

Biographical Sketch for John S. Gierke, Ph.D., P.E.,

a. Professional Preparation

Michigan Technological University	Civil Engineering	BSCE 1984
Michigan Technological University	Civil Engineering	MSCE 1986
Michigan Technological University	Environmental Engineering	Ph.D. 1990

b. Appointments

Associate Professor - September 1996 to Present;

Michigan Technological University, Houghton, Michigan 49931-1295

Visiting Associate Professor - January 1999 through December 1999

University of Delaware, Newark, Delaware

Assistant Professor - July 1990 through August 1996

Michigan Technological University, Houghton, Michigan 49931-1295

Summer Research Faculty Visitor - June 1991 to August 1991

Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831.

c. Publications

(i) Five Relevant Publications

Gierke, J.S., "Water Wells and Pumps," *Chapter in Environmental Engineering for Developing Countries: A Field Guide to Design, Construction and Sustainable Management*, in press.

Gierke, J.S., and S.E. Powers, "Increasing Implementation of In Situ Treatment Technologies Through Field-Scale Performance Assessments," *Water Environment Research*, 69(2), 1997.

Huntzinger, D. N., M. J. Hutchins, J. S. Gierke, J. W. Sutherland, "Enabling Sustainable Thinking in Undergraduate Engineering Education," *International Journal of Engineering Education*, 23(2), 218-230, 2007.

Sherman, H. M., J. S. Gierke, C. P. Anderson, "Controls on Spatial Variability of Uranium in Sandstone Aquifers," *Ground Water Monitoring & Remediation*, 27(2), 106-118, 2007. doi:10.1111/j.1745-6592.2007.00142.x

Wojick, C.L., N.J. Hutzler, and J.S. Gierke, "Solute Movement in an Unsaturated Sand Under Unstable (Fingered) Flow Conditions: Tracer Results," in *Shallow Groundwater Systems, ICH-18*, Chapter 16, 191-205, P. Dillon and I. Simmers, eds., AA.Balkema, Rotterdam, The Netherlands, 1998.

(ii) Five Other Significant Publications

El-Beshry, M.Z., J.S. Gierke, and P.B. Bedient, "Practical Modeling of Soil Vapor Extraction at a Jet-Fuel Spill Site," *Journal of Environmental Engineering*, 127(7), 630-638, 2001.

Gierke, J.S., D.R. Shonnard, and A.S. Mayer, "Multidisciplinary Subsurface Remediation Courses: Fundamentals, Experiments, and Design Projects," *Journal of Engineering Education*, 555-565, 1998 Supplement.

Gierke, J.S., C.L. Wojick, and N.J. Hutzler, "Field Test of Air Sparging Coupled with Soil Vapor Extraction," Chpt. 10 in *Innovative Subsurface Remediation: Field Testing of Physical, Chemical, and Characterization Technologies, ACS Symposium Series 725*, edited by M.L. Brusseau, D.A. Sabatini, J.S. Gierke, and M.D. Annable, American Chemical Society, Washington, D.C., 153-166, 1999.

Heron, G., J.S. Gierke, B. Faulkner, S. Mravik, L. Wood, and C.G. Enfield, "Pulsed Air Sparging in Aquifers Contaminated with Dense Non-Aqueous Phase Liquids," *Ground Water Monitoring and Remediation*, 22(4), 73-82, 2002.

Van Antwerp, D.J., R.W. Falta, and J.S. Gierke, "Numerical Simulation of Field Scale Contaminant Mass Transfer During Air Sparging," *Vadose Zone Journal*, in press.

d. Synergistic Activities

Research by Dr. Gierke and his graduate students has spanned a wide range of topics involving the fate and transport of gaseous and aqueous solutes in a variety of geological media (idealized sands, clay soils, coastal plain aquifers, intermontane basins, and volcanic ash), including both fundamental work on transport processes and applied research on remediation of polluted soils/groundwater. In addition, much of Dr. Gierke's research has been integrated into geological and environmental engineering curricula: (1) In 1992 he received a U.S. Department of Energy Environmental Restoration and Hazardous Waste Management Distinguished Junior Faculty Award for his research in *in situ* mixed region vapor stripping, which led to curricular developments in subsurface remediation. (2) Subsequently, Dr. Gierke collaborated with other researchers at Michigan Technological University on a successful proposal to the Combined Research-Curriculum Development Program. Their project involved designing and building an indoor meso-scale aquifer apparatus for testing remediation techniques. (3) During the projects described above, Dr. Gierke supervised two field-scale air sparging remediation experiments, which involved a large number of graduate and undergraduate students, many of whom went on to graduate school. (4) As active members in the MTU Sustainable Futures Institute, Dr. Gierke and his students are conducting research on sequestration of carbon dioxide in geological formations and waste mineral by-products. (5) Dr. Gierke is the advisor of a multidisciplinary "enterprise" (Aqua Terra Tech) of undergraduates who conduct hydrological characterization and modeling for the undergraduate engineering projects.

e. Collaborators and Other Affiliations

- (i) *Collaborators and Co-Editors*: Falta, Ronald W. (Clemson University), Imhoff, Paul (University of Delaware), McCray, John M. (Colorado School of Mines), Stewart, Bo (Praxis Environmental).
- (ii) *Graduate Advisor*: Neil J. Hutzler, Michigan Technological University
- (iii) *Thesis Advisor for*: Anderson, Cecilia P. (ERM-West), *Bachmann, Nancy-Jeanne (searching for a position), Barbour, Jill N. (Michigan Technological University), Carpenter, Michael D. (consulting), Castor, Meaghan G. (consulting), Ebsch, Jeffery (Coleman Engineering), **El-Beshry, Manar, Fish, Randy E. (Michigan Technological University), *Fuchs, Valerie J. (Michigan Technological University), Gross, Essa L. (Peace Corps), Gu, Yingxin (McGill University), Harrison, Elizabeth (Los Alamos National Laboratory), Hegemann, Robert (Michigan Technological University), *Hein, Gretchen L. (Michigan Technological University), Huntzinger, Deborah N. (Post-doc, Michigan Technological University), *Hutchins, Margot J. (Michigan Technological University), Jenson, Jeremy (Michigan Technological University), *Keating, Gordon (Los Alamos National Laboratory), Kremer, Theodore J. (Malcolm Pirnie, Inc.), Kucharski, Matthew J. (Peace Corps), Mackenzie, Heidi L. (Grenkowitz) (Ford Motor Company), Muraski, Jennifer L. (Montgomery Watson), *Myre, Elizabeth A. (Michigan Technological University), *Quinnan, Joseph (ARCADIS), *Ritchie, Beatrice, Rios Sanchez, Miriam (Michigan Technological University), Sanders, Deborah L. (ERM-West), Sawall, R. Hardy (Geotrans), Schmunk, Steven W. (Marquette Intermediate School District), Sherman, Heidi M. (Consulting), Shonsey, Cara W. (Peace Corps), Stright, Lisa E. (Stanford University), Taege, Deborah A. (AMEC), **VanAntwerp, Darby J. (RMT), Wang, Congli (Consulting), *Wojick, Christopher L. (Michigan Technological University). *Served/serving as co-advisor, **Served as co-advisor, student at different university.

Advisor for 19 M.S. and 2 Ph.D. students, co-advisor for 6 M.S. and 2 Ph.D. students; currently advising 1 Ph.D. student and 10 M.S. students and co-advising 2 Ph.D. students.