

CIVIL, CONSTRUCTION, AND ENVIRONMENTAL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

SEMPRINI, Lewis

Professor

Director of the Western Region Hazardous Substance Research Center

BIRTH DATE

May 23, 1952

DEGREES

B.S.	Chemical Engineering, University of California, Berkeley, 1974
M.S.	Environmental Engineering, Stanford University, 1979
Engineers Degree	Civil Engineering, Stanford University, 1981
Ph.D.	Civil Engineering, Stanford University, 1986

ACADEMIC POSITIONS

Research Assistant, Civil Engineering Department, Stanford University, September 1977-September 1985

Teaching Assistant, Civil Engineering Department, Stanford University, September 1980-June 1981

Research Associate, Department of Civil Engineering, Stanford University, January 1986-December 1990

Lecturer, Department of Civil Engineering, Stanford University, September 1990-December 1990

Senior Research Associate, Department of Civil Engineering, Stanford University, January 1991-March 1993

Assistant Director, Western Region Hazardous Substance Research Center, Department of Civil Engineering, Stanford University, January 1990-March 1993

Associate Professor (Tenured 1996), Department of Civil, Construction, and Environmental Engineering, Oregon State University, March 1993-September 2000

Professor, Department of Civil, Construction, and Environmental Engineering, Oregon State University, September 2000-present

Director of the Western Region Hazardous Substance Research Center, September 2001-present

NON-ACADEMIC POSITIONS

Chemical Engineer, Pacific Gas and Electric Company, Department of Engineering Research, San Ramon, CA, 11/74-6/77

FIELDS OF SPECIALIZATION

Enhanced in-situ bioremediation of chlorinated aliphatic compounds

Physical, chemical, and biological treatment of hazardous substances

Field, laboratory, and modeling studies related to the transport and fate of contaminants in the subsurface

The use of radon and other natural radiogenic isotopes as in-situ tracers for determining properties of the subsurface systems

AWARDS

OSU College of Engineering Award for Outstanding & Sustained Research Leadership – 1999

OSU College of Engineering Research Award for sustained, unusually significant and meritorious achievement in collaborative research and scholarship

PROFESSIONAL ACTIVITIES

Registration

Registered Chemical Engineer, State of California (CA 3749)

Professional Societies

American Chemical Society
American Geophysical Union
American Microbiological Society
Association of Ground Water Scientists and Engineers
Sigma Xi Society

Consulting

AGRA Earth & Environmental, Inc.
Battelle, Columbus, OH
Canonie Engineers
CH2MHill
Lockheed-Martin Corporation
Nestle Corporation
Parsons Engineering
Santa Clara Audubon Society
Weiss Associates
U.S. Air Force
U.S. EPA
Woodward and Clyde, Phoenix, AZ
Woodward and Clyde, Sidney, Australia

Reviewer

Water Resources Research
Water Research
Environmental Science and Technology
Journal of Hydrology
Journal of Ground Water Monitoring and Remediation
Advances in Water Resources
Canadian Journal of Microbiology
Biotechnology and Bioengineering
Bioremediation Journal
Biodegradation
Marine Chemistry
ASCE Journal of Environmental Engineering
U.S. Environmental Protection Agency
U.S. Department of Energy
Society of Environmental Toxicology and Chemistry
University of California Toxic Substances Research and Teaching Program
National Science Foundation

Conference Session Chair

- “Chlorinated Solvents,” at the Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, San Diego, CA, March 19-21, 1991
- “Aerobic Treatment of Chlorinated Solvents,” at the Second Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, San Diego, CA, April 5-8, 1993
- “In-situ Bioremediation,” at the International Symposium on Engineering Hydrology, San Francisco, CA, July 25-30, 1993
- “Aerobic Treatment of Chlorinated Solvents,” at the Third Battelle Conference on: In situ and On-Site Bioreclamation C An International Symposium, San Diego, CA, April 23-27, 1995
- “Bioremediation,” Society of Industrial Microbiology Annual Meeting, San Jose, CA, August 6-10
- “Aerobic Treatment of Chlorinated Solvents,” at the Fourth Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, New Orleans, LA, April 28-May 1, 1997
- “Transformation Processes in Natural Attenuation,” at the First International Conference on: Remediation of Chlorinated and Recalcitrant Compounds, May 18-21, 1998, Monterey, CA.
- “Aerobic Treatment of Chlorinated Solvents,” at the Fifth Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, San Diego, CA, April 18-22, 1999
- “Bioremediation II,” at the 4th International Symposium on Subsurface Microbiology, Vail, CO, August 22-27, 1999
- “Remediation,” Gordon Conference on: Modeling of Transport in Porous Media, Andover, NH, August 6-10, 2000
- “Aerobic Treatment of Chlorinated Solvents,” at the Sixth Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, April 22-26 1, 2001, San Diego, CA
- “Cometabolism of Chlorinated Hydrocarbons,” at the Seventh Battelle Conference on: In situ and On-Site Bioreclamation – An International Symposium, June 2-5 1, 2003, Orlando, FL**

Committees

- Bioremediation Workshop, Lawrenceville, NJ, July 12-14, 1991
- DOE Savannah River Field Demonstration of In-situ Bioremediation of Trichloroethylene, Savannah River, SC, January 1991-December 1992
- American Geophysical Union Groundwater Committee, June 1992-December 1993
- Battelle Workshop for the U.S. Air Force on Bioremediation, Wakella Springs, FL, January 1994
- Air Force Workshop of Trichlorethylene Cometabolism in the Vadose Zone, Tyndall AFB, FL, January 1995
- Chairman: Air Force Committee on “Review of the In Situ Treatment of Chlorinated Solvents Using Aerobic Cometabolism,” September 1997-present
- NABIR Science Advisory Panel, Department of Energy, May 2000-present
- DOE Environmental Remediation Sciences Division 2nd Strategic Planning Workshop, September 19-20, 2002

Editorial Board

- Editorial Board, *Bioremediation Journal*, January 1997-present

Guest Editor, "Mechanisms, Kinetics and Modeling of Aerobic Cometabolism," *Biodegradation*, Vol. 12, No. 2, 2001

PUBLICATIONS

Book Editor

- R.E. Hinchee, A. Leeson, L. Semprini, and S.K. Ong, *Bioremediation of Chlorinated and Polycyclic Aromatic Hydrocarbon Compounds*, Lewis Publishers, Boca Raton (1994).
- R.E. Hinchee, A. Leeson, and L. Semprini, *Bioremediation of Chlorinated Solvents*, Battelle Press, Columbus, OH (1995).
- A. Leeson, P.C. Johnson, R.E. Hinchee, L. Semprini, and V.S. Magar, *In Situ Aeration and Aerobic Remediation*, Battelle Press, Columbus, OH (2001).

Book Chapters

- L. Semprini, G.D. Hopkins, D. Grbic-Galic, P.L. McCarty, and P.V. Roberts, "A Laboratory and Field Evaluation of In-Situ Bioremediation of Trichloroethylene, cis-and-trans-Dichloroethylene, and Vinyl Chloride by Methanotrophic Bacteria," in *Bioremediation: Field Experience*, P.E. Flathman, Ed., Lewis Publishers Inc., Chelsea, MI, pp. 383-412 (1993).
- P.L. McCarty and L. Semprini, "Ground-Water Treatment of Chlorinated Solvent in Groundwater Clean-Up Through Bioremediation," in *Handbook of Bioremediation*, Lewis Publishers Inc., Chelsea, MI, pp. 87-116 (1993).
- L. Semprini, "In-situ Transformation of Halogenated Aliphatic Compounds under Anaerobic Conditions," in *Subsurface Restoration*, Herb Ward, J.A. Cherry, and M.R. Scalf, Eds., Ann Arbor Press, Inc., Chelsea, MI, pp. 429-449 (1997).
- L. Semprini, R.L. Ely, and M.M. Lang, "Modeling of Cometabolism for the In-situ Biodegradation and Trichloroethylene and Other Chlorinated Aliphatic Hydrocarbons," in *Bioremediation: Principles and Practice Vol. (1) Fundamentals and Applications*, S.K. Sikdar and R.L. Irvine, Eds., Technomic Publishing Co., Lancaster, PA, pp. 89-134 (1998).

Refereed Journals

- L. Semprini and P. Kruger, "Relationship of Radon Concentration to Spatial and Temporal Variations of Reservoir Thermodynamic Conditions in the Cerro Prieto Geothermal Field," *Geothermics*, Vol. 13, No. 1/2, 103-115 (1984).
- K. Mayer, D. Grbic-Galic, L. Semprini, and P.L. McCarty, "Degradation of Trichloroethylene (TCE) by Methanotrophic Bacteria in a Saturated Laboratory Column of Aquifer Material," *Water Science and Technology*, Vol. 21, 722-736 (1987).
- P.V. Roberts, G.D. Hopkins, D.M. Mackay, and L. Semprini, "A Field Evaluation of In-Situ Biodegradation of Chlorinated Ethenes: Part I, Methodology and Field Site Characterization," *Ground Water*, Vol. 8, No. 4., 591-604 (1990).
- L. Semprini, P.V. Roberts, G.D. Hopkins, and P.L. McCarty, "A Field Evaluation of In-Situ Biodegradation of Chlorinated Ethenes: Part 2, Results of Biostimulation and Biotransformation Experiments," *Ground Water*, Vol. 28, No. 5, 715-727 (1990).
- L. Semprini, G.D. Hopkins, P.V. Roberts, D. Grbic-Galic, and P.L. McCarty, "A Field Evaluation of In-situ Biodegradation of Chlorinated Ethenes: Part 3, Studies of Competitive Inhibition," *Ground Water*, Vol. 29, No. 2, 239-250 (1991).

- L. Semprini and P.L. McCarty, "Comparison Between Model Simulations and Field Results for *In-Situ* Bioremediation of Chlorinated Aliphatics: Part 1, Biostimulation of Methanotrophic Bacteria," *Ground Water*, Vol. 29, No. 3, 365-374 (1991).
- R.A. Johns, L. Semprini, and P.V. Roberts, "Estimation Aquifer Properties by Non-Linear Least Squares Analysis of Pump Test Response," *Ground Water*, Vol. 30, No. 1, 68-77 (1992).
- T.C. Harmon, L. Semprini, and P.V. Roberts, "Simulating Groundwater Solute Transport Using Independently Determined Sorption Parameters," *J. Environmental Engineering Division*, ASCE, Vol. 118, No. 5, 666-689 (1992).
- L. Semprini and P.L. McCarty, "Comparison Between Model Simulations and Field Results for *In-Situ* Bioremediation of Chlorinated Aliphatics: Part 2, Cometabolic Transformations," *Ground Water*, Vol. 30, No. 1, 37-44 (1992).
- L. Semprini, G.D. Hopkins, P.L. McCarty, and P.V. Roberts, "In-situ Biotransformation of Carbon Tetrachloride and Other Halogenated Compounds Resulting from Biostimulation under Anoxic Conditions," *Environ. Sci. and Technol.*, Vol. 26, No. 12, 2454-2460 (1992).
- Semprini, L., G.D. Hopkins, P.V. Roberts, and P.L. McCarty, "Pilot Scale Field Studies of *In Situ* Bioremediation of Chlorinated Solvents," *Journal of Hazardous Materials*, v. 32, 145-162 (1992).
- D.G. Hopkins, L. Semprini, and P.L. McCarty, "Microcosm and In-situ Field Studies of Enhanced Biotransformation of Trichloroethylene by Phenol-Utilizing Microorganisms," *Appl. Environ. Microbiol.*, Vol. 59, No. 7, 2277-2285 (1993).
- P.L. McCarty and L. Semprini, "Engineering and Hydrogeological Problems Associated with *In Situ* Treatment," *J. Hydrological Sciences*, Vol. 38, No. 4, 261-272 (1993).
- G.D. Hopkins, J. Munakata, L. Semprini, and P.L. McCarty, "Trichloroethylene Concentration Effects on Pilot Field-Scale In-situ Groundwater Bioremediation by Phenol-Oxidizing Microorganisms," *Environ. Sci. and Technol.*, Vol. 27, No. 12, 2542-2547 (1993).
- J. Bae, L. Semprini, and P.L. McCarty, "Down-Well Apparatus for Adding Oxygen and Methane into a Contaminated Aquifer for Bioremediation," *J. Environmental Engineering Division*, ASCE, Vol. 121, No. 8, 565-570 (1995).
- V.A. Fry, J.D. Istok, L. Semprini, K.T. O'Reilly, and T.B. Buscheck, "Retardation of Dissolved Oxygen by Trapped Gas in Groundwater," *Ground Water*, Vol. 33, No. 3, 391-398 (1995).
- L. Semprini, P.K. Kitanidis, D. Kampbell, and J.T. Wilson, "Anaerobic Transformation of Chlorinated Aliphatic Hydrocarbons in a Sand Aquifer Based on Spatial Chemical Distributions," *Water Resour. Res.*, Vol. 31, No. 4, 1051-1062 (1995).
- L. Semprini, "In-Situ Bioremediation of Chlorinated Solvents," *Environ. Health Perspect.*, Vol. 103, No. 5, 101-105 (1995).
- M.M. Lang, P.V. Roberts, and L. Semprini, "Model Simulations in Support of Field Scale Design and Operation of Bioremediation Based Cometabolic Degradation," *Ground Water*, Vol. 35, No. 4, 565-573 (1997).
- Y. Kim, L. Semprini, and D.A. Arp, "Aerobic Cometabolism of Chloroform and 1,1,1-Trichloroethane by Butane Grown Microorganisms," *Bioremediation J.*, Vol. 1, No. 2, 135-148 (1997).
- N. Hamamura, C. Page, T. Long, L. Semprini, and D.J. Arp, "Chloroform Cometabolism by Butane-Grown CF8, *Pseudomonas butanovora*, and *Mycobacterium vaccae* JOB5 and Methane-Grown *Methylosinus trichosporium* OB3b," *Appl. Environ. Microbiol.*, Vol. 63, No. 9, 3607-3613 (1997).
- L. Semprini, "Strategies for the Aerobic Co-Metabolism of Chlorinated Solvents," *Curr. Op. Biotech.*, Vol. 8, No. 3, 296-308 (1997).

- A. Tovannabootr and L. Semprini, "Comparison of Long-Term TCE Transformation Ability of Methane and Propane-Utilizing Microorganisms Stimulated from the McClellan AFB Subsurface," *Bioremediation J.*, Vol. 2, No. 2, 105-124 (1998).
- S. Vancheeswaran, R.U. Halden, K.J. Williamson, J.D. Ingle, and L. Semprini, "Abiotic and Biological Transformation of Tetraalkoxysilanes and Trichloroethene/cis-1,2-Dichloroethene Cometabolism Driven by Tetrabutoxysilane-Degrading Microorganisms," *Environ. Sci. Technol.*, Vol. 33, No. 7, 1077-1085 (1999).
- S. Vancheeswaran, M.R. Hyman, and L. Semprini, "Anaerobic Bio-Transformation of Trichlorofluoroethene (TCFE) in Groundwater-Microcosms," *Environ. Sci. Technol.*, Vol. 33, No. 12, 2040-2045 (1999).
- N. Hamamura, R.T. Storfa, L. Semprini, L., and D.J. Arp, "Diversity in Butane Monooxygenases among Butane-Grown Bacteria," *Appl. Environ. Microbio.*, Vol. 65, No. 10, 4586-4593 (1999).
- L. Semprini, O.S. Hopkins, and B.R. Tasker, "Laboratory, Field and Modeling Studies of Radon-222 as a Natural Tracer for Monitoring NAPL Contamination," *Journal of Transport in Porous Media*, Vol. 38, No. 1/2, 223-240 (2000).
- Y. Kim, D.A. Arp, and L. Semprini, "Aerobic Cometabolism of Chlorinated Methanes, Ethanes, and Ethenes by Butane-Utilizing Microorganisms," *J. Environ. Engr.*, Vol. 126, No. 10, 934-942 ASCE (2000).
- P. Jitnuyanonta, L. Sayavedra-Sotob, L. Semprini, "Bioaugmentation of Butane-Utilizing Microorganisms to Promote Cometabolism of 1,1,1-Trichloroethane in Groundwater Microcosms," *Biodegradation*, Vol. 12, 11-22 (2001).
- K.J. Hageman, J.D. Istok, J.A. Field, T. E. Buscheck, and L. Semprini, "In-Situ Anaerobic Transformation of Trichlorofluoroethene in a TCE-Contaminated Aquifer," *Environ. Sci. Technol.*, Vol. 35, No. 9, 1729-1735 (2001).
- L. Semprini, Editorial, Special Issue of Biodegradation, "Mechanisms, Kinetics, and Modeling of Aerobic Cometabolism," *Biodegradation*, Vol. 12, No. 2, 79-80 (2001).
- Y. Kim, D.J. Arp, and L. Semprini, "A Combined Method for Determining Inhibition Type, Kinetic Parameters, and Inhibition Coefficients for Aerobic Cometabolism of 1,1,1-Trichloroethane by a Butane-Grown Mixed Culture," *Biotechnology and Bioengineering*, Vol. 77, 564-576 (2002).
- B.M. Davis, J.D. Istok, and L. Semprini, "Push-pull Partitioning Tracer Tests Using Radon-222 to Quantify Nonaqueous Phase Liquid Contamination," *Journal of Contaminant Hydrology*, Vol. 58, 129-146 (2002).
- S. Yu and L. Semprini, "Comparison of Trichloroethylene Reductive Dehalogenation by Microbial Communities Stimulated on Silicon-Based Organic Compounds as Slow-Release Anaerobic Substrates," *Water Research*, Vol. 36, 4985-4996 (2002).
- Y. Kim, D.J. Arp, and L. Semprini, "Kinetic and Inhibition Studies for the Aerobic Cometabolism of 1,1,1-Trichloroethane, 1,1-Dichloroethylene, and 1,1-Dichloroethane by a Butane-Grown Mixed Culture," *Biotechnology and Bioengineering*, Vol. 80, 499-508 (2002).
- S. Vancheeswaran, S. Yu, P. Daley, R.U. Halden, K.J. Williamson, J.D. Ingle Jr., and L. Semprini, "Intrinsic Remediation of Trichloroethene Driven by Tetraalkoxysilanes as Co-contaminants: Results of Microcosm and Field Studies," *Remediation*, 7-25, Spring (2003).
- D. Frascari, Y. Kim, M.E. Dolan, and L. Semprini, "A Kinetic Study of Aerobic Propane Uptake and Cometabolic Degradation of Chloroform, cis-Dichloroethylene and Trichloroethylene in Microcosms with Groundwater and Aquifer Solids," *Water, Air, & Soil Pollution* Vol. 3, 285-298 (2003).

- B.M. Davis, J.D. Istok, and L. Semprini, "Static and Push-Pull Methods Using Radon-222 to Characterize Dense Nonaqueous Phase Liquid Saturations," *Ground Water* Vol. 41, 470-481 (2003).
- G. Pon, M.R. Hyman, and L. Semprini, "Acetylene Inhibition of Trichloroethene and Vinyl Chloride Reductive Dechlorination," *Environ. Sci. Technol* Vol.37 3181-3188 (2003)
- Y. Kim, J. D. Istok, and L. Semprini, "Single-Well Push-Pull Tests for Assessing the Feasibility of In Situ Aerobic Cometabolism of Chlorinated Aliphatic Hydrocarbons," *Groundwater*, Vol. 42, No.3 329-337 (2004)

Refereed Conference Proceedings

- L. Semprini and P. Kruger, "Radon Transect Analysis in Geothermal Reservoirs," Proceedings, *50th Annual California Meeting of the Society of Petroleum Engineers*, SPE-8890, Los Angeles, CA (1980).
- L. Macias-Chapa, L. Semprini, and P. Kruger, "Radon Emanation and Transect Studies," SPE-8990, Proceedings, *SPE Fifth International Symposium on Oilfield and Geothermal Chemistry*, Stanford CA, 147-153, May 1980.
- L. Semprini, "Radon-222 Concentration of Groundwater from a Test Zone of a Shallow Alluvial Aquifer in the Santa Clara Valley, California," in *Radon, Radium, and Other Radioactivity in Groundwater*, Barbara Graves, Ed., Lewis Publishers, Chelsea, MI, 205-218 (1987).
- L. Semprini, P.V. Roberts, G.D. Hopkins, and P.L. McCarty, "Field Evaluation of Aquifer Restoration by Enhanced Biotransformation," Proceedings, *International Conference on Physicochemical and Biological Detoxification of Hazardous Wastes*, Y.C. Wu, Ed., Technomic Publishing Co, Lancaster, PA, Vol. 2, 955-976 (1989).
- P.L. McCarty, L. Semprini, M.E. Dolan, T.C. Harmon, C. Teideman, and S.M. Gorelick, "In-situ Methanotrophic Bioremediation for Contaminated Groundwater at St. Joseph, Michigan," in *On-Site Bioreclamation*, R.E. Hinchee, R.E. and R.F. Olfenbuttel, Eds., Butterworth-Heinemann, Boston, 16-40 (1991).
- L. Semprini, G.D. Hopkins, P.V. Roberts, and P.L. McCarty, "In-situ Biotransformation of Carbon Tetrachloride, Freon-113, Freon-11, and 1,1,1-TCA Under Anoxic Conditions," in: *On-Site Bioreclamation*, R.E. Hinchee, R.E. and R.F. Olfenbuttel, Eds., Butterworth-Heinemann, Boston, 41-59 (1991).
- L. Semprini, G.D. Hopkins, and P.L. McCarty, "A Field and Modeling Comparison of In Situ Transformation of Trichloroethylene by Methane-Utilizing and Phenol-Utilizers," in *Bioremediation of Chlorinated and Polycyclic Aromatic Hydrocarbon Compounds*, R.E. Hinchee, E., A. Leeson, L. Semprini, and S.K. Ong, Eds., Lewis Publishers, Chelsea, MI, 248-254 (1994).

Conference Proceedings

- L. Semprini and P. Kruger, "Radon Transect Studies in Vapor and Liquid Dominated Geothermal Reservoirs," Proceedings, *The Sixth Workshop on Geothermal Reservoir Engineering*, Technical Report No. 50, Stanford Geothermal Program, Stanford University, 344-349 (1980).
- L. Semprini and P. Kruger, "Radon and Ammonia Transects Across the Cerro Prieto Geothermal Field," *Proceedings/Actas of the Third Symposium on the Cerro Prieto Geothermal Field*, Baja California, Mexico, Conf-820399, 248-256 (1981).
- L. Semprini, P. Kruger, and F. D'Amore, "Interpretation of Radon Concentration in the Serrazzano Zone of the Larderello Geothermal Field," Proceedings, *The Eighth Workshop on Geothermal*

- Reservoir Engineering*, Technical Report No. 60, Stanford Geothermal Program, Stanford University, 248-256 (1982).
- P. Kruger and L. Semprini, "Radon Start-up Analysis at a Roosevelt Hot Springs, Utah, Geothermal Well," Proceedings, *Seventh Annual Geothermal Conference and Workshop*, EPRI, AP271 (1983).
- L. Semprini and P. Kruger, "Simulation of Radon Transport in Geothermal Reservoirs," Proceedings, *The Ninth Workshop on Geothermal Reservoir Engineering*, Technical Report No. 74, Stanford Geothermal Program, Stanford University, 315-322 (1983).
- L. Semprini and P. Kruger, "Radon as an *In-Situ* Tracer in Geothermal Reservoirs," Proceedings, *1985 IIE-EPRI Geothermal Conference and Workshop*, San Diego, CA, June 1985.
- P. Kruger, L. Semprini, D. Nieva, S. Verma, R. Barragan, R. Molinar, A. Aragon, J. Ortiz, C. Miranda, A. Garfías, and M. Gallardo, "Analysis of Reservoir Conditions During Production Start-Up at the Los Azufers Geothermal Field," *Trans. Geoth. Res. Council.*, 9, 527-532 (1985).
- G.D. Hopkins, L. Semprini, P.V. Roberts, and D.M. Mackay, "Automated Data Acquisition for Assessing *In-Situ* Biodegradation of Chlorinated Aliphatics," Proceedings, *Second Outdoor Conference on Aquifer Restoration, Ground Water Monitoring, and Geophysical Methods*, NWWA, Las Vegas, NV, May 23-26, Vol. 1, 201-203 (1988).
- P. Roberts, L. Semprini, G. Hopkins, and P. McCarty, "Biostimulation of Methanotrophic Bacteria to Transform Halogenated Alkenes for Aquifer Restoration," Proceedings, *NWWA Conference on Petroleum, Hydrocarbons, and Organic Chemicals in Groundwater*, Water Well Publishing Co., Dublin, OH, 203-217 (1989).
- P.L. McCarty, Semprini, L. and P.V. Roberts, "Methodologies for Evaluating the Feasibility of *In-Situ* Degradation of Halogenated Aliphatics Groundwater Contaminants by Methanotrophs," Proceedings, *AWMA/EPA International Symposium on Biosystems for Pollution Control*, Air and Waste Management Association, Pittsburgh, PA, 69-82 (1989).
- P. Roberts, L. Semprini, G. Hopkins, P. McCarty, and D. Grbic-Galic, "Biostimulation of Methanotrophic Bacteria to Transform Halogenated Alkenes for Aquifer Restoration," Proceedings, *Environmental Research Conference on Groundwater Quality and Waste Disposal*, Electric Power Research Institute, Palo Alto, CA, 28-1 to 28-19 (1990).
- T.C. Harmon, L. Semprini, and P.V. Roberts, "Investigating the Validity of the Local Equilibrium Assumption at an Experimental Aquifer Restoration Site Using Laboratory-Scale Parameter Estimates," *Proc. Specialty Conf. Envir. Eng. Div. ASCE*, July 8-11, Arlington, VA, 298-306 (1990).
- L. Semprini, G.D. Hopkins, P.V. Roberts, and P.L. McCarty, "Pilot Scale Field Studies of *In-Situ* Bioremediation of Chlorinated Solvents," Proceedings, *4th Annual Symposium of the Gulf Coast Hazardous Substance Research Center*, April 2-3, Beaumont, TX, 18-38 (1992).
- P.L. McCarty and L. Semprini, "Engineering and Hydrogeological Problems Associated with *In-Situ* Treatment," *Proceedings of the In-situ Bioremediation Symposium '92*, S. Lesage, Ed., National Water Research Institute, Environment Canada, September 20-24, Niagara-on-the-Lake, Ontario, 2-13 (1992).
- M.M. Lang, L. Semprini, and P.V. Roberts, "*In-Situ* Bioremediation Using a Recirculation Well," Proceedings, *ASCE International Symposium on Engineering Hydrology*, July 27-30, San Francisco, 880-885 (1993).
- L. Semprini, P. Kitanidis, D. Kampbell, and J.T. Wilson, "Chemical Distributions and Anaerobic Transformation of Chlorinated Aliphatic Hydrocarbons in a Sand Aquifer," *Proceedings, I&EC Special Symposium*, American Chemical Society, September 19-21, Atlanta, GA, 1162-1165 (1994).

- L. Semprini, G.D. Hopkins, and P.L. McCarty, "In-Situ Aerobic Treatment of Trichloroethylene by Phenol-Utilizing Microorganisms: Results of Transient Formate Addition Studies," *Proceedings, I&EC Special Symposium, American Chemical Society, September 19-21, Atlanta, GA, 1330-1333* (1994).
- A. Tovanabootr, S. Russel, N.H. Stoffers, D.J. Arp, and L.Semprini, "An Evaluation of Five Aerobic Cometabolic Substrates for Trichloroethylene Treatment by Microbes Stimulated from the Subsurface of McClellan Air Force Base," in *In-Situ and On-Site Bioremediation* 4(3), B.C. Alleman, and A. Leeson, Eds., Battelle Press, Columbus, OH, 93-99 (1997).
- Y. Kim, L. Semprini, and D.A. Arp, "Aerobic Cometabolism of Chloroform, 1,1,1-trichloroethane, 1,1-dichloroethylene, and Other Chlorinated Aliphatic Hydrocarbons by Butane-Utilizing Microorganisms," in *In-Situ and On-Site Bioremediation* 4(3), B.C. Alleman, and A. Leeson, Eds., Battelle Press, Columbus, OH, 107-112 (1997).
- G. Pon and L.Semprini, "An Anaerobic Microcosm Study of PCE and TCE Degradation by Microbes Stimulated from a Contaminated Site," in *In-Situ and On-Site Bioremediation* 4(3), B.C. Alleman, and A. Leeson, Eds., Battelle Press, Columbus, OH, 247-252 (1997).
- M.G. Cantaloub and L. Semprini, "A Method for Determining Organic-Water Partition Coefficients for Rn-222," *American Chemical Society 214th National Meeting, Las Vegas, NV, September 7-11, 1997*.
- M.G. Cantaloub, J.F. Higginbotham, and L. Semprini, "The Determination of Rn Partition Coefficients for Several Organic Solvents and Liquid Scintillation Cocktails," *43rd Annual Conference on Bioassay, Analytical, and Environmental Radiochemistry, Charleston, SC, November 9-13, 1997*.
- L. Semprini, "In-Situ Bioremediation of Soils Contaminated by Chlorinated Compounds," in *Biotechnology for Soil Remediation: Scientific Bases and Practical Applications*, Milan, November 27-28, 1997.
- L. Semprini, "Current and Potential Applications of In-situ Bioremediation," in *Biotechnology for Soil Remediation: Scientific Bases and Practical Applications*, Milan, November 27-28, 1997.
- S. Vancheeswaran, L. Semprini, G.Pon, K.J. Williamson, J.D. Ingle, and P. Daley, "Anaerobic Transformation of TCE Driven by Organo-Silicon Compounds," in *Natural Attenuation: Chlorinated and Recalcitrant Compounds*, G.B. Wickramanayake and R.E. Hinchee, Eds., Battelle Press, Columbus, OH, 57-62 (1998).
- D.J. Jerger, R.S. Skeen, L. Semprini, D. P. Leigh, S. Granade, and T. Margrave, "Design of In-Situ Bioremediation System to Treat Groundwater Contaminated by Chlorinated Solvents," in *Designing and Applying Treatment Technologies: Chlorinated and Recalcitrant Compounds*, G.B. Wickramanayake and R.E. Hinchee, Eds., Battelle Press, Columbus, OH, 27-32 (1998).
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- M. Cantaloub, M.D. Humphrey, J.D. Istok, and L. Semprini, "Monitoring NAPL Remediation Using Rn-222 as an *In-Situ* Indicator," American Geophysical Union Conference, San Francisco, CA, (December 6-10, 1998).
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- G. Pon, and L. Semprini, "Complete Anaerobic Transformation of PCE to Ethylene by the Mixed-Culture from the Evanite Site," The Fifth International Symposium on In-situ and On-Site Bioremediation, San Diego, CA (April 19-22, 1999).
- Y. Kim, D. Arp, and L. Semprini, "Kinetic Studies of Aerobic Cometabolism of the Single and Mixtures of 1,1,1-Trichloroethane, 1,1-Dichloroethylene, and 1,1-Dichloroethene by Butane-Grown Microorganisms," The Fifth International Symposium on In-Situ and On-Site Bioremediation, San Diego, CA (April 19-22, 1999).
- A. Tovanabootr and L. Semprini, "Aerobic Cometabolism of TCE and 1,1,1-TCA by Subsurface Microorganisms from the McClellan AFB Grown on Propane and Phenol as Mixed Cometabolic Substrates," The Fifth International Symposium on In-Situ and On-Site Bioremediation, San Diego, CA (April 19-22, 1999).
- L. Semprini, S. Vancheeswaran, S. Tejasen, S. Yu, and R. Halden, "Tetrabutoxysilane (TBOS) and Tetrakis (Ethybutoxy) Silane (TKEBS) as Slow Release Substrates for Driving the Anaerobic and Aerobic Transformation of Chlorinated Solvents," The Fifth International Symposium on In-Situ and On-Site Bioremediation, San Diego, CA (April 19-22, 1999).
- M.T. Keeling and L. Semprini, "Anaerobic Microcosm Studies in Support of a Field Demonstration of Enhanced TCE Transformation at IRP Site 24, Point Mugu Naval Weapons Station, CA," 4th International Symposium on Subsurface Microbiology, Vail, CO (August 22-27, 1999).
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- L. Semprini, M. Cantaloub, B. Davis, M. Humphrey, and J. Istok, "Push-Pull Studies Using Radon-222 to Monitor the remedation of NAPL," Fourth USA/CIS Joint Conference, American Institute of Hydrology, San Francisco, CA (November 7-10, 1999).

- Tovavabootr, A., L. Semprini, M. Dolan, and Y. Kim, "Cometabolism of Chlorinated Aliphatic Hydrocarbons using Propane and Butane-Utilizing Microorganisms," Fourth USA/CIS Joint Conference, American Institute of Hydrology, San Francisco, CA, (November 7-10, 1999).
- Y. Kim, J. D. Istok, D. Frascari, M. E. Dolan, and L. Semprini. "Single-Well-Push-Pull Tests for Evaluating the *In-Situ* Aerobic Treatment of Chlorinated Aliphatic Compounds in Groundwater," Abstract B21A-07, American Geophysical Union 2000 Fall Meeting, San Francisco, CA.
- S. Connon, A. Tovanabootr, S. Giovannoni and L. Semprini, "Dilution Culture Methods and LH-PCR to Compare the Bacterial Community Composition in Propane Sparged Versus Air Sparged Groundwater at McClellan Air Force Base, CA," Spring Meeting of the American Chemical Society, San Diego, CA (April 2-5, 2001).
- Y. Kim, J. D. Istok, and L. Semprini, "Assessing the Feasibility of *In-Situ* Aerobic Cometabolism of Chlorinated Solvents by Single Well Push-Pull and Natural Gradient Drift Tests in McClellan AFB, CA," Abstract B42B-0140, American Geophysical Union 2001 Fall Meeting, San Francisco, CA (2001).
- B. Timmins, M.E. Dolan, A. Tovanabootr, M. Azizian, and L. Semprini. "Comparison of Microcosm Tests and a Field Demonstration of Cometabolic Air Sparging With Propane for the Bioremediation of Trichloroethylene and *cis*-Dichloroethylene," American Geophysical Union 2001 Fall Meeting, San Francisco, CA.
- L. Semprini, M.E. Dolan, Hee Lim, H.D. Hopkins, and P.L. McCarty, "Modeling Studies of the Bioaugmentation of a Butane-Mixed Culture for the Aerobic Cometabolism of 1,1-DCE and 1,1,1-TCA," American Geophysical Union 2001 Fall Meeting, San Francisco, CA.
- B.M. Davis, L. Semprini, and J.D. Istok, "Radon as a Natural Partitioning Tracer for Locating and Quantifying DNAPL Saturation in the Subsurface," American Geophysical Union 2002 Fall Meeting, San Francisco, CA.
- B.M. Davis, L. Semprini, and J.D. Istok, "Radon as a Natural Partitioning Tracer for Locating and Quantifying DNAPL Saturation in the Subsurface," SERDP and ESTCP Workshop, Washington D.C. Dec 2-4, 2002.
- Semprini, L., Y. Kim, and J.D. Istok, "Single-Well-Gas-Sparging Tests for Assessing the Feasibility for In-situ Aerobic Treatment of CAH Mixtures," SERDP and ESTCP Workshop, Washington D.C. Dec 2-4, 2002.
- Semprini, L., Y. Kim, and J.D. Istok, "Single-Well-Gas-Sparging Tests for Assessing the Feasibility for In-situ Aerobic Treatment of CAH Mixtures," American Geophysical Union 2002 Fall Meeting, San Francisco, CA.

INVITED LECTURES

- "Enhanced Reductive Dechlorination: In Situ Carbon Tetrachloride Transformation Under Anoxic Conditions," NCGWR Conference on Subsurface Restoration, Dallas, TX (June 21-24, 1992).
- "In Situ Bioremediation of Chlorinated Solvents," NIEHS Conference on Biodegradation - Its Role in Reducing Toxicity and Exposure to Environmental Contaminants, Research Triangle Park, NC (April 26-28, 1993).
- "Bioremediation of Chlorinated Solvents," Gordon Conference on Applied and Environmental Microbiology, Colby-Sawyer College, New London, NH (July 11-16, 1993).

- “Recirculation Well Technology for In-Situ Bioremediation,” Five Center Technology Conference of the Hazardous Substance Research Centers,” Mohonk Lake, NY (October 10-12, 1993).
- “Bioremediation of Chlorinated Solvents Using Butane and Propane-Utilizers,” Engineering Foundation Conference on Biodegradation of Surface and Subsurface Contamination, Palm Coast, FL (January 21-26, 1996).
- “Engineering In Situ Bioremediation,” Hazardous Waste Solvents in Subsurface Environments: Transportation Risks, Remediation, University of Washington (September 9-10, 1996).
- “Overview of Chlorinated Solvent Bioremediation Technology,” EPA/HSRC Technology Transfer Conference, Albuquerque TVI (July 12, 1996).
- “In Situ Bioremediation of Soils Contaminated by Chlorinated Compounds,” in: Biotechnology for Soil Remediation: Scientific Bases and Practical Applications, Milan (November 27-28, 1997).
- “Current and Potential Applications of In Situ Bioremediation in: Biotechnology for Soil Remediation: Scientific Bases and Practical Applications, Milan (November 27-28, 1997).
- “Determining if In Situ Bioremediation is Successful,” Bioremediation for Industry Conference, University of Notre Dame (March 8-11, 1998).
- “Aerobic Cometabolism of Chlorinated Solvents” SERDP and ESTCP Symposium, Crystal City, VA (December 1-3, 1998).
- “Aerobic Cometabolism of Chlorinated Aliphatic Hydrocarbons by Microorganisms Grown on Propane and Butane,” Center for Biotechnology, Lawrence Berkeley Laboratory, University of California, Berkeley (January 26, 1999).
- “Microcosm Protocol for Evaluating the Potential of Aerobic Cometabolism of Chlorinated Aliphatic Hydrocarbon using Gaseous Substrates,” SERDP and ESTCP Symposium, Crystal City, VA (November 30-December 3, 1999).
- “Radon-222 as a Natural Tracer for Monitoring the Remediation of NAPL Contamination in the Subsurface,” SERDP and ESTCP Symposium, Crystal City, VA (November 30-December 3, 1999).
- “Tetraalkoxysilanes as Slow Release Substrates to Promote Aerobic and Anaerobic Dehalogenation Reactions in the Subsurface,” 220th American Chemical Society Annual Meeting, Washington, DC (August 20-24, 2000).
- “In-situ Treatment of Chlorinated Solvents,” Five Center Hazardous Substance Research Center Meeting, Alisomar, CA (July 2001).

Locations of Other Invited Presentations

Air Force Armstrong Laboratory, Florida

California Department of Health Services

California Institute of Technology

CH2M Hill, Corvallis

EPA Region 10, Seattle, WA

Lawrence Livermore Laboratory

Merck Corporation, New Jersey

Oakland Regional Water Quality Control Board

Oregon State University

Pacific Northwest Laboratory

Portland State University

San Jose State University

Shell Oil Company, Houston

Stanford University

Technical University of Denmark

U.S. EPA Kerr Environmental Research Laboratory, Ada, OK

U.S. Geological Survey, Menlo Park, CA
University of Bologna
University of California, Berkeley
University of California, Irvine (Extension)
University of California, Lawrence Berkeley Laboratory
University of California System Toxic Substances Program
University of California, San Diego (Extension)
University of California, Santa Cruz (Extension)
University of Karlsruhe
University of Minnesota
University of Notre Dame
University of Virginia
University of Washington
University of Waterloo
Washington State University
Western Region Hazardous Substance Research Center, Stanford

SHORT COURSES AND WORKSHOPS

“Bioremediation of Chlorinated Solvents in the Subsurface,” Denmark Technical University, Copenhagen, September 2-4, 1989
“Bioremediation of Chlorinated Solvents,” Western Region Hazardous Substance Research Center, Intel Corporation, February 1990
“Bioremediation of Chlorinated Solvents,” University of California Extension Service in Environmental Hazardous Materials Management, three course given February 1991-August 1992
Course on NAPL Contamination in the Subsurface, University of Waterloo, Chicago, IL, April 1991
Short Course on Bioremediation, University of Washington, July 1994
Short Course on Chlorinated Solvent, University of Washington, September 1996

PATENTS

P.V. Roberts, G.D. Hopkins, L. Semprini, P.L. McCarty, and D.M. Mackay, “Pulsing of Electron Donor and Electron Acceptor for Enhanced Biotransformation of Chemicals,” U.S. Patent 5,006,250 (April 9, 1991).
L. Semprini, P.L. McCarty, P. K. Kitanidis, and J. Bae, “Method and Apparatus for In-situ Groundwater Recirculation,” Patent Number 5,302,286 (April 12, 1994).
L. Semprini and S. Vancheeswaran, “Slow Release Substrates for Driving Microbial Transformations of Environmental Contaminants,” U.S. Patent 6,472 (October 29, 2002).

RESEARCH GRANTS

Prior Research

Stanford University

In-situ Aquifer Restoration of Chlorinated Aliphatics by Methanotrophic Bacteria
In-situ Biotransformation of Carbon Tetrachloride Under Anoxic Conditions
Subsurface Mixing of Nutrients and Groundwater for In-situ Bioremediation
Test-Bed Evaluation of Chlorinated Aliphatics Compounds by Toluene

Demonstration of In-situ Bioremediation of Chlorinated Aliphatics by Methanotrophs at St. Joseph, Michigan

Oregon State University

- “Radon-222 Method for Locating and Quantifying Contamination by Residual Non-Aqueous-Phase Liquids in the Subsurface,” Western Region Hazardous Substance Research Center, \$49,611, March 1992-February 1996
- “Design for Enhancing In-situ Biotransformation of Carbon Tetrachloride: Application to DOE’s Arid Site Integrated Demonstration,” Department of Energy, \$59,997, March 1993-April 1995
- “Microcosm Studies of In-Situ Transformation of TCE under Anaerobic Conditions- Gilbert-Mosley Site,” Camp Dresser & McKee, Inc., \$25,000, July 1994-March 1995
- “Microcosm Studies of the Cometabolic Degradation of TCE by Indigenous Microbes from McClellan AFB,” CH2M Hill, Inc., \$24,297, July 1994-March 1995
- “Modeling Studies for Optimization of In-situ Bioremediation and Laboratory Testing,” Department of Energy, (Co-Investigator, Dan Arp), \$85,000, July 1994-April 1995
- “Aerobic Cometabolism of Chloroform, 1,1,1-trichloroethane, 1,1-dichloroethylene, and Other Chlorinated Aliphatic Hydrocarbons by Microbes Grown on Butane and Propane,” (Co-Investigator, Dan Arp), Western Region Hazardous Substance Research Center, \$176,979, April 1995-March 1997
- “In Situ Bioremediation of Solvent Saturated Soils Utilizing Butane and Propane-Oxidizers,” US Air Force, \$145,420, July 1995-December 1996
- “In Situ Bioremediation of Solvent Saturated Soils Utilizing Butane and Propane-Oxidizers,” Continuation, US Air Force, \$48,624, July 1995-March 1998
- “Characterization of Microbial Activity at Site 300 of Lawrence Livermore Laboratory,” (Co-Investigator with Ken Williamson), Lawrence Livermore Laboratory (DOE), 106,497, September 1996-September 1997
- “Microcosm Tests to Evaluate the Potential for In-situ Transformation of Chlorinated Solvents at NWS, Pt. Mugu, California,” OHM Remediation Service Corporation, \$45,625, December 1996-December 1997
- “Radon-222 as a Tracer of Monitoring NAPL Remediation at the LLNL Site,” Lawrence Livermore Laboratory, \$35,173, May 1997-May 1998
- “Aerobic Cometabolism of Mixtures of Chlorinated Aliphatic Hydrocarbons by Microorganisms Grown on Butane: Kinetic, Biochemical, and Modeling Studies,” (Co-Investigator, Dan Arp) Western Region Hazardous Substance Research Center, \$139,355, October 1997-September 1999
- “In Situ Measurement of TCE Degradation Using a Single-Well, “Push-Pull” Test,” (Co-Investigator with Jack Istok and Mike Hyman), Western Region Hazardous Substance Research Center, \$56,790, October 1997-September 1999
- “Development of Radon-222 as a Natural Tracer for Monitoring the Remediation of NAPL Contamination in the Subsurface,” (Co-Investigator, Jack Istok), Department of Energy EMSP Program, \$403,886, October 1997-September 2000
- “Cometabolic Air Sparging to Remediate Chloroethene-Contaminated Groundwater Aquifers,” (Principal Investigator), DOD ESTCP Program (Subcontract from Battelle, OH), \$165,497, June 1998-March 2000
- “Microcosm Studies and Push-Pull Tests for Evaluating the In-situ Transformation of Chlorinated Solvents at the Homelite Site, Greer South Carolina,” (Co-Investigator, Jack

- Istok), Textron Corp, Providence, RI, \$213,632, July 1998-June 2003
- “Microcosm Studies of TCE Transformation at LLNL Site 300,” Lawrence Livermore National Laboratory, \$85,000, September 1998-December 1999
- “Microcosm Studies of the Anaerobic Transformation of TCE and VC at the Site 24 at the Pt. Mugu Naval Weapon Facility, IT-Ohm Remediation Corp, \$49,757, October 1998-September 1999
- “Microbial Characterization During Cometabolic Sparging,” McClellan Air Force Base, \$28,000, March 1999-December 1999
- “Development of Effective Aerobic Cometabolic Systems for the In Situ Transformation of Problematic Chlorinated Solvent Mixtures,” (Co-Investigator, Perry McCarty), Stanford University, DOD SERDP Program, \$1,130,000, March 1999-Sept. 2003
- “Push-Pull Test for Evaluating the In-situ Aerobic Treatment of Chlorinated Solvent Mixtures in Groundwater,” (Co-Investigator, Jack Istok), DOD ESTCP Program, \$550,046, September 1999-Sept 2003
- “Radon-222 as a Natural Tracer for Monitoring the Remediation of NAPL Contamination in the Subsurface,” (Co-Investigator, Jack Istok), DOD ESTCP Program, \$505,606, September 1999-Nov. 2003
- “In Situ Measurement of TCE Degradation Using a Single-Well, “Push-Pull” Test,” (Co-Investigator with Jack Istok and Jennifer Field), Western Region Hazardous Substance Research Center, \$124,569, October 1999-September 2001
- “Development of Alkylsilanes as Slow Release Substrates for Aerobic/Anaerobic Transformation of Chlorinated of Chlorinated Solvents,” EPA’s Western Region Hazardous Substance Research Center, \$83,411, October 1999-September 2001
- “Advanced Microbe Isolation Laboratory,” (Co-investigator with Steve Giovannoni, Martin Fisk, Dan Arp), NSF-Major Research Instrumentation, \$239,465, October 1999-September 2002
- “Cometabolic Air Sparging to Remediate Chloroethene-Contaminated Groundwater Aquifers, DOD ESTCP Program (Subcontract from Battelle, OH, \$96,000, March 2000-March 2001

Current Research

- “In Situ Transformation of the Neurotoxicant Trichloroethene (TCE) in Anaerobic Groundwater,” (Co-Investigator with Jennifer Field and Jack Istok), National Institute of Environmental Health Sciences, \$1,127,000, April 2001-March 2006
- “Subsurface Biosphere,” (Co-Investigator with Martin Fisk, Dan Arp, Peter Bottomley, and Ann Louise Riesinbach (PSU)), IGERT Program, NSF, \$2,268,000, October 2001-September 2006
- “Developing In-Situ Processes for VOC Remediation in Groundwater and Soils,” EPA, Western Region Hazardous Substance Research Center, \$5,500,000, October 2001-October 2006
- “Developing and Optimizing Biotransformation Kinetics for the Bio-Remediation of Trichloroethylene at NAPL Source Zone Concentrations,” (Co-Investigator, Mark Dolan), EPA’s Western Region Hazardous Substance Research Center, \$121,000, January 2002-January 2004
- “Aerobic Cometabolism of Chlorinated Aliphatic Hydrocarbon Compounds with Butane-Grown Microorganisms,” (Co-Investigators: Daniel J. Arp, PI; Peter Bottomley, Lynda Ciuffetti, Stephen Giovannoni, Ken Williamson), EPA’s Western Region Hazardous Substance Research Center, \$302,000, January 2002-January 2004
- “VIRGE: Virtual Interactive Remediation in the Groundwater Environment: An Action-Oriented Curriculum Innovation in Environmental Engineering,” (Co-Investigator with Shu-Guang Li (Michigan State University)), National Science Foundation, \$55,000, April 2002-March 2004

TEACHING

Student Thesis Advising

M.S.

Omar Hopkins	1994
Michael Niemit	1995
Brian Tasker*	1995
George Pon	1995
Kent Johnson	1996
Young Kim	1996
Sarayu Gottipatti	1996
Adisorn Tovannobootr	1997
Pardi Jutnuanont	1997
Sanjay Vancheswaran	1998
Jae Hwang Shim	1998
Mathew Keeling	1998
Cassandra Robertson*	1999
Erica Louie	1999
Ming-Ying Chu	1999
Derck Rogers*	2000
Incheol Pang	2000
Michael Cantaloub	2001
Robert Sattoff*	2001
Darin Runjkanal	2001
Brian Timmons	2001
Casse Benoit*	2001
Maureen Mathias	2002
Carmen Nale	2002
Hee Lim	2003
Paul Stull*	2003
Bhargavi Maremanda	2003

Ph.D.

Young Kim	2000
George Pon	2003
Sarun Tejasen	2003
Seungho Yu	2003
Brian Davis	2003
Stephenie Connor	2002
(Microbiology)	
Andrew Sabalowsky	2005
<u>Diploma Degree, European Universities</u>	
Niels Stoffers	1996
Lutz Friedrich	1998

Visiting Ph.D. Students, European Universities

Dario Frascari
Cecilla Razzetti

Post-Doctoral Supervision

Dr. Regina Herbish	Visiting Research Associate	1994
Dr. Mark Dolan	Research Associate	1998-2001
Dr. Soon Kown	Visiting Professor from Korea	1998/1999
Dr. Young Kim	Research Associate	2001-present
Dr. Mohammad Azizian	Research Associate	2001-present

Committees

* Project

Professor

Director of the Western Region Hazardous Substance Research Center

M.S. – Civil Engineering

Jason Cole	1993
Mitchell Lindsay	1993
Jeffery Marchioro	1993
Robin Strauss	1994
Kim Carter	1994
Dave Grigsby	1995
Mel McCracken	1995
Paul Odenthal	1995
Andrew Hoffman	1995
Allison Sears	1996
Rick Wadsworth	1996
Jason Weakley	1996
Pimarn Suvannapparatt	1997
Jane Tonkin	1997
Greg Conner	1997
Jeremy Donaldson	1997
Balbhim Mahurkar	1997
Aranee Prakobsabtisukh	1997
Marcus Quigley	1999
Michael May	1999
Darin Trobaugh	1999
Paul Weigand	1999
Yong Kee Lee	1999

M.S. – Other Departments

Tzy-yang Hsien	1993
(Chemical Engineering)	
Bellaya Hosein	1994
(Bioresource Engineering)	
Richard Pagh	1995
(Nuclear Engineering)	

Ph.D. – Civil Engineering

Mark Smith	1993
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Tae Jin Lee	1995
Roger Ely	1996
Martin Schroth	1996
Sheryl Steward	1996
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Joe Lotario	2000
Jason Cole	2000
Adriana Martinez-Prado	2002
Alexandra Deghner	2002

Ph.D. – A Other Departments

Tzy-Yang Hsien	1996
(Chemical Engineering)	
Richard Pagh	2000
(Nuclear Engineering)	
Natsuko Hamamura	2001
(Botany & Plant Pathology)	
Kim Hageman	2002
(Chemistry)	

Ph.D. Committees – Stanford University

Margaret Lang	1994
Larry Smith	1995