

Lawrence D. Lemke
Associate Professor, Department of Geology
Director, Environmental Science Program
Wayne State University

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Education

- 9/97 – 8/03 **Ph.D. Environmental Engineering; University of Michigan - December 2003**
Dissertation: *Influence of Alternative Spatial Variability Models on Solute Transport, DNAPL Entrapment, and DNAPL Recovery in a Homogeneous, Nonuniform Sand Aquifer*
Chair: Linda M. Abriola Civil and Environmental Engineering
- 9/86 - 5/89 **M.B.A. Business Administration; University of Denver - May 1989**
- 8/83 - 5/85 **M.S. Geosciences; University of Arizona - May 1985**
Thesis: *Sedimentation and Tectonics of the Paradox Basin, Utah, Colorado, Arizona and New Mexico.*
Advisor: William R. Dickinson Geological Sciences
- 9/79 - 3/83 **B.S. Geology; Michigan State University - with high honors, March 1983**

Professional Experience

- 8/03 – present **Associate Professor, Environmental Science Program, Department of Geology, Wayne State University, Detroit, MI** (Promoted from Asst. Professor in August, 2010)
- Research: projects include hydrogeology, groundwater flow and contaminant transport modeling, air quality modeling, soil contamination, risk analysis, and geostatistics.
 - Instruction: developed and taught undergraduate and graduate level courses in geology and environmental science.
 - Environmental Science Program Director; appointed August, 2007.
- 6/95 - 8/97 **Exploration Geologist/Project Manager, Exxon Exploration Company, Houston, TX**
[now ExxonMobil Exploration Company, P.O. Box 4778, Houston, TX 77210-4778]
- Oil and gas exploration in western People's Republic of China and Gulf of Thailand
 - Yaha Field Development Study Project Manager:
 - directed international, interdisciplinary efforts to model geology and reservoir performance of gas/condensate fields in the Tarim Basin of western P.R.C. Annual budget: \$4 million.
- 10/92 - 6/95 **Exploitation Geologist, Esso Exploration and Production, UK, London, England**
- North Sea new developments geology
 - reservoir development and equity negotiations
 - integrated geological/geophysical models into oil & gas field reservoir simulations.
- 6/89 - 10/92 **Production Geologist, Exxon Co., USA, New Orleans, LA**
- Offshore Gulf of Mexico reservoir development and production geology
 - developed drilling programs for established fields and provided geologic interpretations to reservoir engineers for field development modeling.
- 8/85 - 6/89 **Petroleum Geologist, Exxon Co., USA, Denver, CO**
- Rocky Mountain oil and gas exploration: Williston Basin, Wyoming Overthrust
 - prospect generation/oil well drilling.

Academic Awards and Honors

- 2014 Wayne State University **College of Liberal Arts and Sciences Teaching Award**, with special designation for mentoring undergraduate research.
- 2013 Wayne State University **Faculty Teaching Travel Grant**, support to attend and present at Association for Environmental Studies and Sciences Conference, Pittsburgh, PA, June, 2013.
- 2012 Wayne State University **Career Development Chair**, support and recognition for outstanding tenured faculty members in the early stages of their careers.
- 2012 Wayne State University **Faculty Educational Development Travel Grant**, support to attend and present at NSF Cutting Edge Workshop on Teaching Environmental Geology; Montana State University, June, 2012.
- 2008 **NSF CAREER Award**. The Faculty Early Career Development (CAREER) Program bestows the National Science Foundation's most prestigious awards in support of early career-development activities of teacher-scholars who most effectively integrate research and education within the context of the mission of their organization.
- 2007 Appointed **Environmental Science Program Director**, Wayne State University College of Liberal Arts and Sciences. Coordination of student major advising and Steering Committee Leadership for eight faculty members from Geology and Biological Sciences.
- 2006 Wayne State University **Presidential Award for Excellence in Teaching** Recognition for faculty who have made outstanding contributions to teaching. Each of the six awards for 2006 included an unrestricted grant of \$2,500 and a citation.
- 2003 University of Michigan **Walter J. Weber, Jr. Student Award for Excellence in Environmental Sciences and Engineering**, Awarded annually to a senior EWRE Ph.D. student who most embodies excellence in research, outstanding academic achievement, and exceptional service in the field of environmental sciences and engineering.
- 2003 MODFLOW and More 2003 Conference – **Best Student Paper Award** Awarded by the conference organizing committee to the student paper abstract judged to have the highest technical merit.
- 2002 University of Michigan **Rackham Predoctoral Fellowship** Awarded to a selected group of Ph.D. candidates whose academic accomplishments and doctoral research show outstanding promise.
- 2002 University of Michigan **Teaching Fellow** Conferred upon a selected group of Ph.D. candidates who complete a month-long seminar on college teaching designed to prepare future faculty for academic careers.
- 2000 University of Michigan College of Engineering **Distinguished Achievement Award** Awarded for outstanding academic performance in the Department of Civil & Environmental Engineering at the University of Michigan
- 1999 American Society for Engineering Education, University of Michigan Student Chapter **Outstanding Student Instructor Award - Honorable Mention** Awarded for outstanding teaching as a graduate student instructor for CEE428 Introduction to Groundwater Hydrology
- 1997 - 1998 Univ. of Mich. Department of Civil & Environmental Eng. **Departmental Fellowship**; Horace H. Rackham School of Graduate Studies **Nontraditional Student Fellowship**
- 1979 - 1983 **National Merit Scholarship**, Michigan State University
- 1979 **Class Salutatorian**, Dwight D. Eisenhower High School, Washington, Michigan

Research Funding

- *WSU Perinatology Virtual Discovery Grant "Geospatial Analyses of Air Pollution and Adverse Birth Outcomes in Detroit" Funding Source* (Funding Source: W.K. Kellogg Foundation; PI: John Reiners, Jr., L.D. Lemke role: Co-PI; Aug 2012-Feb 2014; \$125K)
- *NIEHS Small Business Innovation Research (SBIR) Grant "Geostatistical software for space-time interpolation and uncertainty modeling"* (Funding Source: National Institute of Environmental Health Sciences; PI: Pierre Goovaerts (Biomedware, Inc.), L.D. Lemke role: Co-I; 3/2013-2/2015; \$109K)
- *WSU FY2013 Graduate Research Assistant Competition "Quantifying the Risks of Soil Lead in Urban Community Gardens: Sampling to Account for Spatial Variability of Total and Bioaccessible Lead"* (Funding Source: WSU OVPR and Graduate School; PI: L.D. Lemke, Aug 2012-Aug 2013; one year support for a graduate research assistant ~\$36K)
- *INPHAASE: "Health Outcomes of Environmental Exposure to Airborne Metals: a GeoDHOC Project"* (Funding Agency: Institute for Population Studies, Health Assessment, Administration, Services and Economics; PI: Helene Krouse (WSU Nursing), L.D. Lemke role: Co-PI; Jul 2010-Jun 2012; \$75K)
- *NSF CAREER Grant: "CAREER: Integrating Research, Education, and Heterogeneity into Groundwater Models of Glaciated Urban Areas"* (Funding Agency: National Science Foundation; PI: Lawrence D. Lemke; Sept 2008 – Sept 2012, \$333K)
- *President's Research Enhancement Program to support Clinical and Translational Science in Urban Health: "Linking Geospatial Information with Public Health Outcomes: Modeling Asthma Morbidity Across an Urban International Border"* (Funding Agency: Wayne State Univ.; PI: Linda Weglicki, L.D. Lemke role: Co-I; May 2008-October 2009; \$319K)

University Research Experience

- 8/03 – present **Hydrogeology/Groundwater Contaminant Fate and Transport**– Wayne State University
Applied and theoretical studies of single- and multiphase flow and contaminant transport using alternative spatial variability models for glacial sedimentary aquifers. Application of sequence stratigraphic concepts to continental glacial aquifer systems.
 Sponsors: National Science Foundation, Michigan Dept. of Environmental Quality (MDEQ), D.O.D. Strategic Environmental Research Development Program (SERDP), Wayne State University
- 8/08 – present **Air Pollution** – Wayne State University
Spatial and temporal modeling of airborne contaminant distributions in Detroit and Windsor urban areas. Correlation of air quality with asthma and adverse birth outcomes.
 Sponsors: Institute for Population Studies, Health Assessment, Administration, Services and Economics (INPHAASE), Wayne State University, University of Windsor, W.K. Kellogg Foundation, Perinatology Virtual Discovery Grant
- 8/12 – present **Soil Contamination** – Wayne State University
Characterization and risk assessment of soil lead contamination in urban community gardens, Detroit, Michigan.
 Sponsors: Wayne State University, Research Internships for a Sustainable Environment with Undergraduate Participation (RISEUP) Program
- 5/02 – 8/03 **Ph.D. Dissertation Research** - Director: Linda Abriola
Simulated single- and multiphase groundwater contaminant transport including micellar solubilization of entrapped and pooled DNAPL with alternative aquifer spatial variability models.
 Sponsors: University of Michigan Rackham School of Graduate Studies, D.O.D. Strategic Environmental Research Development Program (SERDP).

- 1/00 – 04/02 **Graduate Student Research Assistant** - Director: Linda Abriola
Developed alternative models of spatially varying aquifer properties for the Bachman Road Site in Oscoda, Michigan. Two-dimensional DNAPL infiltration and entrapment modeling using alternative aquifer models.
Sponsors: U.S. Environmental Protection Agency, Michigan D.E.Q.
- 1/99 – 8/99 **Graduate Student Research Assistant** - Director: Linda Abriola
Performed Site characterization and groundwater modeling in support of Surfactant Enhanced Aquifer Remediation (SEAR) pilot test project.
Sponsors: Great Lakes Mid-Atlantic Center for Hazardous Substance Research, Michigan Department of Environmental Quality.

Completed M.S. Theses Directed

Joseph Cypher: *Hydrogeologic Modeling of a 1,4-Dioxane Plume in a Glacial Aquifer System; Washtenaw County, Michigan*, December 2008.

Shannon Molaroni: *Modeling Ambient Air Quality in the Detroit-Windsor Airshed*, December 2010.

Andrew Frahm: *Deterministic Hydrostratigraphic Modeling of a Glacial Aquifer System, Washtenaw County, Michigan*, December 2011.

Lauren Bugdalski: *Quantifying the Risks of Soil Lead in Urban Community Gardens: Sampling to Account for Spatial Variability*, July 2013.

University Teaching Experience

- 1/03 – present **Associate Professor** - Wayne State University (promoted from Asst. Prof., Aug 2010):
GEL 1000 Environmental Geology (4 sections, F'04 - F'07)
GEL 1010 Physical Geology (15 sections, W'03 - W'14)
GEL 3100 Environmental Systems Analysis (4 sections F'09 – F'13)
GEL 3300 Structural Geology (W'06 – team taught with Ed van Hees, Jeff Howard)
GEL 3400 Sedimentology and Stratigraphy (4 sections F'03 - F'08)
GEL 5000 Geological Site Assessment (3 sections, W'10, W'12, W'14)
GEL 5450 Hydrogeology (6 sections, W'03 - W'13)
GEL 6500 Economic Geology (team taught with Ed van Hees; 3 sections F'05 - F'10)
- 9/01 - 12/02 **GSI Mentor** - University of Michigan, College of Engineering
Provided training, observation, evaluation, guidance, and practical advice to 25-30 new and continuing graduate student instructors each semester.

Course or Curriculum Development (Wayne State University)

- GEL 1000 – Environmental Geology: Lecture/Laboratory/Field Trip
GEL 1010 – Lecture
GEL 1010 – Lab Manual Revision (2014)
GEL 3100 – Environmental Systems Analysis: Lecture/Lab/Field Trip
GEL 3300 – Structural Geology: Lecture/Laboratory/Field Trip
GEL 3400 – Principles of Sedimentation and Stratigraphy: Lecture/Laboratory/Field Trip
GEL 4400 – 40-hour HAZWOPER Training and Certification (w/ Wally Pociask, trainer)
GEL 5000 – Geological Site Assessment: Lecture/Term Simulation
GEL 5450 – Hydrogeology: Lecture/Laboratory/Field Trip
GEL 6500 – Economic Geology: Lecture/Laboratory/Term Simulation/Field Trip

- 9/98 - 12/98 **Graduate Student Instructor** - University of Michigan, University of Arizona

- 9/99 - 12/99 CEE 428 Introduction to Groundwater Hydrology
8/84 - 5/85 GEOS 302 Principles of Stratigraphy and Sedimentation
GEOS 584 Sedimentary Basin Analysis
Laboratory preparation, instruction and grading for graduate and undergraduate students. Developed a term-long groundwater modeling project based on publicly available data from a local groundwater contamination site.
- 3/80 - 3/81 **Undergraduate Teaching Assistant** – Michigan State University: COM 115 Oral Communication (Communication Individual Honors Project for 3 quarters)
Taught and critiqued the elements of public speaking as part of a team of 9 undergraduate teaching assistants.

Professional Memberships and Service Activities

- American Association of Petroleum Geologists, 1981-present
Geological Society of America, 1988-present
National Ground Water Association, 1999- present
American Geophysical Union, 2001-present
International Association of Hydrological Sciences, 2002- present
National Association of Geoscience Teachers, 2007-present
Association of Engineering Geologists, 2004-2010
- 2001-present Reviewer: *Reviewed articles for Ground Water, Water Resources Research, Stochastic Environmental Research and Risk Assessment, Environmental Science & Technology, Journal of American Water Resources Association, Journal of Contaminant Hydrology, Geosphere, Vadose Zone Journal, American Association of Petroleum Geologists, Risk Analysis, Waste Management, International Journal of Environmental Analytical Chemistry, Mathematical Geosciences, Hydrogeology Journal, Integrated Environmental Assessment and Management, Science of the Total Environment, Sedimentology.*
Reviewed research proposals for National Science Foundation, ACS Petroleum Research Fund, U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP), WSU President's Research Enhancement Program in Sustainable Water Management and Water Technology; University of Michigan Water Center Great Lakes Restoration Program; Deutsche Forschungsgemeinschaft (DFG); and WSU Undergraduate Research Grant Program.
NSF Hydrogeology Panel Review – Spring 2012.
- 2003-present Hydrogeology Consultant: *Michigan Department of Environmental Quality Technical Review Committee evaluating remediation plans for the Pall Life Sciences 1,4-dioxane site in Ann Arbor, Michigan (pro bono).*
- 2004 Hydrogeology Consultant: *EPA –Sponsored Technical Outreach Services for Communities (TOSC) Hydrogeology Specialist for Pall Life Sciences 1,4-dioxane site in Ann Arbor, Michigan (pro bono).*
- 5/99 – 5/02 University of Michigan EWRE Graduate Seminar Committee Chair/Co-chair:
Led a team of graduate students who organized a distinguished lecture series of 12-14 speakers per year. Oversaw fund raising, invitations, publicity, and seminar logistics.

Professional Consulting Activities

- 2005 Hydrogeology Consultant: Hands & Associates, Inc. Project 10295. *Groundwater Flow and Contaminant Transport Modeling: Former Coe's Cleaners Site, Milford, Michigan.*
- 2005 Hydrogeology Consultant: Hands & Associates, Inc. Project No. 10295. *Monitoring Network Performance Evaluation: Former Coe's Cleaners Site, Milford, Michigan.*

- 2006 Geologic Consultant: Dianor Resources, Inc. Leadbetter Diamond Project, Wawa, Ontario. *Stratigraphic and Sedimentologic Field Observations; Leadbetter Property, Chabanel Township, Ontario.*
- 2008 Arbitrator: Carl. M. Schultz v. Federated Mutual Insurance Co. Case No. 07-CV-14864. *Evaluation of free product and release history in connection with remediation of environmental contamination at a site in Ortonville, Michigan.*
- 2009 Expert Witness: Milford Downtown Development Authority and Michigan Department of Environmental Quality v. J & S Company, G/CSC, LTD., and BP Products North America, Inc. File No. 07-083146-CH. *Assessment of Groundwater Contamination from Two Former Gasoline Stations in the Village of Milford, Oakland County, Michigan*
- 2012 Expert Witness: MDEQ v Engineering Tube Specialties, Inc., and Myron Investments, LLC Ingham County Circuit Court File No. 11-1157-CE. *Evaluation of groundwater contamination sources and impacts in Mill Street Residential Area, Ortonville, MI.*

Refereed Publications *denotes research project results with Wayne State University students

- O'Leary*, B.F. and **L.D. Lemke**, 2014, Modeling Spatiotemporal Variability of Intra-Urban Air Pollutants in Detroit: A Pragmatic Approach, *Atmospheric Environment*, in press.
- Bugdalski*, L., **L.D. Lemke**, and S.P. McElmurry, 2014, Spatial Variation of Soil Lead in an Urban Community Garden: Implications for Risk-Based Sampling, *Risk Analysis*, 34(1):17-27, published online 24 April 2013, DOI: 10.1111/risa.12053.
- Bower, P., R. Kelsey, B. Bennington, **L.D. Lemke**, J. Liddicoat, B.S. Miccio, A. Lampousis, D.M. Thompson, B.G. Seewald, A. D. Kney, T. Graham, S. Datta, 2014, Brownfield Action: Dissemination of a SENCER Model Curriculum and the Creation of a Collaborative STEM Education Network, *Science Education and Civic Engagement*, 6(1) 5-22.
- Lemke, L.D.**, L.E. Lamerato, X. Xu, J.C. Booza, J. Reiners Jr., D.M. Raymond III, P.J. Villeneuve, E. Lavigne, D. Larkin, and H.J. Krouse, 2013, Geospatial relationships of air pollution and asthma morbidity across the Detroit-Windsor international border: Study design and preliminary results, *Journal of Exposure Science and Environmental Epidemiology*, in press, doi:10.1038/jes.2013.78.
- Miller, L., **L.D. Lemke**, X. Xu, S.M. Molaroni*, H. You, A. Wheeler, J. Booza, A. Grgicak-Mannion, R. Krajenta, P. Graniero, H. Krouse, L. Lamerato, D. Raymond, J. Reiners, Jr., and L. Weglicki, 2010, Intra-urban correlation and spatial variability of air toxics across an International Airshed in Detroit, MI (USA) and Windsor, ON (Canada), *Atmospheric Environment*, published online Jan 29, 2010, DOI: 10.1016/j.atmosenv.2009.12.030.
- Lemke, L.D.** and J.A. Cypher*, 2010, Postaudit evaluation of conceptual model uncertainty for a glacial aquifer groundwater flow and transport model, *Hydrogeology Journal*, published online Jan 9, 2010, DOI: 10.1007/s10040-009-0554-8.
- Cypher*, J.A. and **L. D. Lemke**, 2009, Multiple Working Transport Hypotheses in a Heterogeneous Glacial Aquifer System, *Ground Water Monitoring & Remediation*, 29(3) 105-119, doi: 10.1111/j.1745-6592.2009.01245.x..
- Christ, J.A., **L.D. Lemke**, and L.M. Abriola, 2009, Comparison of two- and three-dimensional simulations of dense non-aqueous phase liquids (DNAPL): Mass removal in nonuniform permeability fields, *Advances in Water Resources*, 32(3) 401-412 – published online Dec 24, 2008, doi:10.1016/j.advwatres.2008.12.002.
- Lemke, L.D.** and A.S. Bahrou*, 2009, Partitioned multiobjective risk modeling of carcinogenic compounds in groundwater, *Stochastic Environmental Research and Risk Assessment (SERRA)*, 23(1) 27-39 – published online Oct 17, 2007, DOI: 10.1007/s00477-007-0192-4.
- Lemke, L.D.** and L.M. Abriola, 2006, Modeling dense nonaqueous phase liquid mass removal in nonuniform formations: Linking source zone architecture and system response, *Geosphere* 2(2) 74-82, DOI: 10.1130/GES00025.1.
- Abriola, L.M., C.D. Drummond, E.J. Hahn, K.F. Hayes, T.C.G. Kibbey, **L.D. Lemke**, K.D. Pennell, E.A. Petrovskis, C.A. Ramsburg, and K.M. Rathfelder, 2005, A pilot-scale demonstration of surfactant-

- enhanced PCE solubilization at the Bachman Road site: (1) Site characterization and test design, *Environmental Science and Technology* 39(6) 1978-1790, DOI: 10.1021/es049563r.
- Christ, J.A., **L.D. Lemke**, and L.M. Abriola, 2005, Comparison of two- and three-dimensional simulations of dense non-aqueous phase liquid (DNAPL) migration and entrapment in a nonuniform permeability field, *Water Resources Research* 41(1), W01007, doi:1029/2004WR003239.
- Lemke, L.D.**, L.M. Abriola, and J.R. Lang, 2004, Influence of Hydraulic Property Correlation on Predicted DNAPL Source Zone Architecture, Mass Recovery and Contaminant Flux, *Water Resources Research*. 40(12) W12417, doi: 10.1029/2004WR003061.
- Lemke, L.D.**, W.A. Barrack, L.M. Abriola, and P. Goovaerts, 2004, Matching solute breakthrough with deterministic and stochastic aquifer models, *Ground Water* 42(6) 920-934.
- Lemke, L.D.**, L.M. Abriola, and P. Goovaerts, 2004, DNAPL source zone characterization: Influence of hydraulic property correlation on predictions of DNAPL infiltration and entrapment, *Water Resources Research*. 40(1) W01511, doi: 10.1029/2003WR001980.
- Phelan, T.J., **L.D. Lemke**, S.A. Bradford, D.M. O'Carroll, and L.M. Abriola, 2004, Influence of textural and wettability variations on predictions of DNAPL persistence and plume development in saturated porous media, *Advances in Water Resources*. 27(4) 411-427, doi: 10.1016/j.advwatres.2004.02.011.
- Lemke, L.D.**, and L.M. Abriola, 2003, Predicting DNAPL entrapment and recovery: the influence of hydraulic property correlation, *Stochastic Environmental Research and Risk Assessment*. 17(6) 408-418, doi: 10.1007/s00477-003-0162-4.
- Abriola, L.M. and **L.D. Lemke**, 2003, The influence of hydraulic property correlation on predictions of DNAPL entrapment and recovery, p. 3-9 in, K. Kovar and Z. Hrkal, eds., Calibration and Reliability in Groundwater Modelling: A Few Steps Closer to Reality; ModelCare 2002: 4th International Conference on Calibration and Reliability in Groundwater Modelling Proceedings; Prague, Czech Republic, 17-20 June 2002, IAHS Publication 277.
- DeCelles, P.G., et al., 1987, Laramide thrust-generated alluvial-fan sedimentation, Sphinx Conglomerate, southwestern Montana, *AAPG Bulletin*. 71(2) 135-155.
- Graham, S.A., et al., 1986, Provenance modeling as a technique for analyzing source terrane evolution and controls on foreland sedimentation, Special Publication of the International Association of Sedimentologists No. 8; 425-436.

Conference Proceedings

* denotes research project results with Wayne State University students

- Lemke, L.D.**, A.L.*Frahm, and L.K. *Pappas, 2013, Hybrid deterministic and stochastic hydrostratigraphic modeling of a complex glacial aquifer system [invited presentation and extended abstract]; Three-Dimensional Geologic Mapping Workshop, Geological Society of America National Meeting, Oct 26, 2013; *Minnesota Geological Survey Open File Report*, OFR-13-2, p. 53-57.
- Lemke, L.D.**, and J.A. Cypher*, 2006, Use of Alternative Conceptual Geologic Models to Evaluate Contaminant Transport Modeling Uncertainty in a Glacial Aquifer System, in E. Poeter, M. Hill, and C. Zheng, eds., Proceedings of MODFLOW and More 2006: Managing Ground-Water Systems, Golden, CO, May 21-24, 2006, p. 41-46.
- Lemke, L.D.**, W. A. Barrack, and L. M. Abriola, 2003, Use of advective particle tracking metrics to identify stochastic realizations with extreme advective-dispersive transport behavior in a nonuniform sand aquifer, p. 533-537 in E. Poeter, C. Zheng, M. Hill, and J. Doherty, eds., Proceedings of MODFLOW and More 2003: Understanding through Modeling; Golden, CO, Sept 16-19, 2003, International Ground Water Modeling Center, Colorado School of Mines.
- Lemke, L.D.**, L.M. Abriola, and P. Goovaerts, 2002, Exploration of the influence of hydraulic property correlation on predictions of DNAPL infiltration and entrapment, p. 58-62 in A. N. Findikakis, ed., Bridging the Gap Between Modeling and Measurement; Groundwater 2002 IAHR Groundwater Symposium Proceedings; Berkeley, CA, Mar 25-29, 2002.
- Drummond, C.D., **L.D. Lemke**, K.M. Rathfelder, E.J. Hahn, and L.M. Abriola, 2000, Simulation of surfactant-enhanced PCE recovery at a pilot test field site, p. 77-84 in, G.B. Wickramanayake, A.R. Gavaskar, and N. Gupta, eds., Treating Dense Nonaqueous Phase Liquids (DNAPLs): Remediation of Chlorinated and Recalcitrant Compounds, Batelle Press, Columbus, OH.

Refereed Instructional Materials

Peer-Reviewed Teaching Materials

- 1) **Lemke, L.D.**, 2005, When Does Aquifer Heterogeneity Matter? Predicting the Influence of Alternative Conceptual Models on Contaminant Plume Migration, *On the Cutting Edge Hydrogeology Teaching Collection*; *Exemplary Rating*
<http://serc.carleton.edu/NAGTWorkshops/hydrogeo/activities/15183.html>

Note: *On the Cutting Edge* review criteria include scientific accuracy; alignment of learning goals, activities and assessments; pedagogic effectiveness; robustness (usability and dependability of all resource components); and completeness of the associated Activity Sheets that provide contextual information to guide the effective use of the activity. "**Exemplary**" status is awarded to only 10-20% of the teaching activities in the collection. The review instrument and associated scoring rubric can be found at:

http://serc.carleton.edu/NAGTWorkshops/mpg/workshop2011/activity_review.html

- 2) **Lemke, L.D.**, 2005, Mixing oil and water: Reinforcing groundwater concepts through comparisons with petroleum migration, *On the Cutting Edge Hydrogeology Teaching Collection*; *Exemplary Rating*
<http://serc.carleton.edu/NAGTWorkshops/hydrogeo/activities/9938.html>
- 3) **Lemke, L.D.**, 2006, Pre-assessment: Gauging students' preparedness for Sedimentary Geology, *On the Cutting Edge Sedimentary Geology Teaching Collection*; *Exemplary Rating*
<http://serc.carleton.edu/NAGTWorkshops/sedimentary/activities/13842.html>

Non Peer-Reviewed Teaching Materials

- 1) **Lemke, L.D.**, 2006, Demystifying the Equations of Sedimentary Geology, *NSF the Cutting Edge Sedimentary Geology Teaching Collection*;
<http://serc.carleton.edu/NAGTWorkshops/sedimentary/activities/13928.html>
- 2) **Lemke, L.D.**, 2008, Urban Environmental Excursions: Field trips to connect urban geology students with the world around them, *On the Cutting Edge Urban Geology Teaching Activity Collection*; <http://serc.carleton.edu/NAGTWorkshops/urban/activities/22250.html>
- 3) **Lemke, L.D.**, A. Fayon, C. de Campos, and R. Boger, 2008, What's Cooking in Geology? Food Analogies and Demonstrations to Connect Geology with Everyday Experiences, *On the Cutting Edge Urban Geology Teaching Activity Ideas Collection*;
http://serc.carleton.edu/urban/activity_ideas/22365.html
- 4) **Lemke, L.D.**, 2008, Paper or Plastic? Recognizing Environmental Tradeoffs, *On the Cutting Edge Urban Geology Teaching Activity Ideas Collection*;
http://serc.carleton.edu/urban/activity_ideas/22367.html

Technical Reports

Lemke, L.D., 2012, Environmental expert report: MDEQ v. Engineering Tube Specialties, Inc., and Myron Investments, LLC; Ingham County Circuit Court File No. 11-1157-CE, by Lawrence D. Lemke, LLC Project No. 1209-001.1, November 27, 2012, 39 pp.

Lemke, L.D., 2009, "Summary of Findings: Assessment of Groundwater Contamination from Two Former Gasoline Stations in the Village of Milford, Oakland County, Michigan," prepared for Michigan Dept. of Environmental Quality by Lawrence D. Lemke, LLC Project No. 2009.04.002, Ann Arbor, MI, July 29, 2009.

- Lemke, L.D.**, 2006, “Stratigraphic and Sedimentologic Field Observations; Leadbetter Property, Chabanel Township, Ontario,” prepared for Dianor Resources, Inc. by Lawrence D. Lemke, LLC, Ann Arbor, MI, Aug 24, 2006.
- Lemke, L.D.**, Cypher, J.A., Barker, C.F., and Hands, L., 2005, “Groundwater Flow and Contaminant Transport Modeling Report: Former Coe’s Cleaners Site, Milford, Michigan,” Hands & Associates, Inc. Project No. 10295, Detroit, MI, Aug 31, 2005.
- Lemke, L.D.**, Barker, C.F., and Hands, L., 2005, “Monitoring Network Performance Evaluation: Former Coe’s Cleaners Site, Milford, Michigan,” Hands & Associates, Inc. Project No. 10295, Detroit, MI, Nov 29, 2005.
- Lemke, L.D.**, 2004, TOSC Review of Pall Life Sciences “Final Feasibility Study & Proposed Interim Response Plan for the Unit E Plume,” *Technical Outreach Services for Communities*, Michigan State University, Aug 4, 2004.

Published Abstracts

* denotes research project results with Wayne State University students

- van Hees, E. and **L.D. Lemke**, 2013, Workforce preparation of geology and environmental science majors at a large urban university; Geological Society of America *Abstracts with Programs*, 45(7) in press.
- *O’Leary, B. and **L.D. Lemke**, 2013, Modeling Spatiotemporal Variability of Intra-Urban Air Contaminants in the Detroit Airshed: A Pragmatic Approach; Geological Society of America *Abstracts with Programs*, 45(7) in press.
- Lemke, L.D.**, A.L.*Frahm, and L.K. *Pappas, , 2013, Drawing the dog: Deterministic hydrostratigraphic modeling of a complex glacial aquifer system using an allostratigraphic approach; Geological Society of America *Abstracts with Programs*, 45(4) p. 53-54.
- *Pappas, L.K., and **L.D. Lemke**, 2013, Adding the spots: Stochastic modeling within a deterministic hydrostratigraphic framework to account for small-scale variability and uncertainty in a complex glacial aquifer system; Geological Society of America *Abstracts with Programs*, 45(4) p. 54.
- Lemke, L.D.**, L.K. *Pappas, and A.L.*Frahm, 2012, Integration of deterministic and stochastic methods to model the hydrostratigraphic architecture of glacial sediments in Ann Arbor, Michigan, USA; Geological Society of America *Abstracts with Programs*, 44(7) p. 143.
- *Bugdalski, L., **L.D. Lemke**, S.P. McElmurry, 2012, Soil lead risk assessment in urban garden plots; Geological Society of America *Abstracts with Programs*, 44(7) p. 609.
- Lemke, L.D.**, A.L.*Frahm, and L.K. *Pappas, 2012, Groundwater contamination beneath Ann Arbor, Michigan: Applying hybrid groundwater models to manage a complex glacial aquifer system; Geological Society of America *Abstracts with Programs*, 44(5) p. 3.
- *Pappas, L.K. and **L.D. Lemke**, 2011, Connecting stochastic and deterministic hydrostratigraphic models of the Quaternary Fort Wayne Moraine glacial aquifer system, Ann Arbor, Michigan, USA; Geological Society of America *Abstr with Prog*, 42(5) p. 80.
- *Bugdalski L.E., **L.D. Lemke**, and S.P. McElmurry, 2011, Spatial variation of soil lead in an urban community garden; Geological Society of America *Abstr with Prog*, 42(5) p. 123.
- Lemke, L.D.**, and A.L.*Frahm, 2011, Fusion of lithostratigraphic, allostratigraphic, and hydrostratigraphic approaches to characterize a glacial aquifer system; Geological Society of America *Abstracts with Programs*, 42(5) p. 28.
- Lemke, L.D.**, and E. van Hees, 2011, Recruiting, retaining, and graduating diverse geology and environmental science students at a large urban university; Geological Society of America *Abstracts with Programs*, 42(5) p. 254.
- *Frahm, A.L. and **L.D. Lemke**, 2010 Comprehensive glacial sediment characterization and correlation with natural gamma log response to identify hydrostratigraphic units in a rotosonic well core; Abstract H23C-1210 presented at 2010 American Geophysical Union Fall Meeting, San Francisco, Calif., 13-17 Dec.
- Lemke, L.D.**, *Bobyryk, S. and X. Xu, 2010, Use of Cokriging to Improve Spatial Resolution of Ambient Airborne Contaminant Concentration Estimates in Detroit and Windsor, American Geophysical Union Fall Meeting Abstract A31H-05.

- Lemke, L.D.**, 2010, Potential Effects of Construction Dewatering on a Migrating Groundwater Contaminant Plume in Ann Arbor, Michigan, USA; Geological Society of America *Abstracts with Programs*, 42(5), p. 326.
- van Hees, E., **L.D. Lemke**, and D. Kashian, 2010, Building and Sustaining Geology and Environmental Science Student Diversity at a Large Urban University, Geological Society of America *Abstracts with Programs*, 42(5), p. 339.
- *Frahm, A.L., and **L.D. Lemke**, 2009, Stratigraphic Analysis of Glacial Sediments using Outcrop, Well Bore, and Natural Gamma Ray Logging; Abstracts with Programs - Geological Society of America *Abstracts with Programs*, 41(7), p. 118.
- *Molaroni, S.M., **L.D. Lemke**, L. Miller, X. Xu, A. J. Wheeler, A. Grgicak-Mannion, H. Krouse, R. Krajenta, J. Reiners, Jr., and L. Weglicki, 2009, Geostatistical Analysis of Ambient Airborne Contaminant Variability across an International Border in Detroit and Windsor, Geological Society of America *Abstracts with Programs*, 41(7), p. 558.
- *Sherman, J.R. and **L.D. Lemke**, 2009, Influence of Decimeter-Scale Variability on DNAPL Infiltration and Migration in a Glacial Sand Aquifer, Geological Society of America *Abstracts with Programs*, 41(7), p. 669.
- *Van Tiem, K. and **L.D. Lemke**, 2009, Linking Texture and Gamma Ray Log Response in Glacial Sediments of Southeast Michigan, Geological Society of America *Abstracts with Programs*, 41(7), p. 142.
- Lemke, L.D.**, 2009, Integrating Sedimentology, Stratigraphy, Hydrogeology, and Critical Thinking through the Successive Interpretation of Subsurface Geologic Cross Sections; Geological Society of America *Abstracts with Programs*, 41(7), p. 154.
- *Cypher, J.A. and **L.D. Lemke**, 2008, Evaluating Multiple Hypotheses for Contaminant Source and Hydrostratigraphic Architecture in a Heterogeneous Glacial Aquifer System, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract H41A-0832.
- *Adolphues, I. R., and **L. D. Lemke**, 2007, Investigating mineralogy and gamma ray log response in glacial sediments; Abstracts with Programs - Geological Society of America *Abstracts with Programs* 39(6) p. 309.
- *Bobyryk, C., and **L. D. Lemke**, 2007, Evaluation of hyporheic zone characteristics and the functionality of physical and chemical variations beneath a Michigan freshwater stream; Geological Society of America *Abstracts with Programs* 39(6) p. 486.
- Lemke, L.D.**, 2007, Demystifying the equations of sedimentary geology; Geological Society of America *Abstracts with Programs* 39(6), p. 274.
- Lemke, L.D.**, 2007, Warts and all: Anomalous plume behavior in a glacial aquifer system; Geological Society of America *Abstracts with Programs* 39(6), p.483.
- *Bahrou, A.S., and **L.D. Lemke**, 2006, Integrating Reactive Transport, Exposure, and Toxic Potency Uncertainty with Monte Carlo Simulation and Partitioned Multi-objective Risk Modeling [abstr.], Geological Society of America *Abstracts with Programs*, 38(7), p. 430.
- *Cypher, J.A. and **L.D. Lemke**, 2006, Solute Transport Modeling Uncertainty: The Importance of Alternative Conceptual Geologic Models for Characterizing Heterogeneity [abstr.], Geological Society of America *Abstracts with Programs*, 38(7), p. 111.
- Lemke, L.D.**, T. Callahan, S. Custer, D. Easley, T. Eaton, K. Nichols, and L. Joseph, 2006, Got Data? So What! Hydrogeologic Interpretation Beyond Results [poster], Geological Society of America *Abstracts with Programs*, 38(7), p. 428, Philadelphia, PA, October 24, 2006.
- van Hees, E. and **L.D. Lemke**, 2006, Using Field Trips to Attract and Retain Minority Students in the Geosciences [oral], Geological Society of America *Abstracts with Programs*, 38(7), p. 461, Philadelphia, PA, October 25, 2006.
- *Camilleri, S. and **L. D. Lemke**, 2005, Screening stochastic aquifer realizations using advective particle tracking metrics [abstr.], Abstracts with Programs - Geological Society of America, 37(7), 505.
- Lemke, L.D.**, 2005, Evolving Conceptual Hydrogeologic Models for Complex Glacial Aquifer Systems, Abstracts with Programs - Geological Society of America, 37(7), 100.
- Lemke, L.D.**, 2004, Spatial correlation of physical aquifer properties: Influence on DNAPL entrapment and recovery, Abstracts with Programs - Geological Society of America, 36(5), 324.

- Lemke, L.D.**, W. A. Barrack, L. M. Abriola, and P. Goovaerts, 2002, Influence of conceptual model selection on three-dimensional tracer transport: comparison of predictions and observations in a nonuniform sand aquifer, *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract H71A-0782.
- Lemke, L.D.**, M. Stonehouse, and L.M. Abriola, 1999, Application of sequence stratigraphic methods to model ground water flow and contaminant transport in glacial aquifers [oral], Abstracts with Programs - Geological Society of America, 31(7), 149.

Presentations

- Lemke, L.D.**, 2014, Phase 2 Environmental Site Assessment: Adapting Brownfield Action to incorporate ASTM E1903-11 [invited presentation], Brownfield Action Seminar, Barnard College/Columbia University, New York, 19 April 2014.
- Lemke, L.D.**, 2014, Geology and Environmental Science Program Assessment [invited presentation], CLAS/OTL Setting and Advancing Program Goals Workshop, 17 April 2014.
- Lemke, L.D.**, 2014, Linking Urban Air Quality to Health across the Detroit-Windsor International Border: A Five-Year Summary of the GeoDHOC Project [invited presentation], WSU Faculty Symposium: Research/Urbanism/Excellence, 4 April 2014.
- Lemke, L.D.**, 2014, Hybrid deterministic and stochastic hydrostratigraphic modeling of a complex glacial aquifer system [invited presentation and webinar], Geological Survey of Canada / Commission géologique du Canada; Ottawa, Ontario, 14 March 2014.
- Lemke, L.D.**, 2013, GeoDHOC Air Quality and Health Investigations in Detroit and Windsor [invited pres.], Institute of Environmental Health Sciences (IEHS) / Center for Urban Responses to Environmental Stressors (CURES) Seminar Series, Eugene Applebaum College of Pharmacy, Detroit, MI, November 21, 2013.
- Lemke, L.D.**, 2013, A Cohort Model for Undergraduate Research: Measuring and Multiplying the Benefits of Undergrad Research Engagement [invited lecture], Wayne State University Office for Teaching and Learning, 2013 Undergraduate Research and Creative Projects Week, Detroit, MI November 14, 2013.
- Lemke, L.D.**, 2013, The Fracas Over Fracking: Dissecting the Controversy over Hydraulic Fracturing [invited lecture], Michigan Mineralogical Society Gem, Mineral, Fossil & Jewelry Show, Macomb County Community College, Warren, MI October 13, 2013
- Lemke, L.D.**, 2013, Groundwater Fundamentals: Know It and Show It [invited lecture], Michigan Alliance of Environmental and Outdoor Education (MAEOE) and Michigan Earth Science Teacher Association (MESTA) Conference, Belle Isle, Detroit, MI October 5, 2013.
- Lemke, L.D.**, 2013, What to expect and how to succeed at WSU: A professor's perspective and advice to incoming freshmen; [invited presentation] New Student Convocation keynote address, Wayne State University, Detroit, MI, Aug 27, 2013.
- Lemke, L.D.**, 2013, Linking urban air quality to health – undergraduate student engagement in investigations across the Detroit-Windsor international boundary; [invited pres.] Integrating Geoscience into Sustainability through Scientific Research and Learning - Association for Environmental Studies and Sciences Conference, Pittsburgh, PA, June 22, 2013.
- Lemke, L.D.**, 2013, Linking Air Pollution to Health Outcomes in Detroit and Windsor: The Importance of Collaboration and Teamwork in Science; [invited presentation] 49th Annual Southeastern Michigan Junior Science and Humanities Symposium keynote address, Wayne State University, Detroit, MI, Mar 28, 2013.
- Lemke, L.D.**, 2013, What's all the Fracas about Fracking? Assessing the Risks and Benefits of Unconventional Oil and Gas Development; [invited presentation] Wayne State University Science Under the Dome Seminar Series, Department of Physics, March 1, 2013.
- Lemke, L.D.**, 2012, Urban Environmental Excursions: Designing field trips to demonstrate sustainable connections between natural and engineered systems in urban environments; [invited pres.], American Geophysical Union Fall Meeting; Teaching About Sustainability, December 7, 2012.
- Lemke, L.D.**, 2012, Careers and Research in the Physical and Life Sciences: How I became a geologist and environmental engineer, [guest lecture] ORI 950 Orientation: Charting your path, Oct 10, 2012.

- Lemke, L.D.**, 2012, What's all the frac about fracking? [invited presentation], Earth and Environmental Science Seminar Series (E²S³), Wayne State University Dept. of Geology, September 26, 2012.
- Lemke, L.D.**, 2012, The Risks and Benefits of Hydraulic Fracturing – A Pragmatic Assessment; Michigan Mineralogical Society [invited presentation], Cranbrook Institute of Science, Bloomfield Hills, MI, September 10, 2012.
- Lemke, L.D.**, 2012, Using Brownfield Action – A virtual tool for Environmental Site Assessment [invited presentation], Teaching Environmental Geology; NSF Cutting Edge Workshop, Session: Case Studies I -- Sessions introducing the *SCIENCE* that underlies the topic. Montana State Univ., June 3, 2012.
- Lemke, L.D.**, 2012, Engaging urban students and underrepresented minorities [invited pres.], Teaching Environmental Geology; NSF Cutting Edge Workshop, Session: Cross-cutting Issues in Teaching Environmental Geology I: Pedagogic Issues and Strategies. Montana State Univ., June 3, 2012.
- Lemke, L.D.**, 2012, How to Succeed and What to Expect at Wayne State: A Professor's Perspective [invited pres.], Wayne State University Freshmen Orientation –Faculty 'Lecture' to Incoming Freshmen; May 23, June 15, July 11, and July 13, 2012.
- Lemke, L.D.**, 2012, Reservoir simulation in a channelized fluvial environment: Incorporating fracture effects [guest lecture], GEL3300 Structural Geology, Wayne State University, Mar 22, 2012.
- Lemke, L.D.**, 2012, Confronting the legacy of groundwater contamination beneath Ann Arbor, Michigan: The role of groundwater models in managing a complex glacial aquifer system [invited pres.], Wayne State University Water@Wayne Seminar Series, Mar 8, 2012.
- Lemke, L.D.**, 2011, Ambient Airborne Contaminant Variability across the Detroit-Windsor International Border [invited pres.], University of Michigan Dearborn, Department of Natural Sciences Colloquium, Nov 11, 2011.
- Lemke, L.D.**, 2011, Contaminant Transport in Glacial Aquifer Systems: *Conceptualizing and Incorporating Heterogeneity* [guest lecture], GEL5510 Contaminant Fate and Transport, Wayne State University, Sept 13, 2011.
- Rosenberg, D., S. Trimpin, **L.D. Lemke**, M. Cote, and C. Trentacosta, 2011, NIH and NSF career award advice from WSU recipients & reviewers [panel discussion]; Wayne State University Professional and Academic Development Seminar Series, Sept 9, 2011.
- Lemke, L.D.**, 2011, GeoDHOE 2008-2009 Detroit-Windsor Air Sampling Campaigns [invited pres.], City of Detroit Reuse of Urban Sites (REUS) Committee Briefing; Michigan Department of Environmental Quality; Warren, MI, March 23, 2011.
- Lemke, L.D.**, 2011, Evolving Hydrogeologic Models for Glacial Aquifer Systems: *Conceptualizing and Incorporating Heterogeneity* [invited pres.], Western Michigan University Dept. of Earth Sciences Colloquium; March 7, 2011.
- Lemke, L.D.**, 2011, Connecting Earth Sciences and Public Welfare: Applied Research in Groundwater Quality Management [invited pres.], Indiana University-Purdue University at Indianapolis Dept. of Earth Sciences; March 3, 2011.
- Lemke, L.D.**, 2011, Ambient Air Quality in Detroit and Windsor: Sampling Across an Urban International Border [invited pres.], Michigan Department of Natural Resources and Environment, Warren, Michigan; Feb 14, 2011.
- Lemke, L.D.**, 2010, Warrior 2010: Freshman Success! [invited pres.], Wayne State University Freshmen Orientation –Faculty 'Lecture' to Incoming Freshmen; June 14 and Aug 9, 2010.
- Lemke, L.D.**, 2010, Ambient Air Quality Sampling Across an Urban International Border in Detroit and Windsor [invited pres.], Indiana University-Purdue University at Indianapolis Dept. of Earth Sciences Colloquium; April 8, 2010.
- Lemke, L.D.**, 2009, Engaging Students in the Assessment Process [invited pres.], Engaging Students in LARGE Classes, Wayne State University Nov 20, 2009.
- Lemke, L.D.**, 2009, New Orleans Before and After Katrina: A Geologist's Perspective on the Viability of the Crescent City [invited pres.], WSU Year of the Environment Seminar Series, Nov 16, 2009.
- Lemke, L.D.**, 2009, September 2008 Detroit-Windsor Air Sampling Event: Logistics and Preliminary Results [invited presentation], Michigan Department of Public Health; Lansing, MI, Sep 28, 2009.

- Lemke, L.D.**, 2009, Review of the 2008 and 2009 Detroit-Windsor Air Sampling Campaigns [invited presentation], Reuse of Urban Sites (ReUS) Committee Briefing; Detroit Department of Environmental Affairs, Detroit, MI, Apr 29, 2009.
- Lemke, L.D.**, 2009, Earth Day: Environmental Science at Wayne State University [invited pres.], Forum on Contemporary Issues in Society (FOCIS), Apr 22, 2009.
- Lemke, L.D.**, 2009, Ambient Air Quality Sampling Across an Urban International Border in Detroit and Windsor [invited lecture], Earth and Environmental Science Seminar Series, Wayne State University Dept. of Geology, Apr 22, 2009.
- Lemke, L.D.** and W.A. Lemke, 2009, Caring for the Earth: Viewing our Planet through a Spiritual Lens [seminar], Michigan Catholic Young Adult Conf., St. Scholastica Church, Detroit, MI, Mar 28, 2009.
- Lemke, L.D.**, J. Booza, A.Girgcak-Manion, 2008, Linking Geospatial Information with Public Health Outcomes: Modeling [invited presentation], North American Public Health Institute Air Quality and Public Health Forum, Windsor, ON, Nov 10, 2008.
- Lemke, L.D.**, and L. Weglicki, 2008, Overview of the September 2008 Detroit-Windsor Air Sampling Campaign. [invited pres.], Detroit Dept. of Environmental Affairs, Detroit, MI, September 24, 2008.
- Lemke, L.D.**, 2007, The Geology of New Orleans and the Louisiana Gulf Coast: Katrina's Impact on the Crescent City [invited seminar], Central Michigan University Department of Geology Seminar Series, Mt. Pleasant, MI, February 23, 2007.
- Lemke, L.D.**, 2007, Evolving Conceptual Hydrogeologic Models for Complex Glacial Aquifer Systems [invited seminar], University of Akron Department of Geology and Environmental Science Seminar Series, Akron, Ohio, January 26, 2007.
- Lemke, L.D.**, 2006, What is a Watershed? And Why Should We Care? [invited oral presentation], Integrated Michigan Environmental Program (IMEP) kickoff presentation; St. Francis Middle School, Ann Arbor, Michigan, August 29, 2006.
- Lemke, L.D.**, 2006, Katrina's Legacy: Mitigating the Short- and Long-term Vulnerability of New Orleans [invited luncheon speaker], Engineering Society of Detroit 17th Annual Solid Waste Technical Conference, Michigan State University, East Lansing, MI, April 4, 2006.
- Lemke, L.D.**, 2005, Know It and Show It: Groundwater Fundamentals for Secondary Teachers [invited lecture], Metropolitan Detroit Science Teachers Association Fall Conference, Lawrence Tech University, Southfield, MI, October 29, 2005.
- Lemke, L.D.**, 2005, Rebuilding New Orleans: Geologic Vulnerabilities of the Crescent City [invited oral presentation], Impact of Hurricane Katrina – Rebuilding New Orleans: Issues, Challenges, and Opportunities; Wayne State University, Detroit, MI, Sept. 16, 2005.
- Lemke, L.D.**, 2005, New Orleans Sustainability: Geologic Vulnerabilities of the Crescent City [invited oral pres.], CE6270 Sustainable Development Seminar; Wayne State Univ., Detroit, MI, Sep. 9, 2005.
- Lemke, L.D.**, 2005, Mixing oil and water: Reinforcing groundwater concepts through comparisons with petroleum migration, [oral], Teaching Hydrogeology in the 21st Century – NSF Cutting Edge Workshop, University of Nebraska, Lincoln, NE, July 23-28, 2005.
- Lemke, L.D.**, 2005, Spatial Correlation of Physical Aquifer Properties: Influence on DNAPL Entrapment and Recovery [invited seminar], Johns Hopkins University Center for Environmental and Applied Fluid Mechanics Seminar Series, April 15, 2005.
- Lemke, L.D.**, 2005, Evolving Conceptual Hydrogeologic Models for Complex Glacial Aquifer Systems [invited seminar], Wayne State Univ. Earth and Environmental Science Seminar Series, Feb 21, 2005.
- Lemke, L.D.**, 2004, Development of conceptual hydrogeologic models for complex glacial aquifer systems [oral] Assoc. of Engineering Geologists National Conv., Detroit, MI, Sept 26-Oct 2, 2004.
- Lemke, L.D.**, 2004, TOSC Review of PLS's "Final Feasibility Study & Proposed Response for the Unit E Plume" and "DEQ's Proposed Remedial Alternative" [invited oral presentation], Technical Outreach Services for Communities (TOSC) Public Meeting, Scio Township, MI, Aug 4, 2004.
- Lemke, L.D.**, 2004, 1,4-dioxane under Ann Arbor, Michigan: The role of environmental engineers and hydrogeologists in contaminant remediation [invited oral presentation], University of Michigan Dept. of Civil and Environmental Engineering CEE 260, Ann Arbor, MI, Apr 2, 2004.
- Lemke, L.D.**, 2004, 1,4-dioxane in Ann Arbor: Managing the E-plume [invited oral presentation], Technical Outreach Services for Communities (TOSC) Public Meeting, Ann Arbor, MI, Mar 24, 2004.

- Lemke, L.D.**, 2004, Anatomy of a contaminated aquifer system: 1,4-dioxane under Ann Arbor, Michigan; Michigan Mineralogical Society [invited oral presentation], Cranbrook Institute of Science, Bloomfield Hills, MI, Feb 9, 2004.
- Lemke, L.D.**, 2003, 1,4-Dioxane groundwater contamination at the Pall Life Sciences site, Ann Arbor, Michigan; St. Mary's Student Parish Peace and Justice Commission Educational Lecture Series [invited oral presentation], Ann Arbor, MI, Sept 8, 2003.
- Lemke, L.D.**, 2003, DNAPL source zone remediation: Chlorinated solvents in a homogeneous, nonuniform sand aquifer; *National Research Council Committee on Source Removal of Contaminants in the Subsurface* [invited oral presentation], Irvine, CA, Aug 18, 2003.
- Lemke, L.D.**, 2000, When the tail wags the dog: Monte Carlo and partitioned multiobjective risk methods for risk assessment of groundwater contamination [poster], Risk Based Decision Making in Groundwater Resources IX, United Engineering Foundation Conference, Santa Barbara, CA, Oct 15-20, 2000.
- Lemke, L.D.** and L.M. Abriola, 2000, Ground water flow and contaminant transport modeling in glacial aquifers: integration of deterministic and stochastic hydrostratigraphic approaches [poster], SEPM/IAS Research Conference: Hydrogeology of Sedimentary Aquifers, Santa Fe, NM, Sept 24-27, 2000.
- Lemke, L.D.**, E.J. Hahn, C.D. Drummond, K.M. Rathfelder, L.M. Abriola, and P. Goovaerts, 2000, Comparison of sequential Gaussian and sequential indicator geostatistical simulations using three-dimensional flow and transport models in a homogenous, non-uniform aquifer [poster]: Gordon Research Conference (Modeling Flow and Transport in Porous Media), Aug 6-10, 2000.
- Lemke, L.D.**, E.J. Hahn, C.D. Drummond, K.M. Rathfelder, L.M. Abriola, and P. Goovaerts, 2000, Comparison of sequential Gaussian and sequential indicator geostatistical simulations using three-dimensional flow and transport models in a homogenous, non-uniform aquifer [oral]: North American Council on Geostatistics, Annual Meeting, Aug 11, 2000.