACHING EXPERIENCE

Senior Research Scientist and Adjunct Associate Professor, Environmental Engineering Research Program, School of Engineering and Computer Science, University of the Pacific, Stockton, California. March 2005 to present. (currently 50% appointment)

Responsible for managing laboratory staff and QA program for water quality monitoring project on the San Joaquin River. Developing research program using fatty acids to indicate microbial community analysis, algal growth rates, and zooplankton grazing. Also responsible for preparation of project reports, invoicing of work, grant writing, manuscript preparation.

Scientific Engineering Associate, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California. May 2000 to present. (currently 50% appointment)

Working independently and as a principle investigator, provides research and scientific chemical analysis and engineering direction for the Center for Environmental Biotechnology analytical facility at LBNL. Responsibilities comprise coordination of the laboratory's research efforts including development of a wide variety of analytical methods for organic and inorganic constituents of environmental samples, construction and design of novel experimental systems, quality assurance of laboratory research, grant proposal writing and publication of results. Responsibilities also include the mentoring of undergraduate and graduate student researchers, supervision, operation, maintenance, and troubleshooting of analytical instrumentation in the laboratory, supervision of students and research associates working in the lab, and assuring safe laboratory working conditions.

During research activities a wide variety of instruments and techniques are used, including GC/MS, IC, anaerobic and aerobic culturing of microorganisms, bioreactor design and maintenance, a variety of data acquisition and monitoring systems, omnilog phenotypic microarray, phospholipid fatty acid analysis, analysis of metals by XANES and EXAFS (SSRL), microscopy.

Major projects:

- Genomes to Life: Growth characteristics of Metal reducing bacteria and analysis of stress response pathways.
- Aerobic Landfill Bioreactors

- Using molecular biomarkers to understand phytoplankton communities in aquatic and agricultural ecosystems
- Selenium speciation and biotransformation in the San Luis Drain, CA
- Biodegradation and detection of endocrine disrupting compounds

Postdoctoral Research Fellow, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California. November 1996 to April 2000.

Fellowship included developing applications for the use Ferrofluids in porous media for bioremediation projects, investigating the chemical permeability of viscous liquid barriers, and fracture flow characterization using chaos theory.

Professor and Faculty Advisor, Kennedy Western University, Thousand Oaks, California. June 1996 to Jan 2002.

Responsible for the development and maintenance of courses for distance learning facility for mid career professionals located worldwide unable to attend a traditional university. Responsibilities include regular interaction with students through phone conversation and email for academic advising and course completion, preparation of course materials, grading of exams and final theses.

Courses: Technical mathematics with Calculus; Environmental chemistry; Statistics; System analysis and design; Air pollution control engineering; Risk Analysis

Chemistry Instructor, Ventura Community College, Ventura, California. January to May, 1996.

Primary lecturer and laboratory instructor for three community college chemistry courses. Students were primary enrolled in a pre-nursing program.

Graduate Student Researcher and Teaching Assistant, Department of Mechanical and Environmental Engineering, UC Santa Barbara, Santa Barbara, California. September 1990 to November 1995.

Project involved coupling a river sediment transport model to movement of hydrophobic organic chemicals, including PCBs and hexachlorobenzene in rivers. Included measuring and modeling the adsorption and desorption of hydrophobic organic chemicals to river sediments during different hydrologic conditions. During graduate school tenure was also responsible for teaching Numerical methods and Statics.

Chemist, Battelle Pacific Northwest Laboratories, Sequim, Washington. March to September 1990.

Contracted to perform metals digestion and analysis of mussels collected by the NOAA mussel watch program and from the Exxon Valdez oil spill.

Chemist, ABB Environmental, Camarillo, California, September 1988 to March 1990.

Contract laboratory chemist responsible for routine metals analysis on environmental samples using ICP, flame AA, and graphite furnace AA. Included QA/QC and data management.

Chemist, Hazardous Materials Laboratory, State of California Department of Health Services. Summer 1986 and 1987

Analysis of Dioxins in environmental samples and human tissue.

VOLUNTEER ACTIVITIES

Center for Science and Engineering Education, Lawrence Berkeley Nat'l Lab
Board of Directors, Regional Parks Foundation, Aug 2003-present
Mentor and Coach, First Lego League Robotics team, 2002 challenge

Laboratory Women's Forum, Sept. 2004.

JOURNAL ARTICLES

- Holman, H-Y, E. Wozei, Z. Lin, L. Comolli, D, Ball, S. Borglin, M. Fields, T. Hazen, K. Downing. 2009. Real-Time Molecular Monitoring of Chemical Environment in Obligate Anaerobes during Oxygen Adaptive Response. PNAS, *PNAS published online before print June 16, 2009*.
- Borglin, Sharon, Joyner, Janet Jacobsen, Aindrila Mukhopadhyay, Terry C. Hazen. 2008. Overcoming the Anaerobic Hurdle in Phenotypic Microarrays: Generation and Visualization of Growth Curve Data for Desulfovibrio vulgaris Hildenborough, Journal of Microbiological Methods. 76 (2): 159-168
- Stringfellow, W.T., J.S. Hanlon, S.E. Borglin, and N.W.T. Quinn. 2008. Comparison of Wetland and Agriculture Drainage as Sources of Biochemical Oxygen Demand in the San Joaquin River, California. Agricultural Water Management 95 (5): 527-538.

Faybishenko, B., Terry C. Hazen, Philip E. Long, Eoin L. Brodie, Mark E. Conrad, Susan S. Hubbard, Dominique Joyner, Sharon Borglin, Romy Chakraborty, Kenneth H. Williams, John E.Peterson, Jinsong Chen, Tetsu K. Tokunaga, Jiamin Wan, Marry Firestone, Darrell R. Newcomer, Charles T. Resch, Kirk J. Cantrell, Anna Willett, and Stephen Koenigsberg. In Press. In Situ Long-Term Bioimmobilization of Cr(VI) in Groundwater Using ^{13}C-Labeled Slow-Release Lactate. Env Sci &Tech. 42 (22), pp 8478–8485

Jacobsen, J. S., D. C. Joyner, S. E. Borglin, T. C. Hazen, A. P. Arkin, and E. W. Bethel. 2007. Visualization of Growth Curve Data from Phenotype Microarray Experiments. 11th International Conference on Information Visualization (IV07), Zurich, Switzerland, July 4-6, 2007. Published by the IEEE Computer Society. LBNL-63251.

Stolyar, S., Q. He, M. P. Joachimiak, Z. He, Z. K. Yang, S. E. Borglin, D. C. Joyner , K. Huang, E. Alm, T. C. Hazen, J. Zhou, J. D. Wall, A. P. Arkin, and D. A. Stahl. 2007. Response of *Desulfovibrio vulgaris* to alkaline stress. J. Bacteriol. 189:8944-8952. LBNL-xxxx. *(3.993, 0)*

Mukhopadhyay, A., A. M. Redding, M. P. Joachimiak, A. P. Arkin, S. E. Borglin, P. S. Dehal, R. Chakraborty, J. T. Geller, T. C. Hazen, D. C. Joyner, V. J. J. Martin, J. D. Wall, Z. K. Yank, J. Zhou, and J. D. Keasling. 2007. Cell wide response to low oxygen exposure in *Desulfovibrio vulgaris* Hildenborough. J. Bacteriol. 189:5996-6010. LBNL-63534. *(3.993, 1)*

Campbell, C. S. Borglin, FB Green, A. Grayson, E. Wozei, W. Stringfellow. Environmental Monitoring, Fate, and transport of Estrogenic Endocrine Disrupting Compounds: a Review. 65 (2006) 1265-1280.

Teh, Y. A., Silver, W.L., Conrad, M.E., Borglin, S.E., and Carlson, C.M. (2006b) Carbon isotope fractionation by methane-oxidizing bacteria in tropical rain forest soils. Journal Of Geophysical Research (G),(111), 1-8, doi:10,1029/2005JG00053.

Mukhopadhyay, A., Z. He, E. J. Alm, A. P. Arkin, E. E. Baidoo, S. Borglin, W. Chen, T. C. Hazen, Q. He, H.-Y. Holman, K. Huang, R. Huang, D. C. Joyner, N. Katz, M. Keller, P. Oeller, A. Redding, J. Sun, Z. Yang, J. D. Wall, J. Wei, H.-C. Yen, J. Zhou, and J. D. Keasling. 2006. Salt stress in *Desulfovibrio vulgaris* Hildenborough: An integrated genomics approach. J. Bacteriol. 188:4068-4078. LBNL-59862. (4.167, 0)

Wozei, E., H-Y.N. Holman, S.W. Hermanowicz, S. Borglin. 2006. "Detecting estrogenic activity in water samples with estrogen-sensitive yeast cells using spectrophotometry and fluorescence microscopy". Proceedings 2006 Symposium - Safe Drinking Water: Where Science Meets Policy; The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, U.S.A.; March 16-17, 2006. LBNL-59880.

Campbell, C., S Borglin, W. Stringfellow, FB. Green, A. Grayson. Advances in Biologially Based Sensors for Endocrine Disrupting Compounds in water. UCRL Conference – 209562, 2005. World water and Environmental Research Congress.

Oldenburg, C. M., S. E. Borglin, and T. C. Hazen. Submitted. Multiphase Modeling of Flow, Transport, and Biodegradation in a Mesoscale Landfill Bioreactor. J. Air Waste Manag. Assoc. LBNL-48904.

Borglin, S., T. Hazen, C. Oldenburg, and P. Zawislanski. Comparison of aerobic and anaerobic biotreatment of municipal solid waste. *J. Air and Waste Management Assoc*. Volume 54, July 2004, pages 815-822.

Zawislanski, P., Benson, S., TerBerg, R., and Borglin, S. Selenium speciation, solubility, and mobility in land-disposed dredged sediments. *Environ. Sci. Technol*.; 2003; 37(11); 2415-2420.

Herbel, M., Switzer Blum, J., Borglin, S., and Oremland, R. Reduction of Elemental Selenium to Selenide: Experiments with Anoxic Sediments and Bacteria that Respire Se-Oxyanions. *Geomicrobiology J*. 2003. 20:587-602.

Borglin, S, C. Oldenburg, and G. Moridis. Experimental Investigation of Flow of Ferrofluids in Porous Media. *Transport in Porous Media* 41:61-80. 2000: LBNL 40126

Oldenburg, C, S. Borglin, and G. Moridis. Numerical Simulation of the Flow of Ferrofluids in Porous Media, *Transport in Porous Media* 38: 319-344, 2000, LBNL 40146

Borglin, S., R. Jepsen, A. Wilke, and W. Lick, 1996. Parameters Affecting the Desorption of Hexachlorobenzene from Detroit River Sediments, *Environ. Tox. Chemistry*, Vol 15, No. 10, pp2254-2262.

Jepsen, R, S Borglin, W. Lick, and D.L. Swackhamer, 1995. Parameters Affecting the Adsorption of Hexachlorobenzene to Natural Sediments, *Environ. Tox. Chemistry*, Vol 14, No. 9, pp1487-1497.

LBNL REPORTS

San Joaquin River Up-Stream DO TMDL Final Project Report, 2008, ERP-02D-P63
San Luis National Wildlife Refuge TOC Project # 04-147-555-0, 2008, Final Report

Stringfellow, William T.;Borglin, Sharon E.;Hanlon, Jeremy S. Measurement and Modeling of Algal Biokinetics in Highly Eutrophic Waters LBNL-59961 **,**04/04/2006

Borglin, Sharon E.; Stringfellow, William T.; Hanlon, Jeremy S. Standard Operation Procedures for the Up-Stream Dissolved Oxygen TMDL Project LBNL/PUB-937

Zawislanski, P., Benson, S., TerBerg, R., and Borglin, S. Land disposal of San Luis drain sediments, Panoche Water District, South Dos Palos, California, 2002, LBNL-51025

Zawislanski, P., Benson, S., TerBerg, R., and Borglin, S. Land Disposal of San Luis Drain Sediments Progress Report. 2002 LBNL-47861

Geller, J. T., S. E. Borglin, B. A Faybishenko, Experiments and Evaluation of Chaotic Behavior of Dripping Water in Fracture Models, LBNL Report 48394, Lawrence Berkeley National Laboratory, Berkeley, CA 94720, June, 2001.

Moridis, G.J.;Borglin, S.E.;Oldenburg, C.M.;Becker, A., FY1997 Annual Report: Theoretical and Experimental Investigations of Ferrofluids for Guiding and Detecting Liquids in the Subsurface, LBNL-41069

Borglin, S, ; Moridis, G.;Oldenburg, C. On magnetic fluid emplacement: Laboratory Experiments of Ferrofluid Flow, 1998, LBNL-42203

Borglin, S.E., G.J. Moridis, and A. Becker. Magnetic Detection of Ferrofluid Injection Zones. LBNL-40127. March, 1998.

Faybishenko, B., Doughty, C., Geller, J., Borglin, S., Cox, B., Petersen, R. A chaotic-dynamical conceptual model to describe fluid flow and contaminant transport in a fractured vadose zone, 1997, Annual Report, LBNL 41223

PRESENTATIONS (UPDATED THROUGH MAY 2008)

- Borglin, S., Worden, Heather, Shore, Jennifer, Jain, Ravi. Solid Waste Management at US Military Institutions: As Sustainable Approach, Solid Waste Management at Military Installations, San Francisco, CA, May 29-30, 2008.
- Borglin, S. and Stringfellow, W. San Joaquin River Riparian Zone Project Annual Review, Northern California Watershed Jamboree, October 19, 2007
- Sharon E. Borglin, William T. Stringfellow, Jeremy S. Hanlon, Gary Litton, Mark Brunnell, Scientific studies supporting Development of a dissolved oxygen TMDL for the San Joaquin River, California, State of the Estuary Conference, Oakland, CA, Oct 16-18, 2007.
- Geller*, J., S. Borglin, L. Camp, R. Chakraborty, J. Fortney, M. Singer, M. Shelby, and T. C. Hazen. Contributed. Diverse Applications of Extremophile Fermenters and Observations. June 2008, Boston, MA. Annual Meeting
- Fortney*, J., R. Chakraborty, M. Joachimiak, S. Borglin, A. P. Arkin, and T. C. Hazen. Contributed. Investigation of stress response in the metal reducing organism Geobacter metallireducens. June 2008, Boston, MA. Annual Meeting American Society for Microbiology.
- Hazen*, T. C., S. E. Borglin, D. C. Joyner, and J. Jacobsen. Invited. Anaerobic Phenotypic Microarray. March 2008, Florence, Italy. Phenotypic Microarray Conference.
- Hazen, T. C., C. Abulencia, G. Anderson, S. Borglin, E. Brodie, S. v. Dien, M. Fields, J. Fortney, J. Geller, E. Hendrickson, H.-Y. Holman, J. Leigh, T. Lie, R. Phan, J. Jacobsen, D. Joyner, R. Chakraborty, M. Keller, A. Mukhopadhyay, C. Schadt, D. Stahl, S. Stolyar, C. Walker, J. D. Wall, E. Wozei, Z. Yang, H.-c. Yen, G. Zane, and J. Zhou. Invited. Applied Environmental Microbiology Core Research on Stress Response Pathways in Metal-Reducers VIMSS:ESPP. February 2008, North Bethesda, MD. Genomics: GTL Awardee Workshop VI.
- Arkin, A. P., T. C. Hazen, C. Abulencia, E. J. Alm, G. Anderson, M. Auer, E. Baidoo, K. S. Bender, P. Benke, S. Borglin, E. Brodie, S. Brown, L. Camp, R. Chakraborty, S. Chhabra, G. Chirica, D. Chivian, M. Cipriano, P. S. Dehal, T. DeSantis, E. Drury, I. Dubchak, D. Elias, M. W. Fields, V. O. Y. Fok, J. Fortney, S. Gaucher, J. Geller, M. Hadi, Z. He, C. Hemme, K. Hillesland, H.-Y. Holman, K. H. Huang, Y. W. Huang, C. Hwang, J. Jacobsen, M. P. Joachimiak, D. Joyner, J. Keasling, K. Keller, M. Keller, Y. Light, E. Luning, R. Meagher, A. Mukhopadhyay, A. Palumbo, R. Phan, T. Phelps, F. Pingitore, M. Podar, M. N. Price, A. Redding, J. Robertson, R. Sapra, C. Schadt, M. Shirley, A. Shutkin, M. Singer, A. Singh, D. A. Stahl, S. Stolyar, A. Sundararajan, Y. Tang, J. V. Nostrand, S. Villa, C. Walker, J. D. Wall, Z. K. Yang, H.-c. Yen, G. Zane, A. Zhou, and J. Zhou. Invited. The Virtual Institute of Microbial Stress and Survival - VIMSS:ESPP Overview. February 2008, North Bethesda, MD. Genomics: GTL Awardee Workshop VI.
- Wozei, E., H-Y.N. Holman, S.W. Hermanowicz, S. Borglin. 2006. "Detecting estrogenic activity in water samples with estrogen-sensitive yeast cells using spectrophotometry and fluorescence microscopy". 2006 Symposium -Safe Drinking Water: Where Science Meets Policy; The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, U.S.A.; March 16-17, 2006. LBNL-59880-Abs.

- Long*, P. E., D. R. Newcomer, C. T. Resch, K. Cantrell, B. Faybishenko, T. C. Hazen, E. Brodie, D. Joyner, S. Borglin, J. Hanlon, M. Conrad, T. Tokunaga, J. Wan, S. Hubbard, K. Williams, J. Peterson, M. Firestone, G. Andersen, T. DeSantis, A. Willett, and S. Koenigsberg. Contributed. Evaluation of the Effectiveness of Cr(VI) Biostimulation in Groundwater at Hanford 100H Site. May 2006, Baltimore, MD. Spring meeting of American Geophysical Union.
- Faybishenko*, B., T. C. Hazen, E. Brodie, D. Joyner, S. Borglin, J. Hanlon, M. Conrad, T. Tokunaga, J. Wan, S. Hubbard, K. Williams, J. Peterson, M. Firestone, G. Andersen, T. DeSantis, P. E. Long, D. R. Newcomer, C. T. Resch, A. Willett, and S. Koenigsberg. Contributed. Tracer Tests and Field Monitoring of In situ Cr(VI) Bioreduction at the Hanford 100H Site. May 2006, Baltimore, MD. Spring meeting of American Geophysical Union.
- Mukhopadhyay*, A., Z. He, E. Alm, A. Arkin, E. Baidoo, S. Borglin, W. Chen, T. C. Hazen, Q. He, H-Y. Holman, K. Huang, D. Joyner, M. Keller, P. Oeller, A. Redding, J. Sun, J. Wall, J. Wei, H-C. Yen, J. Zhou, and J. Keasling. Salt Stress in *Desulfovibrio vulgaris* Hildenborough: An Integrated Genomics Approach. May 2006, Orlando, FL. American Society for Microbiology Annual Meeting.
- Hazen*, T. C., B. Faybishenko, E. Brodie, D. Joyner, S. E. Borglin, R. Chakraborty, M. Conrad, T. Tokunaga, J. Wan, S. Hubbard, K. Williams, J. Peterson, M. Firestone, G. Andersen, T. DeSantis, P. E. Long, D. R. Newcomer, A. Willett, and S. Koenigsberg. Contributed. Long-Term Chromium Bio-Immobilization at the Hanford 100H Site: Geochemical and Microbiological Response to Slow Release Electron Donor. May 2006, Orlando, FL. American Society for Microbiology Annual Meeting.
- Joyner*, D., A. Mukhopadhyay, R. Chakraborty, S. E. Borglin, and T. C. Hazen. Contributed. Anaerobic Phenotype Microarray Method for Knockout Mutant Comparison. May 2006, Orlando, FL. American Society for Microbiology Annual Meeting.
- Borglin*, S. E., M. E. Conrad, E. Brodie, K. N. Woods, B. Faybishenko, D. Joyner, and T. C. Hazen. Contributed. Assessment of Bioreduction of Cr(VI) Using ^{13}C-PLFA analysis. May 2006, Orlando, FL. American Society for Microbiology Annual Meeting.
- Hazen*, T. C., B. Faybishenko, E. Brodie, D. Joyner, S. Borglin, R. Chakraborty, M. Conrad, T. K. Tokunaga, J. Wan, S. Hubbard, K. Williams, J. Peterson, M. Firestone, G. Andersen, T. DeSantis, P. E. Long, D. R. Newcomer, A. Willett, and S. Koenigsberg. Invited. Long-Term Chromium Bio-Immobilization at the Hanford 100H Site: Geochemical and Microbiological Response to Slow Release Electron Donor. April 2006, Warrenton, VA. DOE ERSP annual workshop.
- Mukhopadhyay, A., E. J. Alm, A. P. Arkin, E. E. Baidoo, P. I. Benke, S. E. Borglin, W. Chen, S. Chhabra, M. W. Fields, S. P. Gaucher, A. Gilman, M. Hadi, T. C. Hazen, Q. He, H.-Y. Holman, K. Huang, R. Huang, Z. He, D. C. Joyner, M. Keller, K. Keller, P. Oeller, F. Pingitore, A. Redding, A. Singh, D. Stahl, S. Stolyar, J. Sun, Z. Yang, J. D. Wall, G. Zane, J. Zhou, and J. D. Keasling*. Invited. VIMSS Functional Genomics Core Research on Stress Response Pathways in Metal-Reducers. February 2006, Washington, DC. DOE Genomics:GTL Annual Workshop.
- Abulencia, C., E. Alm, G. Anderson, A. P. Arkin*, K. Bender, S. Borglin, E. Brodie, R. Chakraborty, S. Chhabra, S. van Dien, I. Dubchak, M. Fields, S. Gaucher, J. Geller, M. Hadi, T. C. Hazen, Q. He, Z. He, H.-Y. Holman, K. Huang, R. Huang, J. Jacobsen, D. Joyner, J. Keasling, K. Keller, M. Keller, A. Mukhopadhyay, R. Phan, M. Price, J. A. Ringbauer, Jr., A. Singh, D. Stahl, S. Stolyar, J. Sun, D. Thompson, C. Walker, J. Wall, J. Wei, D. Wolf, D. Wyborski, H.-C. Yen, G. Zane, J. Zhou, and B. Zuniga. Invited. The Virtual Institute of Microbial Stress and Survival (VIMSS): Deduction of Stress Response Pathways in Metal/Radionuclide Reducing Microbes. February 2006, Washington, DC. DOE Genomics:GTL Annual Workshop.
- Conrad*, M. E., S. E. Borglin, E. Brodie, K. N. Woods, B. Faybishenko, T. C. Hazen, P. E. Long, and A. Willett. Contributed. Quantification of enhanced bioreduction of Cr(VI) using 13C-PLFA monitoring coupled with advance microbiological techniques. October 2005, Salt Lake City, UT. Annual Meeting Geological Society of America.
- Hazen*, T. C., B. Faybishenko, E. Brodie, D. Joyner, S. E. Borglin, J. Hanlon, M. Conrad, T. Tokunaga, J. M. Wan, S. Hubbard, K. Williams, J. Peterson, M. K. Firestone, G. L. Andersen, T. DeSantis, P. E. Long, D. R. Newcomer, A. Willett, and S. Koenigsberg. Contributed. Chromium Bio-Immobilization at the Hanford 100H Site: Geochemical Response to Slow Release Electron Donor. July 2005, San Francisco, CA. International Union of Microbiological Societies.
- Brodie*, E., T. C. Hazen, B. Faybishenko, D. Joyner, S. Borglin, M. Conrad, G. Andersen, T. DeSantis, P. Long, D. Newcomer, A. Willett, and S. Koenigsberg. Contributed. Chromium Bio-Immobilization at the Hanford 100H site: Comprehensive Molecular Analysis of Microbial Population Dynamics. July 2005, San Francisco, CA. International Union of Microbiological Societies.
- S.E.Borglin, Terry Hazen, Dominique Joyner, and Rick Huang. Effects of environmental stressors on signature lipid biomarkers in *Desulfovibrio vulgaris,* presented at the International Symposium for Microbial Ecology, Cancun, Mexico, August 2004.
- Holman, H.Y., Hazen, T.C., Joyner, D.C., Borglin, S.E. A Real-time investigation of *Desulfovibrio vulgaris* response to oxygen stress. presented at the International Symposium for Microbial Ecology, Cancun, Mexico, August 2004
- T.C. Hazen , D. Joyner, S.E. Borglin, B. Faybishenko, M. Conrad, G.L. Andersen, M. Firestone, E. Brodie, P.E. Long, S. Koenigsberg, Function microbial changes during lactate and HRC-stimulated bioreduction of Cr(VI) in

Hanford 100H sediments. presented at the International Symposium for Microbial Ecology, Cancun, Mexico, August 2004

- Malave*, J., S. E. Borglin, C. Rios-Velazquez, and T. C. Hazen. Contributed. Study of Microbial Community Structure Using Phospholipid Fatty Acid Analysis (PLFA) at a Chromium Contaminated Site. May 2004, New Orleans, LA. American Society for Microbiology Annual Meeting. LBNL-54287 Abs.
- Joyner*, D. C., S. E. Borglin, R. Huang, T. C. Hazen, J. D. Wall, H.-C. Yen, and S. M. Stolyar. Contributed. Chemically defined medium for Desulfovibrio vulgaris stress studies and biomass production. May 2004, New Orleans, LA. American Society for Microbiology Annual Meeting.
- Borglin*, S. E., T. C. Hazen, D. C. Joyner, and R. Huang. Contributed. Effects of Environmental stressors on Signature Lipid Biomarkers in Desulfovibrio vulgaris. May 2004, New Orleans, LA. American Society for Microbiology Annual Meeting.
- Hazen, T. C., D. Joyner, S. Borglin, B. Faybishenko, J. Wan, T. Tokunaga, S. Hubbard, K. Williams, M. Conrad, C. Rios-Velazquez, J. Malave-Orengo, R. Martinez-Santiago, M. Firestone, E. Brodie, P. E. Long, E. Willett, and S. Koenigsberg. Contributed. Field Investigations of HRC®-Stimulated Bioreduction of Cr(VI) at Hanford 100H. May 2004, New Orleans, LA. American Society for Microbiology Annual Meeting.
- Hazen, T. C., D. Joyner, S. Borglin, B. Faybishenko, M. Conrad, C. Rios-Velazquez, J. Malave-Orengo, R. Martinez-Santiago, M. Firestone, E. Brodie, P. E. Long, E. Willett, and S. Koenigsberg. Contributed. Functional Microbial Changes During Lactate and HRC-Stimulated Bioreduction of Cr(VI) in Hanford 100H Sediments. May 2004, Monterey, CA. International Conference on Chlorinated and Recalcitrant Compound Remediation.
- Hazen, T. C., D. Joyner, S. Borglin, B. Faybishenko, J. Wan, T. Tokunaga, S. Hubbard, K. Williams, M. Firestone, E. Brodie, P. E. Long, E. Willett, and S. Koenigsberg. Contributed. Field Investigations of HRC®-Stimulated Bioreduction of Cr(VI) at Hanford 100H. May 2004, Monterey, CA. International Conference on Chlorinated and Recalcitrant Compound Remediation.
- Hazen, T. C., D. Joyner, S. Borglin, B. Faybishenko, J. Wan, T. Tokunaga, S. Hubbard, K. Williams, M. Conrad, C. Rios-Velazquez, J. Malave-Orengo, R. Martinez-Santiago, M. Firestone, E. Brodie, P. E. Long, E. Willett, and S. Koenigsberg. Invited. Field Investigations of HRC®-Stimulated Bioreduction of Cr(VI) at Hanford 100H. March 2004, Warrenton, VA. NABIR Program Annual PI Meeting.
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