

# JOSHUA D. SHROUT

## CURRICULUM VITAE

### Education/Training

Post-doc University of Washington/ University of Iowa—Microbiology (2003-2007)  
Post-doc University of Iowa—Civil and Environmental Engineering (2002-2003)  
Ph.D. University of Iowa—Civil and Environmental Engineering (2002)  
M.S. Marquette University—Civil and Environmental Engineering (1998)  
B.S. Northwestern University—Environmental Engineering (1994)

### Positions and Appointments

2011- Concurrent Appointment—Department of Biological Sciences,  
University of Notre Dame

2008- Member—Eck Institute for Global Health, University of Notre Dame

2007- Assistant Professor—Department of Civil Engineering and Geological Sciences,  
University of Notre Dame

2003-2007 Senior Fellow/Post-Doctoral Fellow—Department of Microbiology,  
University of Washington/University of Iowa; Matthew R. Parsek, research  
advisor. Research: Biofilm development and cell-cell signaling of *Pseudomonas  
aeruginosa*

2002-2003 Post-Doctoral Scholar—Department of Civil and Environmental Engineering,  
University of Iowa; Jerald L. Schnoor and Pedro J. Alvarez, research advisors.  
Research: Application of molecular techniques to investigate bioremediation of  
perchlorate and RDX.

1998-2002 Graduate Research Assistant—Civil and Environmental Engineering,  
University of Iowa; Gene F. Parkin, research advisor. Research: Degradation of  
perchlorate by mixed- and pure-culture bacteria.

1998 Environmental Engineer, Summer Internship  
Applied Technologies, Inc., Brookfield, Wisconsin. Projects: Design of Biological  
Treatment Systems for Industrial Wastewaters.

1996-1998 Graduate Research Assistant  
Marquette University; Daniel H. Zitomer, research advisor. Research: Biological  
Treatment of High-Strength Industrial Wastewaters.

1995-1996 Environmental Engineer  
ENSA Environmental, Inc., Northbrook, Illinois. Projects: Underground Storage  
Tank Removal Oversight, Asbestos Inspection, and Air Quality Monitoring.

## Fellowships and Awards

Indiana CTSI (Clinical Translational Sciences Institute) Young Investigator Basic Science Award,  
2010-2012

NIH-Training Grant on Mechanisms of Parasitism Post-Doctoral NRSA Fellow,  
University of Iowa, 2004-2006

NSF-Research Training Grant in Gene Expression and Bioremediation Fellow,  
University of Iowa, 1998-2002

University of Iowa Graduate Student Senate Travel Grant, May 2002

## Funded Research

Co-Principal Investigator (2011-2014)  
DE SC-0006642: "In Situ Correlated Molecular Imaging of Chemically Communicating Microbial  
Communities"—DOE Office of Biological and Environmental Research (Paul W. Bohn, Principal  
Investigator) (\$1,370,000)

Co-Principal Investigator (2011-2014)  
1R01GM100470-01: "Study of the interplay of motility mechanisms during swarming of  
*Myxococcus xanthus*"—NIH (Mark S. Alber, Principal Investigator) (\$800,285)

Principal Investigator (2010-2012)  
"Discerning Coordinated Surface Motility of *Pseudomonas aeruginosa*"—Indiana CTSI (Clinical  
Translational Sciences Institute; NIH UL1RR025761) (\$180,820)

Principal Investigator (2008-2009)  
W912HZ-08-1-0002 : "Identification of Structural and Genetic Factors Critical to the Production  
of Microbial Biopolymers with Desirable Properties"—U.S. Army Engineer Research and  
Development Center (ERDC) (\$75,000)

Principal Investigator (2008)  
"Survival Mechanisms of Pathogenic Bacteria in Water Distribution Systems"—University of  
Notre Dame Faculty Research Program (\$9,992)

Co-Principal Investigator/Post-Doctoral Scholar (2002-2003)  
DAAA09-02-C-0071: "Treatability and Demonstration Project for Phytoremediation and  
Rhizodegradation of Perchlorate in Groundwater at the Longhorn Army Ammunition Plant,  
Karnack, Texas"—U.S. Army Operations Command (Jerald L. Schnoor, Principal Investigator)  
(\$243,561)

## Professional Services

Scientific Committee member

- WEF/IWA Biofilm Reactor Technology Conference 2010 (Portland, OR, USA)

Session chair

- Biofilm Development Session at the 5<sup>th</sup> ASM Conference on Biofilms. November 15-19, 2009, Cancun, MEXICO.

*ad hoc* Reviewer

- Applied and Environmental Microbiology* (2010-present)
- PLoS Pathogens* (2011)
- Microbiology* (2011)
- Journal of Bacteriology* (2009)
- Journal of Applied Microbiology* (2009-2010)
- Environmental Science and Technology* (1998-present)
- International Society for Microbial Ecology* (2010)
- FEMS Microbial Ecology* (2010)
- FEMS Microbiology Letters* (2010)
- Biotechnology and Bioengineering* (2010)
- Biofouling* (2009)
- Trends in Microbiology* (2008, 2009)
- Nature Protocols* (2008)
- Langmuir* (2008)
- Journal of Environmental Engineering* (2008)
- Applied Microbiology and Biotechnology* (2007)
- Applied Microbiology* (2007)
- Biodegradation* (2005)
- Water Research* (2005)
- Journal of Hazardous Materials* (2005)
- Journal of Chemical Technology and Biotechnology* (2005)

Proposal Reviewer

- U.S. Department of Defense-Defense Threat Reduction Agency (DTRA) (2011)
- Dutch Technology Foundation STW (2010)
- U.S. Army Engineering Research Development Center (ERDC) (2010)
- NSF Panelist (2009)
- AAAS-KACST Grant Program (2008)
- U.S. Army Research Office (2006)
- NIWR-USGS National Competitive Grants Program (2005)

External Advisor—Iowa City High School Science Club (2005)

## Professional Societies

American Society of Microbiology

(since 2002)

## Peer-Reviewed Publications

Staudt, A.K, L.G. Wolfe, and J.D. Shrout (2011) Variations in exopolysaccharide production by *Rhizobium tropici*. *Arch. Microbiol.* DOI: 10.1007/s00203-011-0742-5.

Morris, J.D., J.L. Hewitt, L.G. Wolfe, N.G. Kamatkar, S.M. Chapman, J.M. Diener, A.J. Courtney, W.M. Leevy, and J.D. Shrout (2011) Imaging and Analysis of *Pseudomonas aeruginosa* Swarming and Rhamnolipid Production. *Appl. Environ. Microbiol.* 77(23): 8310-8317.

Kamatkar, N.G., M.J. Sarna, and J.D. Shrout (2011) Population dynamics during swarming of *Pseudomonas aeruginosa*. *Commun. Integr. Biol.* 4(6): 689-691.

Kamatkar, N.G. and J.D. Shrout. (2011) Surface hardness impairment of quorum sensing and swarming for *Pseudomonas aeruginosa*. *PLoS One.* 6(6): e20888.

Du, H. J., Z. L. Xu, J. D. Shrout, and M. Alber. (2011) Multiscale modeling of *Pseudomonas aeruginosa* swarming. *Math. Models Meth. Appl. Sci.* 21: 939-954.

Shrout, J. D., T. Tolker-Nielsen, M. Givskov, and M. R. Parsek. (2011) The contribution of cell-cell signaling and motility to bacterial biofilm formation. *MRS Bull.* 36(5): 367-373.

Conrad, J. C., M. L. Gibiansky, F. Jin, V. D. Gordon, D. A. Motto, M. A. Mathewson, W. G. Stopka, D. C. Zelasko, J. D. Shrout, and G. C. Wong. (2011) Flagella and Pili-Mediated Near-Surface Single-Cell Motility Mechanisms in *P. aeruginosa*. *Biophys. J.* 100(7): 1608-1616.

Gibiansky, M.L., J.C. Conrad, F. Jin, V.D. Gordon, D.A. Motto, M.A. Mathewson, W.G. Stopka, D.C. Zelasko, J.D. Shrout, and G.C.L. Wong. (2010) Bacteria Use Type IV Pili to Walk Upright and Detach from Surfaces. *Science* 330(6001): 197.

Smalyukh, I. I., J. Butler, J. D. Shrout, M. R. Parsek and G. C. L. Wong. (2008). Elasticity-mediated nematiclike bacterial organization in model extracellular DNA matrix. *Phys. Rev. E* 78(3): 30701-30704.

Starner, T. D., J. D. Shrout, M. R. Parsek, P. C. Appelbaum and G. Kim. (2008) Subinhibitory Concentrations of Azithromycin Decrease Nontypeable *Haemophilus influenzae* Biofilm Formation and Diminish Established Biofilms. *Antimicrob. Agents Chemother.* 52(1): 137-45.

Shrout, J.D., D.L. Chopp, C.L. Just, M. Hentzer, M. Givskov, and M.R. Parsek. (2006) "The impact of quorum sensing and swarming motility on *Pseudomonas aeruginosa* biofilm formation is nutritionally conditional." *Mol. Microbiol.* 62(5): 1264-1277.

Shrout, J.D. and G.F. Parkin. (2006) "Influence of Electron Donor, Oxygen, and Redox Potential on Bacterial Perchlorate Degradation." *Water Res.* 40(6): 1191-1199.

Shrout, J.D., G.C. Struckhoff, G.F. Parkin and J.L. Schnoor. (2006) "Stimulation and Molecular Characterization of Bacterial Perchlorate Rhizodegradation by Plant-Produced Electron Donors". *Environ. Sci. Technol.* 40(1): 310-317.

Sherburne, L.A., J.D. Shrout, and P.J. Alvarez. (2005) "Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) Degradation by *Acetobacterium paludosum*." *Biodegradation* 16(6): 539-547.

Shrout, J.D., P. Laresse-Casanova, M.M. Scherer and P.J. Alvarez. (2005) "Sustained and Complete Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX) Degradation in Zero-Valent Iron Simulated Barriers under Different Microbial Conditions". *Environ. Technol.* 26(10): 1115-1126.

Shrout, J.D., T. E. Scheetz, T. L. Casavant, and G. F. Parkin. (2005) "Isolation and Characterization of Autotrophic, Hydrogen-Utilizing, Perchlorate-Reducing Bacteria." *Appl. Microbiol. Biotechnol.* 67(2): 261-268.

Shrout, J.D., A.G.B. Williams, M.M. Scherer, and G.F. Parkin (2005) "Inhibition of Microbial Perchlorate Reduction by Zero-Valent Iron." *Biodegradation* 16(1): 23-32.

Zitomer, D.H. and J.D. Shrout. (2000) "High-Sulfate, High-Chemical Oxygen Demand Wastewater Treatment Using Aerated Methanogenic Fluidized Beds" *Wat. Environ. Res.* 1:90-97.

Zitomer, D.H. and J.D. Shrout. (1998) "Feasibility and Benefits of Methanogenesis Under Oxygen-Limited Conditions" *Waste Mgmt.* 18:107-116.

## Book Chapters

Shrout, J.D. and M.R. Parsek (2006) "Quorum Sensing: Coordinating Group Behavior Through Intercellular Signals" in Molecular Paradigms of Infectious Disease: A Bacterial Perspective. C.A. Nickerson and M.J. Schurr., eds. Springer. New York. ISBN: 0-387-30917-9.

## Invited Presentations

"Discerning Surface Motility of *Pseudomonas aeruginosa*" University of California-San Francisco. October 18, 2011, San Francisco, CA, U.S.A.

"Discerning Surface Motility Behavior of *Pseudomonas aeruginosa*" University of Michigan. September 8, 2011, Ann Arbor, MI, U.S.A.

"Discerning Surface Motility of *Pseudomonas aeruginosa*" Indiana University-Bloomington. October 12, 2010, Bloomington, IN, U.S.A.

"Discerning Coordinated Surface Motility of *Pseudomonas aeruginosa*" Indiana University School of Medicine. August 16, 2010, Indianapolis, IN, U.S.A.

“Understanding a different kind of stimulus package—the contribution of environment, cell-cell signaling, and motility on bacterial biofilm development” Columbia University. January 22, 2010, New York, NY, U.S.A.

“Understanding how bacteria coordinate as communities—the contribution of environmental sensing, cell-cell signaling, and motility on developing biofilms” Carnegie Mellon University. September 11, 2009, Pittsburgh, PA, U.S.A.

“Importance and control of swarm motility by *Pseudomonas aeruginosa*.” University of Illinois—Urbana/Champaign. November 12, 2008, Urbana, IL, U.S.A.

“Do these bacteria know what they're doing?—Surface and community sensing during biofilm development.” Northwestern University. November 7, 2008, Evanston, IL, U.S.A.

“Do these bacteria know what they're doing?—Surface and community sensing during biofilm development.” Southern Great Lakes Industrial Microbiology Meeting. October 25, 2008, Chicago, IL, U.S.A.

“The contribution of AHL quorum sensing to *Pseudomonas aeruginosa* biofilm formation, surface interaction, and swarm motility.” University of Wisconsin-Milwaukee. April 4, 2008, Milwaukee, WI, U.S.A.

“Do these bacteria know what they're doing?—Surface and community sensing during biofilm development.” Marquette University. April 3, 2008, Milwaukee, WI, U.S.A.

“The Contribution of Quorum Sensing to *Pseudomonas aeruginosa* Swarming and Biofilm Formation is Nutritionally Conditional.” 88<sup>th</sup> Annual Meeting of the AAAS Pacific Division. June 19, 2007, Boise, ID, U.S.A.

“Cell Signaling and Motility Affect Architecture of *Pseudomonas aeruginosa* Biofilms.” Marquette University. November 18, 2004, Milwaukee, WI, U.S.A.

“Potential for *In Situ* Rhizodegradation of Perchlorate.” Iowa Groundwater Association Annual Meeting. November 10, 2004, Coralville, IA, U.S.A.

“Inhibition of Bacterial Perchlorate Degradation by Zero-Valent Iron.” Northwestern University. January 29, 2003, Evanston, IL, U.S.A.

“Characterization of Methanogenic, Perchlorate-Acclimated, Mixed Cultures.” Swiss Federal Institute for Environmental Science and Technology (EAWAG), ETH. June 19, 2001, Dübendorf, SWITZERLAND.

## **Abstracts and other Publications**

Kamatkar, N.G., Sarna, M.J., and Shrout, J.D. “Limiting *Pseudomonas aeruginosa* swarming by Surface Impairment of AHL Quorum Sensing” ASM Conference on Cell-Cell Communication in Bacteria, November 6-9, 2011, Miami, FL, U.S.A.

Shrout, J.D. "Surface Characteristics Influence Quorum Sensing and Swarming of *Pseudomonas aeruginosa*" The 2011 Molecular Genetics of Bacteria and Phages Meeting, August 2-7, 2011, Madison, WI, U.S.A.

Gibiansky, M.L., Conrad, J.C., Motto, D.A., Wong, G.C.L., and Shrout, J.D. "Discerning surface motility patterns important to biofilm formation" EUROBIOFILMS 2011 - Second European Congress on Microbial Biofilms, July 6-8, 2011, Copenhagen, DENMARK.

Wolfe, L.G., A.K. Staudt, and J.D. Shrout "Yield and Characterization of ex planta EPS Produced by *Rhizobium tropici*" American Society of Microbiology 110<sup>th</sup> General Meeting. May 23-27, 2010, San Diego, CA, U.S.A.

Motto, D.A., M. L. Gibiansky, J. C. Conrad, V. D. Gordon, M. A. Mathewson, G. C. Wong and J. D. Shrout "Carbon source affects multiple surface motility aspects of *Pseudomonas aeruginosa*" 5th ASM Conference on Biofilms. November 15-19, 2009, Cancun, MEXICO.

Gordon, V.D., J.D. Shrout, I. Smalyukh, J. Butler, K.M. Colvin, G. Spalding, M.R. Parsek, G.C.L. Wong "Laser trapping directly probes inter-bacterial interactions and provides a platform for systematic study of spatiotemporal dependencies of quorum sensing and motility" 5th ASM Conference on Biofilms. November 15-19, 2009, Cancun, MEXICO.

Conrad, J.C., F. Jin, V. D. Gordon, M. L. Gibiansky, D. A. Motto, M. A. Mathewson, W. G. Stopka, D. C. Zelasko, J. D. Shrout, G. C. Wong "High-throughput biometric analysis of *Pseudomonas aeruginosa* flagella-based surface motility" 5th ASM Conference on Biofilms. November 15-19, 2009, Cancun, MEXICO.

M. L. Gibiansky, Conrad, J.C., F. Jin, V. D. Gordon, F. Jin, D. A. Motto, M. A. Mathewson, W. G. Stopka, D. C. Zelasko, J. D. Shrout, G. C. Wong "High-throughput biometrics for bacterial motility" 5th ASM Conference on Biofilms. November 15-19, 2009, Cancun, MEXICO.

Shrout, J.D. "Surface factors influence swarm motility of *Pseudomonas aeruginosa*" American Chemistry Society Surface and Colloids Meeting. June 14-19, 2009, New York, NY, U.S.A.

Staudt, A.K., L.G. Wolfe, and J.D. Shrout "Identification of Environmental and Structural Factors Critical to the Production of Exopolysaccharides by *Rhizobium tropici*" American Society of Microbiology 109<sup>th</sup> General Meeting. May 17-21, 2009, Philadelphia, PA, U.S.A.

Motto, D.A., N. G. Kamatkar, J. L. Hewitt, M. R. Parsek, and J. D. Shrout "Surface factors influence swarm motility of *Pseudomonas aeruginosa*" American Society of Microbiology 109<sup>th</sup> General Meeting. May 17-21, 2009, Philadelphia, PA, U.S.A.

Aruguete, D.M., J.S. Guest, J.D. Shrout, N.G. Love, and M.F. Hochella, Jr. "Bacterial Physiology and Viability in the Presence of Quantum Dot Nanoparticles: Towards an Environmental Perspective." American Geophysical Society Fall Meeting. December 10-14, 2007, San Francisco, CA, U.S.A.

Shrout, J.D., J. Cardon, and M.R. Parsek. "The contribution of AHL quorum sensing to *Pseudomonas aeruginosa* surface interaction and swarm motility." 3rd ASM Conference on Cell-Cell Communication on Bacteria. October 7-10, 2007, Austin, TX, U.S.A.

Shrout, J.D. and M.R. Parsek. "The impact of quorum sensing and swarming motility on *Pseudomonas aeruginosa* biofilm formation is nutritionally conditional." 4th ASM Conference on Biofilms. March 25-29, 2007, Quebec City, Quebec, CANADA.

Butler, J.C., J. D. Shrout, I. Smalyukh, J. Manual, G. Spalding, G. C. L. Wong, and M. R. Parsek. "Generating biofilms with optical tweezers: the influence of quorum sensing and motility upon *Pseudomonas aeruginosa* aggregate formation." 4th ASM Conference on Biofilms. March 25-29, 2007, Quebec City, Quebec, CANADA.

Shrout, J.D., D.L. Chopp, and M.R. Parsek. "Quorum Sensing and Motility Affect Architecture of *Pseudomonas aeruginosa* Biofilms." American Society of Microbiology 105<sup>th</sup> General Meeting. June 5-9, 2005, Atlanta, GA, U.S.A.

Shrout, J.D., J.L. Schnoor, and G.F. Parkin. "Effect of Electron Donor Addition and Redox Conditions on Bacterial Perchlorate Degradation." 5<sup>th</sup> International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 24-27, 2004, Monterey, CA, U.S.A.

Shrout, J.D., P. Larese-Casanova, M.M. Scherer, and P.J. Alvarez. "Sustained RDX Degradation in Bioaugmented, Simulated, Fe(0) Permeable Reactive Barriers." 5<sup>th</sup> International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 24-27, 2004, Monterey, CA, U.S.A.

Shrout, J.D., M.L. Seppanen, G.F. Parkin, and J.L. Schnoor. (2003) "Utilization Of Plant-Produced Electron Donors For Bacterial Perchlorate Degradation." In Proceedings of *Air & Waste Management Association's 96th Annual Conference and Exhibition*. June 22-26, 2003. San Diego, California, U.S.A.

Shrout, J.D., B. Oh, G. F. Parkin, and P. J. Alvarez "Enhanced RDX Degradation by Dissimilatory Iron-Reducing Bacteria in Flow-Through Fe(0) Columns." American Society of Microbiology 103<sup>rd</sup> General Meeting. May 18-22, 2003, Washington D.C., U.S.A.

Shrout, J.D. and G.F. Parkin. "Isolation of Hydrogen-Utilizing, Autotrophic, Perchlorate-Degrading Bacteria." 11<sup>th</sup> Biocatalysis and Bioprocessing Conference. October 21-23, 2002, Iowa City, IA, U.S.A.

Shrout, J.D. (2002) *Characteristics and Electron Donor Requirements of Perchlorate Degradation by Mixed and Pure-Culture Bacteria*. Ph.D. Dissertation. The University of Iowa.

Shrout, J.D. and G.F. Parkin. "Electron Donor Requirements And Redox Conditions For Perchlorate Degradation." 3<sup>rd</sup> International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 20-23, 2002, Monterey, CA, U.S.A.

Shrout, J.D. and G.F. Parkin. "Isolation of Hydrogen-Utilizing, Autotrophic, Perchlorate-Degrading Bacteria." American Society of Microbiology 102<sup>nd</sup> General Meeting. May 19-23, 2002, Salt Lake City, UT, U.S.A.

Shrout, J.D. and G.F. Parkin. "Electron Donor Requirements And Redox Conditions For Perchlorate Degradation." 10<sup>th</sup> Biocatalysis and Bioprocessing Conference. October 22-24, 2001, Iowa City, IA, U.S.A.

Shrout, J.D. and G.F. Parkin. "Characterization of Methanogenic, Perchlorate-Acclimated, Mixed Cultures." 6th International Symposium on In Situ and On-Site Bioremediation. June 4-7, 2001, San Diego, CA, U.S.A.

Shrout, J.D. and G.F. Parkin. "Inhibition Of Anaerobic Perchlorate Biotransformation By Fe(0)." 9th Biocatalysis and Bioprocessing Conference. October 23-25, 2000, Iowa City, IA, U.S.A.

Shrout, J.D., and G.F. Parkin. (2000) "Inhibition Of Anaerobic Perchlorate Biotransformation By Fe(0)" In Proceedings of 2<sup>nd</sup> International Conference on Remediation of Chlorinated and Recalcitrant Compounds. May 22-25, 2000. Monterey, CA, U.S.A. Battelle Press.

Mason, M.G., J.D. Shrout, and G.F. Parkin. "Enhanced Anaerobic Degradation of Tetrachloroethene and 1,1,1-Trichloroethane Using a Lactate Enriched Methanogenic Culture in the Presence of Zero-Valent Iron." 8<sup>th</sup> Biocatalysis and Bioprocessing Conference. October 25-27, 1999, Iowa City, IA, U.S.A.

Mason, M.G., J.D. Shrout, and G.F. Parkin. "Enhanced Anaerobic Degradation of Tetrachloroethene and 1,1,1-Trichloroethane Using a Lactate Enriched Methanogenic Culture in the Presence of Zero-Valent Iron." 1999 Conference on Hazardous Waste Research—Great Plains/Rocky Mountain Hazardous Substance Research Center. May 24-26, 1999, St. Louis, MO, U.S.A.

Shrout, J.D. (1998) *The Effects of Limited Aeration on Expanded Bed Biological Wastewater Treatment*. M.S. Thesis. Marquette University.

Zitomer, D.H. and J.D. Shrout. (1998) "Limited-Aeration of Methanogenic Systems for Treatment of Sulfate-Containing Wastewater" Proceedings of the 1998 ASCE National Conference on Environmental Engineering. June 7-10, 1998. Chicago, IL, U.S.A.

Zitomer, D.H. and J.D. Shrout. (1997) "Kinetics of COD Biotransformation Under Methanogenic, Limited-Aeration Conditions" *Proceedings 70<sup>th</sup> Annual Water Environment Federation Conference*. October 18-22, 1997. Chicago, IL, U.S.A.

## **Professional Certifications and Licenses**

Engineer in Training—State of Illinois, 1994

International Fire Code Institute UST Decomissioner—State of Illinois, 1996-1998

Visible Emissions Observer—State of Wisconsin, 1995-1996

Asbestos Inspector—State of Kentucky, 1996

Asbestos Inspector—State of Wisconsin, 1995-1996  
Hazardous Waste Operations and Emergency Response, 1995-1997

### **Continuing Education and Special Training**

January 15, 1996—Chicago, IL “8-Hour Waste Operations and Emergency Response Training Refresher 29CFR1910.120” (Baxter Reilly).

February 6-8, 1995—Milwaukee, WI “Asbestos Inspector Training Course” (Milwaukee Asbestos Information Center).

January 10-13, 1995—Chicago, IL “40-Hour Waste Operations and Emergency Response Training 29CFR1910.120” (Baxter Reilly).