School of Chemical, Biological and Environmental Engineering
O R E G O N S T A T E U N I V E R S I T Y

SEMPRINI, Lewis
Distinguished Professor of Environmental Engineering
Executive Chair of the OSU Subsurface Biosphere Initiative

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 2000-2006
Director of the Western Region Hazardous Substance Research Center, September 2001-2006
Professor, School of Chemical, Biological and Environmental Engineering, 2007-Present
Distinguished Professor of Environmental Engineering, Oregon State University 2007-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
Toxicity and gene expression studies of metal nanoparticles and nitrifying bacteria
Biofilm studies with nitrifying bacteria

AWARDS

OSU College of Engineering Award for Outstanding & Sustained Research Leadership – 1998-1999
OSU College of Engineering Research Award for Sustained, Unusually Significant and Meritorious Achievement in Collaborative Research and Scholarship – 2001-2002
OSU College of Engineering Alumni Professor Award for Outstanding Contributions to the College and the University – 2003-2004.
OSU Distinguished Professor of Environmental Engineering, 2007

PROFESSIONAL ACTIVITIES

Registration

Registered Chemical Engineer, State of California (CA 3749)

Professional Societies

American Chemical Society
American Geophysical Union
American Microbiological Society
Association of Environmental Engineering and Science Professors
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
Water Science and Technology
Environmental Science and Technology
Journal of Contaminant Hydrology
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, 1996

"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

"Session H21A: Heterogeneities in Subsurface Microbial Processes," American Geophysical Union Fall Meeting, San Francisco, Fall 2004.

"Session – "Innovative Clean-up-technologies." 7th IAHS International Groundwater Quality Conference (GQ10), June-13-18, 2010, Zurich, Switzerland

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 Trichloroethylene 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 2000-2004
DOE Environmental Remediation Sciences Division2nd Strategic Planning Workshop, September 19–20, 2002
DoD Review Committee: Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents, Sept 2003 – August 2004.

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).

L. Semprini, "Bioaugmentation for the In situ Aerobic Cometabolism of Chlorinated Aliphatic Hydrocarbons," SERPD Monograph on Bioaugmentation (2009, In Review)

Refereed Journal Articles

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* Biorestoration 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* Biorestoration 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 Micro-organisms," *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 Trichlorofluroethene (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. *Enviro. 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 Trichlorofluorethene 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," *Ground Water* Vol 42, 329-337 (2004)

G. Pon and L. Semprini, "Anaerobic Reductive Dechlorination of 1-chloro-1-fluoroethene to Track the Transformation of Vinyl Chloride," *Environ. Sci. Technol* Vol.38 6803-6808 (2004)

S. Yu and L.Semprini, "Kinetics and Modeling of Reductive Dechlorination at High PCE and TCE Concentrations," *Biotechnology and Bioengineering Vol. 88 451-464* (2004).

K.J. Hageman, J.A. Field, J.D. Istok, and L.Semprini., "Quantifying the Effects of Fumarate on In Situ Reductive Dechlorination Rates," *J. of Contaminant Hydrology* Vol 75:281-296 (2004).

S. Yu, M.E. Dolan, and L. Semprini, "Kinetics and Inhibition of Reductive Dechlorination of Chlorinated Ethylenes by Two Different Mixed Cultures," *Environ. Sci. Technol.Vol.* 39 195-205 (2005)

S.A. Connon, A.Tovanabootr, M. Dolan, K. Vergin, S. J. Giovannoni,[1] and L. Semprini, "Bacterial Community Composition Determined by Culture Independent and Dependant Methods during Propane Stimulated Bioremediation in Trichloroethene Contaminated Groundwater," *Environmental Microbiology* Vol 7:165-178.(2005).

J. A. Field, J. D. Istok, L. Semprini, P. Bennett, and T. E. Buscheck, "Trichlorofluoroethene: A Reactive Tracer for Evaluating the Effectiveness of In Situ Trichloroethene Remediation," *Ground Water Monitoring Remediation Vol 25(2):68-77 (2005).*

M.R. Niemet and L. Semprini, "Column Studies of Anaerobic Carbon Tetrachloride Biotransformation with Hanford Aquifer Material," *Ground Water Monitoring Remediation 25*(3)82-92 (2005).

B.M. Davis, J.D. Istok and L. Semprini, "Numerical Simulations of Radon as an In Situ Partitioning Tracer for Quantifying NAPL Contamination Using Push-Pull Tests," *Journal of Contaminant Hydrology Vol* 78:87-103 (2005).

Y. Kim and L. Semprini, "Cometabolic Transformation of cis-1,2-dichloroethylene and cis-1,2-dichloroethylene epoxide by a butane-grown mixed culture," *Water Science & Technology* Vol 52 (8): 125-131 (2005).

E. Ennis, R. Reed, M. Dolan, L. Semprini, J. Istok, and J. Field, "Reductive Dechlorination of the Vinyl Chloride Surrogate Chlorofluoroethene in TCE-Contaminated Groundwater," *Environ. Sci. Technol.* 39:6777-6785 (2005). DOI link: http://dx.doi.org/10.1021/es048640f

M. F. Azizian, J.D. Istok, and L. Semprini, "Push-Pull test evaluation of the in situ aerobic cometabolism of chlorinated ethenes by toluene-utilizing microorganisms," *Water Science and Technology* 52(7):35-40 (2005)

J. A.C. Barth, A. Kappler, M. Piepenbrink, C. Werth, S. Regenspurg, L. Semprini, G. F. Slater, C. Schüth, P. Grathwohl, "New Demands in Biogeochemical Gradient Research on Microbes, Measurements and Modeling," *EOS* 86(44):432 (2005).

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K. Williamson, L. Semprini, G. Rorrer, and J. McGuire, "Integration of Chemical Engineering, Environmental Engineering, and Bioengineering to Facilitate Research and Education in Nanotechnology," *Biotechnology, and Sustainability*, Water *Environment Research* 78(6):555-556 (2006).

M. Azizian, J. D. Istok, L. Semprini, "Evaluation of the in-situ aerobic cometabolism of chlorinated ethenes by toluene-utilizing microorganisms using push–pull tests," *Journal of Contaminant Hydrology*, 90 105–124 (2007). DOI link: http://dx.doi.org/10.1016/j.jconhyd.2006.09.015

L. Semprini,., M. E. Dolan, M. A. Mathias, G. D. Hopkins and P. L. McCarty, "Laboratory, field and modeling studies of Bioaugmentation of butane-utilizing microorganisms for the in situ cometabolic treatment of 1,1-dichloroethene, 1,1-dichloroethane, and 1,1,1-trichloroethane," *Advances in Water Resources*, 30 1528-1546 (2007). DOI link: http://dx.doi.org/10.1016/j.advwatres.2006.05.017

A.E. Taylor, M.E. Dolan, P.J. Bottomley, and L. Semprini, "Utilization of Fluoroethene as a Surrogate for Aerobic Vinyl Chloride Transformation" Environ. Sci. Technol., 41 (18) 6378–6383 (2007). DOI link: http://dx.doi.org/10.1021/es0701255

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Y. Kim, J. D. Istok, L. Semprini, "Single-well, gas-sparging tests for evaluating the in situ aerobic cometabolism of cis-1,2-dichloroethene and trichloroethene," *Chemosphere* 71 (2008) 1654–1664 (2008). DOI link: http://dx.doi.org/10.1016/j.chemosphere.2008.01.021

T. S. Radniecki, M.E. Dolan, and L. Semprini, "Physiologicl and transcriptional responses of Nitrosomonas europaea to toluene and benzene inhibition," Environmental Sci. and Technol. (2008), 42(11):4093-4098.

S. Behrens, M. F. Azizian, P.J. McMurdie, A. Sabalowsky, M. E. Dolan, L. Semprini, and A.M. Spormann, "Monitoring Abundance and Expression of 'Dehalococcoides' Species Chloroethene-Reductive Dehalogenases in a Tetrachloroethene-Dechlorinating Flow Column," *Appl. Envir. Microbiol*. 2008 74: 5695-5703. DOI link: **http://dx.doi.org/10.1128/AEM.00926-08**

M.F. Azizian, S. Behrens, A. Sabalowsky, M.E. Dolan, A.M. Spormann, and L. Semprini, "Continuous-flow column study of reductive dehalogenation of PCE upon Bioaugmentation with the Evanite enrichment culture," *Journal of Contaminant Hydrology* 100 (2008) 11–21. DOI link: http://dx.doi.org/10.1016/j.jconhyd.2008.04.006

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T. S. Radniecki, T., Semprini, M. E. Dolan, "Expression of *merA, amoA* and *hao* in Continuously Cultured *Nitrosomonas europaea* Cells Exposed to Zinc Chloride Additions," *Biotechnology and Bioengineering*, 102 (2) (2009) 546-553. DOI link: http://dx.doi.org/10.1002/bit.22069

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M F. Azizian, I. P.G. Marshall, S. Behrens, A. M. Spormann, and L. Semprini. "Comparison of lactate, formate, and propionate as hydrogen donors for the reductive dehalogenation of Trichloroethene in a continuous-flow column." *Journal of Contaminant Hydrology*.113 (2010) 77-92.

A.R. Sabalowsky and L. Semprini. "Trichloroethene and cis-1, 2-dichloroethene concentration-dependent toxicity model simulates anaerobic dechlorination at high concentrations: I. Batch-fed reactors." *Biotechnology and Bioengineering*. 107(3) (2010) 529-539.

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A.E. Taylor, D. J. Arp, P.J. Bottomley, and L. Semprini. "Extending the alkene substrate range of vinyl chloride utilizing Nocardioides sp. strain JS614 with ethene oxide" *Applied Microbiology and Biotechnology* 87(6) (2010) 2293-2299.

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L. Semprini, P. McCarty, M. Dolan, M. Lang, T. McDonald, J. Bae, and P. Kitanidis, "Design and Treatability Study of *In Situ* Bioremediation of Chlorinated Aliphatics by Methanotrophs at St. Joseph, Michigan," In: *Bioremediation of Hazardous Wastes*, EPA/600/R-92/126, EPA Office of Research and Development, pp. 43-45 (1992).

G.D. Hopkins, L. Semprini, and P.L. McCarty, "Evaluation of In situ Biodegrdation of Trichloroethylene and cis-and-trans-Dichloroethylene by Phenol-Utilizing Bacteria," In: *Bioremediation of Hazardous Wastes*, EPA/600/R-92/126, EPA Office of Research and Development, 71-73 (1992).

L. Semprini, G.D. Hopkins, and P.L. McCarty, "Comparison of *In-Situ* Biodegradation of Trichloroethylene by Indigenous Microbes Grown on Methane and Phenol," submitted to Society of Industrial Microbiology Annual Meeting, San Diego (August 10-13, 1992).

L. Semprini, P.K. Kitanidis, P.L. McCarty, J.T. Wilson, and D. Kambell, "Detailed Chemical Characterization of Chlorinated Aliphatic Hydrocarbons at St. Joseph, Michigan, NPL Site," *EOS, Trans. Amer. Geophys. Union*, 73(43), 243.

G.D. Hopkins, L. Semprini, and P.L. McCarty, "Field Evaluation of Phenol for Cometabolism of Chlorinated Solvents," Symposium on Bioremediation of Hazardous Wastes, Research and Development of Field Applications, EPA/600/R-93/054, EPA Office of Research and Development, pp. 41- 45 (1993).

P.K. Kitandis, L. Semprini, J. T. Wilson, and Donald Kambell, "Natural Anaerobic Bioremediation of TCE at the Saint Joseph, Michigan Superfund Site," Symposium on Bioremediation of Hazardous Wastes, Research and Development of Field Applications, EPA/600/R-93/054, EPA Office of Research and Development, pp. 57-60 (1993).

M.M. Lang, L. Semprini, and P.V. Roberts, "*In Situ* Bioremediation Using a Recirculation Well," Bioremediation of Hazardous Wastes, Research and Development of Field Applications, EPA/600/R-93/054, EPA Office of Research and Development, pp. 227-228 (1993).

L. Semprini, G.D. Hopkins, and P.L.McCarty, "Field Study of *In-Situ* Trichloroethylene Degradation in Groundwater by Phenol-Oxidizing Microorganisms," EPA's 19th Annual RREL Hazardous Waste Research Symposium, Cincinnati, OH (April 13-15, 1993).

L. Semprini, K. Broholm, and M.E. McDonald, "Radon-222 Deficit Method for Locating and Quantifying NAPL Contamination in the Subsurface," *EOS, Trans. Amer. Geophys. Union*, 74(43), 299 (1993).

L. Semprini, R. Ely, H.D. Hopkins, and P.L. McCarty, "Evaluation of Different Kinetic Models for the *In-Situ* Cometabolism of TCE and Other Chlorinated Aliphatic Hydrocarbons," Poster Abstract, In Situ and On-site Bioreclamation Third International Symposium, San Diego, CA (April 24-27, 1995).

L. Semprini and Y. Kim, "Cometabolism of Chloroform by Microorganisms Grown on Butane and Chloroform," SIM Annual Meeting, San Jose, CA (August 6-10, 1995).

L. Semprini, O.S. Hopkins, S. Gottipati, and B.R. Tasker, "Field, Laboratory, and Modeling Studies of Radon-222 as a Natural Tracer for Detecting NAPL Contamination in the Subsurface and Monitoring the Progress of Remediation," *EOS, Trans, Amer. Geophys. Union*, 76(46) F276 (1995).

L. Semprini, "Aerobic Transformation of Chlorform and Other Chlorinated Aliphatic Hydrocarbons by Microorganisms Growing on Butane and Propane," Engineering Foundation Conference on Bioremediation of the Surface and Subsurface Contamination, Palm Coast, FL (January 21-26, 1996).

L. Semprini, G. Pon, P.K.Kitanidis, D.H. Kampbell, and J.T. Wilson, "Detailed Chemical Characterization of Chlorinated Aliphatic Hydrocarbons at the St. Joseph, Michigan NPL Site," Conference on Intrinsic Remediation of Chlorinated Solvents, Salt Lake City (April 2, 1996).

M.G. Cataloub, S. Gottipatti, J.F. Higginbotham, O. Hopkins, and L. Semprini, "222Rn as an Indicator of Nonaqueous Phase Liquid Contamination in Groundwater," *Health Physics* 70(6) S36-TPM-A-4 (1996).

L. Semprini and J. H. Shim, "Model Analysis of Trichloroethylene Cometabolism by Phenol-Utilizing Microorganisms Under *In-Situ* Conditions of the Moffett Field Test Facility," Environmental Microbiology Gordon Conference, Newport, RI, (August 15-20, 1997).

J. Field, M.G. Cantaoub, M.D. Humphrey, J.D. Istok, K. Radakovich, T. Sawyer, M.H. Schroth, and L. Semprini, "Quantifying Surfactant-Enhanced DNAPL Recovery Using Push-Pull Tests in

Physical Aquifer Models," American Geophysical Union, Fall 1997 Conference, San Francisco, CA (December 1-5, 1997).

L. Semprini, A. Tovanabootr, G. Pon, M. Keeling, and S. Vancheeswaran, "Microcosm Studies Evaluating the Potential of Anaerobic and Aerobic Transformation of Chlorinated Solvents," Technology Transfer Conference, WRHSRC, Timberline Lodge, Mt. Hood, OR, (October 10-12, 1998).

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).

L. Semprini and J. Shim, "A Modeling Analysis of Trichloroethylene, 1,1-Dichloroethylene, and Phenol Concentration Effects on *In-situ* Aerobic Cometabolism," American Geophysical Union, Conference, San Francisco, CA (December 6-10, 1998).

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).

M.E. Dolan and L. Semprini, "Aerobic Cometabolic TCE Transformation in Propane-Fed Aquifer Microcosms," 4th International Symposium on Subsurface Microbiology, Vail, CO (August 22-27, 1999).

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.

L. Semprini, 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.

L. Semprini., 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.

L. Semprini, M. E. Dolan, M. Mathias, G. D. Hopkins, and P. L. McCarty, "Laboratory, Field, and Modeling Studies of Aerobic Cometabolism of CAHS by Butane-Utilizing Microorganisms," Seventh International In-situ and On-Site Bioremediation Symposium, Orlando, Fl, June 2-5, 2003.

L. Semprini, Y. Kim, M. Azizian, "Single-Well-Push-Pull Tests for Assessing the Feasibility for In-situ Aerobic Cometabolic Treatment of Chlorinated Aliphatic Hydrocarbons," Geological Society of America Abstracts with Programs, Vol. 35, No. 6, September 2003, p. 372.

M.F. Azizian, Istok, J. D. and Semprini, L. 2004. In Situ Aerobic Cometabolism of Chlorinated Ethenes by Toluene-Utilizing Microorganisms Using Push-Pull Tests", Environmental Security Technology Certification Program (ESTCP) Conference, Washington D.C., November 2004.

L. Semprini. Single-well Push-Pull Tests for Evaluating In Situ TCE, cis-DCE, and trans-DCE Cometabolism by Toluene-Utilizing Microorganisms. Eos Trans. AGU 85(47), Fall 2004 meeting. Suppl., Abstract H21A-0998.

M.E. Dolan, L. Semprini, J. Li, G. Hopkins, and P.L. McCarty. In Situ Subsurface Cometabolic Transformation of Chlorinated Solvent Mixtures by Native and Bioaugmented Butane Utilizing Microorgansims. Eos Trans. AGU 85(47), Fall 2004 meeting. Suppl., Abstract H21A-0995.

L. Semprini, J. Istok, and J. Field. Single-Well , "Push-Pull" Tests to Evaluate the Anaerobic and Aerobic Transformation of Chlorinated Solvents. Biogeochemical Gradient Workshop, University of Tuebingen, Germany," May 5, 2005.

L. Semprini, L., M. Azizian, A. Sabalowsky, M. Dolan, P. Ruiz-Hass, J. Ingle, S. Behrens, A. Spormann. 2005. A Continuous Flow Column Study of Anaerobic PCE Transformation with

the Evanite Culture and Hanford Aquifer Solids. Joint International Symposia for Subsurface Microbiology (ISSM 2005) and Environmental Biogeochemistry (ISEB XVII), Wyoming, August 14-19, 2005.

L. Semprini, L., S. Brehens, M. Azizian, A. Sabalowsky, M. Dolan, P. Puiz-Hass, J. Ingle, and A. Spormann. 2005. A Continuous Flow Column Study of Anaerobic PCE Transformation with the Evanite Culture and Hanford Aquifer Solids, EOS Trans. AGU 86(52) Fall meet. Suppl. Abstract B31A-0970.

T.S. Radniecki, Dolan, M.E. and L. Semprini. 2006. "Nitrification inhibition of Nitrosomonas europaea by toluene: kinetics and proteomics" Gordon Research Conference on Environmental Sciences: Water, Plymouth, New Hampshire, June 25-30.

A. Sabalowsky and L. Semprini. 2006. Toxicity toward anaerobic reductive dechlorination by Dehalococcoides-containing mixed cultures due to high chloroethene concentrations. Poster Abstract #42. Superfund 2006 Annual Meeting: New Technologies to Assess Environmental Exposure: Science & Policy, December 11-12, 2006, Hilton La Jolla Torrey Pines, San Diego, CA.

T.S. Radniecki, Dolan, M.E. and L. Semprini. 2007. "Detection of toluene and benzene "sentinel genes" in Nitrosomonas europaea using microarrays and qPCR" The American Society of Microbiology 107th General Meeting, Toronto, Canada, May 21-25.

A.E. Taylor, M. Dolan, P.J. Bottomley, L. Semprini. 2007. Utilization of Fluoroethene as a Surrogate for Aerobic Vinyl Chloride Degradation, The Ninth International In Situ and On-Site Bioremediation Symposium. Baltimore, MD.

T.S. Radniecki, Semprini, L. and M.A. Dolan, "Physiological and transcriptional responses of continuously cultured Nitrosomonas europaea exposed to pulse additions of cadmium sulfate" The American Society of Microbiology 108th General Meeting, Boston, Massachusetts, June 1-5, 2008.

T.S. Radniecki, Dolan, M.E. and L. Semprini, "Linking NE1545 expression with decreases in cell diameter in Nitrosomonas europaea cells exposed to aromatic hydrocarbons" The 236th American Chemical Society National Meeting and Exposition, Processing of Organic Pollutants in Aquatic Systems: From Micropollutants to Industrial Contaminants, Philadelphia, Pennsylvania, August 17-21, 2008.

E. Swogger, T. Radniecki, and L. Semprini. ?Growth and Transcriptional Response of Nitrosomonas europaea Biofilms Exposed to Phenol? American Society for Microbiology 108th General Meeting Boston, MA, June 1-5, 2008.

L. Semprini and M. Azizian, S. F. Behrens, I. P. G. Marshall, and A. M. Spormann, “Transition Studies of Reductive Dehalogenation in a Chemostat Using Formate as an Electron Donor,” Partners in Environmental Technology Technical Symposium, December 2-4, Washington D.C. 2008. (Abstract and poster).

E. Swogger, E., Radniecki, T.S. and L. Semprini, "Transcriptional and physiological responses of Nitrosomonas europaea biofilms exposed to phenol"The 7th International Symposium for Subsurface Microbiology, Shizuoka, Japan, November 16-21, 2008.

T.S. Radniecki, Gilroy, C. and L. Semprini, "Zinc oxide nanoparticle inhibition of Nitrosomonas europaea" Greener Nanosciences 2009, Eugene, Oregon, March 2-3, 2009.

L. Semprini, L., M. Azizian, I. Marshall and A.M. Spormann. Comparison of lactate, formate, and propionate as substrates for TCE reductive dehalogenation in a continuous-flow column. SERDP/ESTCP Annual Workshop, Washington D.C., Dec. 1-3, 2009.

M. Azizian, I, Marshall, S. Brehens, A. Spormann, and L. Semprini. "Evaluation of a continuous-flow column of different fermenting substrates for the reductive dehelogenation of trichloroethene, 7th IAHS International Groundwater Quality Conference (GQ10), Zurich Switizerland, June 13-18, 2010.

T.S. Radniecki, Anderson, J.W., Schneider, M.C., Stankus, D.P., Nason, J.A.,and L. Semprini. (2010) Influence of Biological Macromolecules and Aquatic Chemistries on the Inhibition of Nitrifying Bacteria by Silver Nanoparticles. Abstract H42C-02. Fall Meeting American Geophysical Union, San Francisco,Calif. Dec. 13-17.

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)

"Single-Well-Push-Pull Tests for Assessing the Feasibility for In-situ Aerobic Cometabolic Treatment of Chlorinated Aliphatic Hydrocarbons," Geological Society of America Meeting, Seattle, Washington, Nov 2 -5, 2003.

"Field Studies of In-situ Aerobic Cometbaolism of Chlorinated Aliphatic Hydrocarbons," Korean Society of Soil and Groundwater Environment," April 15, 2004.

"Single-Well , "Push-Pull" Tests to Evaluate the Anaerobic and Aerobic Transformation of Chlorinated Solvents," Biochemical Gradients Workshop, University of Tuebingen, Germany," May 5, 2005.

"Batch Kinetic and Continuous Flow Column Studies of Anaerobic Transformation of Tetrachloroethene and Trichloroethene Anerobic," Oct 12, 2005. University of Texas.

"Laboratory and Modeling Studies of the Anaerobic Transformation of Chlorinated Ethenes as Groundwater Contaminants," Stanford University, Nov. 21, 2008.

"Laboratory and Modeling Studies of the Anaerobic Transformation of Chlorinated Ethenes as Groundwater Contaminants," Oregon Graduate Institute, December 12, 2008.

"Field, Laboratory and Modeling Studies of the Anaerobic Transformation of Chlorinated Ethenes as Groundwater Contaminants," SEED Workshop, Seoul Korea, Feb. 4, 2010.

"Chemostat, Aquifer Column and Modeling Studies of the Reductive Dehalogenation of Tetrachloroethene (PCE) and Trichloroethene." Eberhard Karl University of Tuebingen, July 21, 2010.

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
Korea University
Lawrence Livermore Laboratory
Merck Corporation, New Jersey
Oakland Regional Water Quality Control Board
Oregon State University
Oregon Health Sciences University
Pacific Northwest Laboratory
Portland State University
San Jose State University
Samsun Corporation
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 Texas
University of Tuebingen
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

SBRC Regional Symposium On Trichloroethylene (TCE), OHSU, Portland, OR, May 21, 2004

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 19/95

"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. 2004

"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 2004

"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. 2004

"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 Alkosilanes 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-investagator 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

"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-Dec 2005

"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-August 2007

"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-

August 2007

"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-August 2007

"Continuous Flow Column Studies of Reductive Dehalogenation with Two Different Enriched Cultures: Kinetics, Inhibition, and Monitoring of Microbial Activity," Semprini (PI), Dolan (Co-PI), Spormann (Co-PI), $340,000 , EPA's Western Region Hazardous Substance Research Center. January 2004-August 2007.

"Aerobic Cometabolism of Chlorinated Ethenes by Microorganisms that Grow on Organic Acids and Alcohols, Bottomley (PI), Arp, Dolan, Semrpini (Co-PIs). $240,000 EPA's Western Region Hazardous Substance Research Center.January 2004-August. 2007.

"Identifying the Expression of Sentinel Genes of the Bacteria *N. Europaea* Upon Exposure to Nanomaterials. L. Semprini. OSU Engineering $20K."

"Global Transcriptional Responses in Nitrogen Cycling and Nutrient Removal Processes and Development of Supplemental Instructional Workshops,"NSF – Genome-Enabled Environmental Science Engineering , D. Arp (PI), P. Bottomley, L. Semprini (Co-PI) NSF – Genome-Enabled Environmental Science Engineering $1,980,000. Oct 2005-September-2010.

Current Research

"Provost Initiative on Subsurface Biosphere Education and Research," Oregon State University, L. Semprini (PI), D. Arp, P. Bottomley, M. Fisk, D. Myrold (Co-PIs). $1,500,000. Jan, 2005-Dec.2010.

"Molecular Biomarkers for Detecting, Monitoring and Quantifying Reductive Microbial Processes " Project number (ER-1588). A. Spormann (Stanford University) and L. Semprini, Oregon State University. $1,700M (2007-2011), 798K OSU.

"Identifying the Inhibition and Expression of Sentinel Genes of the Bacteria N. Europaea Upon Exposure to Metal Oxide Nanoparticles." AFRL/ONAMI Program on Safer Nanomaterials and Nanomanufacturing Initiative (SNNI) L. Semprini, J. Nason, D. Arp, T. Radniecki. ($240K) July 2009-July 2011.

"Inhibition of *Nitrosomonas europaea* by Ag^{+} and Ag-NP: Determining the influence of aquatic chemistry capping agents, growth stage and gene expression on inhibition" NSF : CBET – Environmental Health and Safety of Nanotechnology L. Semprin (PI) Tyler Radniecki (Co-PI) (331K) April 2011-March 2014.

Student Thesis Advisor

M.S.		**Ph.D.**	
Omar Hopkins	1994	Young Kim	2000
Michael Niemit	1995	Stephenie Connor	2002
Brian Tasker*	1995	George Pon	2004
George Pon	1995	Sarun Tejasen	2003
Kent Johnson*	1996	Seungho Yu	2004
Young Kim	1996	Brian Davis	2003

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	2004
Christiana Blatchford	2005
Chaithanya Vuppala*	2006
Nobu Satomi*	2008
Andrew Sabalowsky	2009
Ann Taylor	2008
Nizar Mustafan	2011
Ellen Lauchnor	2011
Dusty Berggren	2012

Visiting Ph.D. European Universities

Dario Frascari
Cecilla Razzetti

Diploma Degree, European Universities

Niels Stoffers	1996
Lutz Friedrich	1998

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	2001-2003
Dr. Mohammad Azizian	Research Associate	2001-present
Dr. Seungho Yu	Research Associate	2004-2005
Dr. Tyler Radniecki	Research Associate	2005-2011
Dr. Ilsu Lee	Visiting Scholar form Korea	2006-2009

Committees

M.S. – Civil Engineering

Jason Cole	1993
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Ph.D. – Civil Engineering

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M.S. – Other Departments

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

Current Committees

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Chair CBEE Award Committee
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Ph.D. – A Other Departments

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(Chemical Engineering)
Richard Pagh 2000
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Natsuko Hamamura 2001
(Botany & Plant Pathology)
Kim Hageman 2002
(Chemistry)

Ph.D. Committees – Stanford University

Margaret Lang 1994
Larry Smith 1995