

The 23rd Annual International Conference on

Soils, Sediments and Water

October 15-18, 2007
University of Massachusetts at Amherst

Analysis, Site Assessment, Fate,
Environmental and Human Risk Assessment,
Remediation and Regulation



Conference Co-Directors

Paul T. Kostecki, Ph.D.
Edward J. Calabrese, Ph.D.
Environmental Health Sciences
School of Public Health
University of Massachusetts
Amherst, MA

Clifford Bruell, Ph.D.
Center for Environmental Engineering
Science & Technology
University of Massachusetts
Lowell, MA

- **141 Presenters**
- **95 Posters**
- **16 Workshops**
- **48 Exhibitors**

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Profiles of the 2007 Life Career Award Winners Included!

- 9:00am – 5:00pm 1) **Compliant Analysis of Water, Wastes and Related Solid Environmental Samples Using Inductively Coupled Plasma Atomic Emission and Mass Spectrometry** (917 Campus Center)
- 9:00am – 5:00pm 2) **In-Situ Chemical Oxidation Workshop** (904-08 Campus Center)
- 10:00am – 5:00pm 3) **Theory and Use of Field Portable X-ray Fluorescence for Soil Analysis** (804-08 Campus Center)
- 1:00pm – 5:00pm 4) **The 2007 MCP Audit – A Case Study Approach** (Cape Cod Lounge, Student Union)
- 1:00pm – 5:00pm 5) **“Lies, Damned Lies, and Statistics”: Avoiding Pitfalls in Environmental Sampling** (101 Campus Center)
- 1:00pm – 5:00pm 6) **Evaluating Monitored Natural Attenuation of MTBE and TBA** (Reading Room, Campus Center)
- 2:00pm – 4:00pm 7) **Environmental Forensic Techniques for Classic and Emerging Contaminants** (174-76 Campus Center)
- 2:00pm – 5:00pm 8) **Environmental Fate of Hydrocarbons in Soils and Groundwater** (168C Campus Center)

AM SESSIONS

Tuesday

8:30 am

Conference Welcome and Overview (Campus Center Auditorium)

Paul T. Kostecki, *Vice Provost for Research, University of Massachusetts, Amherst, MA*

Session 1: ETHICS IN ENVIRONMENTAL PRACTICE: RESPONSIBILITIES, BENEFITS & CASE EXAMPLES

Campus Center Auditorium

Moderator: **Chris Teaf**, *Florida State University, Tallahassee, FL*

9:00am

In Defense of the Earth: Considering the Rationales

Lisa H. Newton, *Fairfield University, Fairfield, CT*

9:30am

Ethical Assessment at the Limits of the Risk Assessment Process: Uncertainty

Perchlorate and Societal Consequences
David R. Brown, Lisa H. Newton, *Fairfield University, Fairfield, CT*

10:00am Break

10:30am

Consequences of Non-compliance in Production of Commercial Products

Clifford Chanler, *Chanler Law Group, New Canaan, CT*

11:00am

The Public Trust and Air Quality

Norman Anderson, *American Lung Association of Maine, Augusta, ME*

11:30am

Ethics in Technical Publications: How Can the System Identify and Address Scientific Fraud?

Christopher M. Teaf, *Florida State University, Tallahassee, FL*
Barry L. Johnson, *Emory University, Atlanta, GA*

Session 2a: PESTICIDES

101 Campus Center

Moderator: **Peter W. Woodman**, *Risk Management Inc, Acton, MA*

9:00am

Abiotic and Biotic Approaches to Remediating Pesticide and Fertilizer-Contaminated Soil and Water

Hardiljeet K. Boparai, Manmeet Waria, *University of Nebraska-Lincoln, Lincoln, NE*
Tunlawit Satapanajaru, *Kasetsart University, Bangkok, Thailand*
Steve D. Comfort, Patrick J. Shea, *University of Nebraska-Lincoln, Lincoln, NE*

9:30am

Field-Scale Cleanup of a Pesticide-Contaminated Soil with a Combined Chemical-Biological Approach

Manmeet Waria, *University of Nebraska, Lincoln, NE*
Tunlawit Satapanajaru, *Kasetsart University, Bangkok, Thailand*
Steve D Comfort, *University of Nebraska, Lincoln, NE*

10:00am Break

Session 2b: PESTICIDES

101 Campus Center

Moderator: **Andy Rezendes**, *Alpha Analytical, Westborough, MA*

10:30am

Incorporating Engineered Controls into Vapor Intrusion Evaluations

Amy Goldberg Day, William Carson, *LFR, Inc., Emeryville, CA*

11:00am

Assessing the Public Health Significance of Subsurface-Contaminant Vapors Intruding into Indoor Air

Henry J. Schuver, *U.S. EPA – OSW, Washington, DC*

11:30am

Issues Related to Residual Subsurface Petroleum Odors at a Railroad Yard in Central Pennsylvania

Joseph T. McNally, *GeoServices, Ltd., Camp Hill, PA*
Robert Carson, *Hope Tower Associates, LLC, East Stroudsburg, PA*

Session 3a: BROWNFIELDS

168C Campus Center

Moderator: **Andrew Coleman**, *Electric Power Research Institute, Palo Alto, CA*

9:00am

Database Analysis of State Surface Soil Regulatory Guidance Values

Amy Hanna, Aaron A. Jennings, *Case Western Reserve University, Cleveland, OH*

9:30am

Removal of Chlorinated DNAPL below the Water Table Using Thermal Conduction Heating

Gorm Heron, *TerraTherm, Inc., Keene, CA*
James P. Galligan, John LaChance, Ralph Baker, *TerraTherm, Inc., Fitchburg, MA*
Steven Vinci, *C&S Engineers, Syracuse, NY*

10:00am Break

Session 3b: FISHERVILLE MILL: ASSESSMENT AND CLEANUP OF A BROWNFIELDS SITE ON THE BLACKSTONE RIVER

168C Campus Center

Moderator: **Janis Tsang**, *USEPA, Region I, Boston, MA*

10:30am

Fisherville Mill: Site History and the Initial Conceptual Model

Paul Ollila, *MassDEP, Worcester, MA*
Janis Tsang, *USEPA, Boston, MA*
Dean Brammer, Bette Nowack, Jim Soukup, *Weston Solutions, Inc., Manchester, NH*

11:00am

Fisherville Mill: Risk Reduction and Source Cleanup

Jim Soukup, Dean Brammer, Bette Nowack, *Weston Solutions, Inc., Manchester, NH*
Janis Tsang, *USEPA, Region I, Boston, MA*
Paul Ollila, *MassDEP, Worcester, MA*

11:30am

Fisherville Mill: Cost Effective Remediation through Collaboration

Eugene Bernat, *Fisherville Redevelopment Corporation, Springfield, MA*
Eric Hultstrom, *Woodard & Curran, Inc., Dedham, MA*

Noon – Lunch Luncheon Speaker, Tuesday, October 16, 2007
Amherst Room, 10th Floor Campus Center

US Air Force Energy Strategy

Kevin W. Billings, *Air Force Deputy Assistant Secretary for Environment, Safety and Occupational Health (EESOH)*

Continued

Session 4a: ENVIRONMENTAL FATE

Reading Room, Campus Center

Moderator: **James Dragun**, *The Dragun Corporation, Farmington Hills, MI*

9:00am

Characteristics of a Plume of Extremely High pH Groundwater

Bradley A. Green, Charles A. Crocetti, Charles L. Head, *Sanborn, Head & Associates, Inc., Concord, NH*

9:30am

Transport of Testosterone, Androstenedione and Estrogen in the Vadose Zone Underlying a Dairy Waste Lagoon

Laurence S. Shore, *Kimron Veterinary Institute, Bet Dagan, Israel*
Shahar Baram, Karen Barel-Cohen, Shai Arnon, Ofer Dahan, *Ben-Gurion University of the Negev, Sede Boqer, Israel*

10:00am Break

Session 4b: SEDIMENTS

Reading Room, Campus Center

Moderator: **Fayaz Lakhwala**, *Adventus Group, Union, NJ*

10:30am

Use of XRF to Characterize Mine Waste Sediment in a Marine Environment

Wolfgang D. Calicchio, Peter Baker, *MACTEC, Inc., Portland, ME*
Tige Cunningham, Christian Ricardi, *NRCC EAC, MACTEC, Inc., Portland, ME*

11:00am

The Use of Constructed Wetlands for the Treatment of Heavy Metals in Urban Stormwater Runoff

Swarna Muthukrishnan, Ariamalar Selvakumar, Thomas O'Connor, *U.S. EPA, Edison, NJ*

11:30am

Electrokinetic Treatment of Marine Sediments Contaminated by Heavy Metals

Giorgia De Gioannis, Aldo Muntoni, *University of Cagliari, Cagliari, Italy*
Alessandra Poletini, Raffaella Pomi, *University of Rome "La Sapienza", Rome, Italy*

ANNOUNCEMENT

We are proud to announce the

Adventus Americas Student Award

for platform and poster presentation

\$1000 Awards will be given to the best student platform and poster presentations

Life Achievement Award

The Annual International Conference on Soils Sediments and Water is pleased to announce the recipients of the Life Achievement Award. This award is given to individuals in the areas of industry, academia, government and military, who have made significant contributions to the understanding and solution of soil, sediment and groundwater pollution problems. This year's winners are John P. Christopher, Ph.D., DABT, CA EPA, in the area of government, Derek R. Lovley, Ph.D., University of Massachusetts Amherst in the area of academia, Charles M. Reynolds, Ph.D., U.S. Army Engineer Research and Development Center, CRREL, in the area of military and Rosalind A. Schoof, Ph.D., DABT, Integral Consulting Inc, in the area of industry.

Dr. Derek Lovley



Derek Lovley received his PhD in Microbiology in 1982 from Michigan State University where he worked on anaerobic metabolism of organic matter in aquatic sediments, focusing the cooperative and competitive interactions between microbial populations that influence the extent of methane production. He was awarded the Sigma Xi Graduate Research Award and M.S.U. College of Natural Sciences Doctoral Research Award for this work. He did his postdoctoral research at the Anaerobe Lab at Virginia Polytechnic Institute where he investigated the physiology of methane-producing microorganisms and published the first paper describing a portion of the pathway by which acetate is converted to methane as well as describing a new methane-producing microorganism recovered from cow rumen. He established his own research lab in the Water Resources Division of the U.S. Geological Survey in 1984 where he served as a Project Chief and initiated a diversity of studies on subsurface microbiology. At the USGS, Lovley developed the theory and methods for the now common practice of measuring hydrogen concentrations to define what microbial processes predominate in aquifers. He discovered that aromatic hydrocarbon contaminants could be anaerobically degraded in contaminated groundwater and aquatic sediments and developed strategies for stimulating this process for enhanced bioremediation. He demonstrated that iron redox chemistry in anaerobic subsurface environments was controlled by enzymatic processes, rather than abiotic processes as previously considered, and isolated and characterized the microorganisms, most notably *Geobacter* species, responsible for iron reduction. He discovered that *Geobacter* and other iron reducers could also reduce contaminant and radioactive metals, such as uranium, and suggested that this could be used for the in situ bioremediation of metal-contaminated subsurface environments. While at the USGS, Lovley received many awards including Popular Science's 'Best of What's New in Environmental Technology' and was named a Mendenhall Lecturer, the highest scientific award at the USGS.

In 1995 Lovley moved his laboratory to the Microbiology Department at the University of Massachusetts-Amherst. He served as Department Head from 1997-2004 and is now a Distinguished Professor as well as serving as Director of Environmental Biotechnology and an Associate Dean for the College of Natural Resources and the Environment. At UMASS he further developed anaerobic strategies for the bioremediation of subsurface environments contaminated with aromatic hydrocarbons and contaminant metals. Furthermore, he expanded his research on iron-reducing microorganisms and demonstrated for the first time that the capacity for iron reduction is a highly conserved feature of hyperthermophilic microorganisms, a finding which coupled with geological data, suggests that iron reduction was the first form of respiration to evolve on earth. In these studies, Lovley also described 'strain 121' a microorganism which holds the record of growing at the highest temperature known to support life and is currently in the Guinness Book of World Records. In studies that also related to life in the subsurface and possibly other planets, Lovley and colleagues discovered and described a unique subsurface environment in which life is supported by geologically produced hydrogen, alleviating the need for any energy input from the sun to support life.

However, from 1995 to the present Lovley's research has primarily focused on *Geobacter*. Novel findings have included the capacity of *Geobacter* to produce electricity from a wide variety of organic wastes and renewable biomass and the fact that *Geobacter* produces 'microbial nanowires' fine, electrically conductive appendages that are important for the reduction of metals and electricity production. The sequencing of the complete genome of several *Geobacter* species and the development of a genetic system for *Geobacter* has led to the development of sophisticated computer models that can predict the physiological

(continued on page 7)

**Session 1:
PHYTOREMEDIATION**

Campus Center Auditorium

Moderators: **Lee Newman**, *University of South Carolina, Columbia, SC*; **Jason White**, *The Connecticut Agricultural Experiment Station, New Haven, CT*

1:30pm**Phytoextraction of Arsenic in the Mid-Atlantic Area Using Pteris Ferns**

Michael J. Blaylock, Mark P. Elless, *Edenspace Systems Corporation, Chantilly, VA*
Myles Bartos, *U.S. Environmental Protection Agency, Philadelphia, PA*

2:00pm**The Effects of *Cyperus esculentus* on the Phytoremediation of Contaminated Range Soils**

Afrachanna D. Butler, *Jackson State University, Jackson, MS and US Army Corps of Engineer, Vicksburg, MS*
Victor F. Medina, *U.S. Army Corps of Engineer, Vicksburg, MS*
Maria F. Begonia, *Jackson State University, Jackson, MS*

2:30pm**Concurrent Uptake of Semivolatile Organic Compounds and Metals by Desert Plants**

Zarhelia Carlo-Rojas, Wen-Yee Lee, *University of Texas at El Paso, El Paso, TX*

3:00pm Break**3:30pm****Plant Organic Matter Deposition Alters Sedimentary Organic Matter Composition and PAH Desorption**

Elizabeth Guthrie Nichols, Jennifer Musella, *North Carolina State University, Raleigh, NC*

4:00pm**Engineering Non-Food Plants for Phytoremediation of Heavy Metals and Metalloids**

Om Parkash, *University of Massachusetts, Amherst, MA*

4:30pm**Investigation of Fluoride Distribution in Deciduous Trees at a Hazardous Waste Landfill**

Fan Wang-Cahill, Karen Fields, *Parsons, Cincinnati, OH*

Session 2: BIOTECHNOLOGY

101 Campus Center

Sponsored by

Geovation Engineering, P.C.

Moderators: **Eric Hince**, *Geovation Engineering, P.C., Florida, NY*; **Stephen S. Koenigsberg**, *WSP Environmental Strategies, Irvine, CA*

1:30pm**Advanced Diagnostic Tools and Applications to Site Design, Management and Closure**

Stephen S. Koenigsberg, *WSP Environmental Strategies, Irvine, CA*
John Simon, *WSP Environmental Strategies, Reston, VA*
Matt Burns, *WSP Environmental Strategies, Boxborough, MA*
David Sarr, Scott Haitz, *WSP Environmental Strategies, Reston, VA*

2:00pm**Applying Environmental Biotechnology to a VCUP Program for the Remediation of a Mixed Chlorinated Solvent Plume**

William R. Mahaffey, *Pelorus EnBiotech Corp, Evergreen, CO*
Mark Miller, *DOMANI Sustainability, LLC, Denver, CO*
Duane Wanty, *Invensys, Inc., Foxboro, MA*
Aaron Peacock, *Center for Biomarker Analysis, Knoxville, TN*

2:30pm**Comparison of Sediment, Groundwater, and Bio-Trap Microbial Samples from a Biostimulation Study at Rifle, Colorado**

Aaron Peacock, Ph.D., *Haley & Aldrich, Rockford, TN*

3:00pm Break**3:30pm****Combining Transcriptomic and Proteomic Methods to Develop Bioindicators of Chlorinated Solvent Bioremediation**

Robert M. Morris, *UC Santa Barbara, CA*
Brian G. Rahm, Stephen H. Zinder, Ruth E. Richardson, *Cornell University, Ithaca, NY*

4:00pm**In-Situ Stable Isotope and Fluorinated Analog Probing to Evaluate Fate of cDCE via both Reductive Dechlorination and Anaerobic Oxidation**

Eric C. Hince, *Geovation Engineering, P.C., Florida, NY*
Edward Sullivan, *The Whitman Companies, Inc., East Brunswick, NJ*
Greg Davis, Dora Ogles, Aaron Peacock, *Microbial Insights, Inc., Rockford, TN*
Kerry Sublette, Jennifer Busch-Harris, Eleanor Jennings, *University of Tulsa, Tulsa, OK*

4:30pm**Reductive Dechlorination of Chlorinated Solvents with Electrodes as the Electron Donor**

Sarah M. Strycharz, Kelly P. Nevin, Derek R. Lovley, *University of Massachusetts - Amherst, Amherst, MA*

5:00pm**Round Table Discussion: "Current Practices and Future Directions in the Application of Molecular Biological Tools and Emerging Biotechnologies"****Session 3: TUNGSTEN**

168C Campus Center

Sponsored by **ARCADIS U.S., Inc.** and **International Tungsten Industry Association (ITIA)**

Moderator: **Carmen Venezia**, *OSRAM, Sylvania, Towanda, PA*

1:30pm**Tungsten Distribution at Camp Edwards Small Arm Ranges**

Jay Clausen, Susan Taylor, Dennis Lambert, Ronald Bailey, Susan Bigl, Nancy Perron, *US Army Corps of Engineers, Hanover, NH*
Anthony Bednar, Steve Larson, *US Army Corps of Engineers, Vicksburg, MS*
Chuck Ramsey, *Envirostat Inc., Fort Collins, CO*
Bonnie Packer, Kimberly Watts, *US Army Environmental Center, Aberdeen Proving Ground, MD*

2:00pm**Analytical Method Development for Tungsten in Groundwater by SW-846 Method 6020 by ICP/MS (Lessons Learned)**

Mark R. Koenig, *USACE Project Chemist, Concord, MA*
Anthony Bednar, *U.S. Army Engineer Research and Development Center, Vicksburg, MS*
Paul Nixon, *U.S. Army, Camp Edwards, MA*
Laurie Ekes, *Environmental Chemical Corporation, Otis ANGB, MA*
Michael E. Ketterer, *Northern Arizona University, Flagstaff, AZ*
Jay L. Clausen, *US Army Corps of Engineers, Hanover, NH*
Nina Duston, *Massachusetts Dept. Environmental Protection, Lawrence, MA*

2:30pm**Tungsten Leaching from Kinetic Energy Penetrator Fragments and Sporting Goods: Chemical and Environmental Impacts**

Washington Braida, Gulsah Sen, Nikolai Strigul, Christos Christodoulatos, *Stevens Institute of Technology, Castle Point on Hudson, Hoboken, NJ*
Agamemnon Koutsospyros, *University of New Haven, West Haven, CT*
Gregory O'Connor, *US Army, Picatinny, NJ*

3:00pm Break**3:30pm****Tungsten Geochemistry: Fate and Transport of Tungsten at Small Arms Ranges**

Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*

4:00pm**Tungsten Fate and Transport as a Function of Iron Redox Cycling and Associated Biotic-Abiotic Reactions**

Kevin T. Finneran, *University of Illinois - Urbana Champaign, Urbana, IL*

4:30pm**Subchronic (90-Day) Oral Toxicity of Sodium Tungstate in Rats**

W.C. McCain, *U.S. Army Center for Health Promotion and Preventive Medicine, Aberdeen Proving Ground, MD*
L. Crouse, M.A. Bazar, M. Thompson, A. Hess-Ruth, P. Beall, M. Quinn, *U.S. Army, Aberdeen Proving Ground, MD*
J. Middleton, *Army Research, Development and Engineering Center (ARDEC), Picatinny, NJ*

5:00pm**Preliminary Assessment of Tungsten Risk-Based Screening Values and Toxicity Benchmarking**

John D. Schell, *ARCADIS Inc., Houston, TX*
Salvatore Giolando, Dianne Green, *ARCADIS Inc., Hamilton, OH*
Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*

Session 4: COMBINING CHEMICAL AND BIOLOGICAL TECHNOLOGIES FOR SOIL AND GROUNDWATER REMEDIATION

Reading Room, Campus Center

Sponsored by **Regenesi**

Moderator: **Ben Mork**, *Regenesi, San Clemente, CA*

1:30pm

Integration Chemical and Biological Technologies for Remediation of Contaminated Soil and Groundwater
Ben Mork, Bob Kelley, *Regenesi, San Clemente, CA*

2:00pm

Combined Physical and Biological Processes for Remediation of Contaminated Sites

Maureen Dooley, *Regenesi, Wakefield, MA*
Bob Kelley, *Regenesi, San Clemente, CA*

2:30pm

Former Manufactured Gas Plant (MGP) Remediation using Surfactant-Enhanced In-Situ Chemical Oxidation (S-ISCO®)

John Collins, George E. Hoag, *VeruTEK Technologies, Inc., Glastonbury, CT*

3:00pm Break

3:30pm

Evaluation of In-Situ Biostimulation Effects Related to Sodium Persulfate Injections

Edward Sullivan, *The Whitman Companies, Inc., East Brunswick, NJ*

Eric C. Hince, *Geovation Consultants, Inc., Florida, NY*

Greg Davis, Dora Ogles, *Microbial Insights, Inc., Rockford, TN*

Kerry Sublette, Jennifer Busch-Harris, Eleanor Jennings, *University of Tulsa, Tulsa, OK*

4:00pm

Bioremediation of TCE and TCA using SDC-9TM after Sodium Permanganate Treatment

Raymond J. Cadorette, Lawrence Nesbitt, *Shaw Environmental, Inc., Hopkinton, MA*

Tarek Ladaa, *Shaw Environmental, Inc., Knoxville, TN*

4:30pm

Biodegradation of Anthracene in Presence of Humic Acid and Biosurfactants

Hui Chen, Yingqin Wu, Mingguang Ma, Yuan Zhang, *Northwest Normal University, Gansu, P.R. China*

Session 5: ENVIRONMENTAL FORENSICS

Cape Cod Lounge, Student Union

Moderator: **A. Dallas Wait**, *Gradient Corporation, Cambridge, MA*

1:30pm

Identification of Natural Gas Sources Using Geochemical Forensic Tools

Paul Boehm, Tarek Saba, *Exponent, Inc., Maynard, MA*

Laurie Benton, *Bellevue, WA*

2:00pm

PCB Source and Dechlorination Fingerprinting

Stephen Emsbo-Mattingly, *NewFields Environmental Forensics Practice, LLC, Rockland, MA*

Victor Magar, *ENVIRON International Corporation, Chicago, IL*

Marc Mills, Richard Brenner, *USEPA ORD NRMRL, Cincinnati, OH*

2:30pm

Forensic Analysis and PCB Fingerprinting in Sediments Using Congener Data and Multiple Statistical Evaluation Methods

Noémi Barabás, *Limno-Tech, Inc., Ann Arbor, MI*

Carrie Graff, *Limno-Tech, Inc, Washington, D.C.*

Rich Galloway, *Honeywell International, Morristown, NJ*

Daniel Herrema, Timothy J. Dekker, *Limno-Tech, Inc., Ann Arbor, MI*

3:00pm Break

3:30pm

Fact or Fiction: The Source of Perchloroethylene Contamination in Groundwater is a Manufacturing Impurity in Chlorinated Solvents

Valerie A. Lane, *GeoTrans, Inc., Harvard, MA*

James S. Smith, *Trillium, Inc., Coatesville, PA*

4:00pm

Thoughts on Manufacturing Changes in the US Petroleum Industry: Implications for Age-dating, Calculating Weathering Indices and Hydrocarbon Fingerprinting

Dr. Michael Wade, *Wade Research, Inc., Marshfield, MA*

4:30pm

Age-Dating Diesel Fuel: A Case Study Averse to the Christensen and Larsen Method

Scott A. Stout, Gregory S. Douglas, *NewFields, Rockland, MA*

List of Exhibitors

Booth	Affiliation
B1	Gannett Fleming, Inc.
B2	Redux Technology
B3	G.E.O. Inc.
B4	Maxymillian Technologies, Inc.
B5	Milone & MacBroom, Inc.
B6	Northeast Analytical NEA Labs
B7	LSP Association
B8	Columbia Analytical Services, Inc.
B9	Geovations Technologies, Inc.
B10	ENSR Corporation
B11	Naval Facilities Engineering Command (NAVFAC)
B12	Alpha Analytical
B13	AMEC Earth & Environmental, Inc.
B14	Solinst Canada, Ltd.
B15	Thermo Scientific NITON Analyzers (formerly Thermo Electron NITON Analyzers)
B16	UXB International, Inc.
B17	CL Solutions, LLC
B18	Lancaster Laboratories, Inc.
B19	Redox Tech, LLC.
B20	inVentures Technologies, Inc.
B21	Groundwater Analytical
B22	Strategic Diagnostics Inc.
B23	Kerfoot Technologies, Inc.
B24	US EPA/OSWER/OSRTI/ Technology Innovation and Field Services Division (TIFSD)
B25	Accutest Laboratories
B26	FMC Corporation
B27	AquaBlok, Ltd.
B28	Adventus Group
B29	Eastern Analytical, Inc.
B30	Regenesi
B31	ARCADIS BBL
B32	Environmental Remediation and Financial Services, LLC
B33	TerraTherm, Inc.
B34	Microseeps, Inc.
B35	Gore
B36	Waterloo Barrier, Inc.
B37	Aztech Technologies, Inc.
B38	Deep Earth Technologies
B39	Environmental Resources Management (ERM)
T1	EnviroDirectory New England
T2	ZEBRA Environmental Corp.
T3	EFI Global, Inc.
T4	Ion Signature Technology, Inc.
T5	Engineers Without Borders UMass Chapter
T6	Stevens Water Monitoring Systems, Inc.
T7	ECCS, Inc.
T8	Bacharach, Inc.
T9	Student Career Booth

WORKSHOPS 7 pm – 10 pm

9) In-Situ Thermal Remediation (168C Campus Center)

10) Applied Chemical Fingerprinting in Environmental Forensics (Reading Room, Campus Center)

11) Utilization of Stable Isotopes in Environmental and Forensic Geochemistry Studies (917 Campus Center)

12) Professional Ethics, Professional Conduct, and Environmental Professionals (101 Campus Center)

Session 1: GASOLINE OXYGENATES I

Campus Center Auditorium

Sponsored by

American Petroleum Institute

Moderator: **Bruce Bauman**, *American Petroleum Institute, Washington, DC*

8:30am

Gasoline Oxygenate Use, Groundwater Issues and Related Research

Bruce Bauman, *American Petroleum Institute, Washington, DC*

9:00am

Trends in the Occurrence of MTBE in Drinking Water in the Northeast United States

Michael Moran, *U.S. Geological Survey, Rapid City, SD*

9:30am

3D Expedited Characterization Methodology for MTBE Contamination Impacting Deep Public Drinking Water Supply Wells

Joseph E. Haas II, *New York State Department of Environmental Conservation, Stony Brook, NY*

Donald A. Trego, *Environmental Assessment & Remediations, Patchogue, NY*

Kevin G. Hale, *New York State Department of Environmental Conservation, Albany, NY*

10:00am Break

10:30am

Behavior of Ethanol and Aromatic Hydrocarbons from Two Gasoline Releases and One Natural Gradient Experiment, CFB Borden

Marian Mocanu, Dinah Augustine, *University of Waterloo, Waterloo, ON, Canada*

José Luiz Gomes Zoby, *University of São Paulo, São Paulo, Brazil*

Erika Williams, John Molson, Jim Barker, *University of Waterloo, Waterloo, ON, Canada*

11:00am

Field Performance Comparison of Three Oxygen Distribution Technologies

Cristin L. Bruce, Gerard E. Spinnler, *Shell Global Solutions (US), Houston, TX*

Paul R. Dahlen, Jennifer Triplett, Paul C Johnson, *Arizona State University, Tempe, AZ*

11:30am

Results and Lessons Learned from Field Applications of Oxygen Distribution Technologies

Cristin L. Bruce, Paul M. Maner, Gerard E. Spinnler, *Shell Global Solutions (US) Inc., Houston, TX*

Session 2: REMEDIATION I

101 Campus Center

Sponsored by **ENSR Corporation**

Moderator: **David V. Nakles**, *ENSR Corporation, Monroeville, PA*

8:30am

The Effect of Coal Tar on Geomembrane/Geosynthetic Clay Liners in Coal Tar Impacted Soil

Adam P. Chen, Joe A. Chittet, Joel D. Krueger,

Joan V. Gonzalez, *Burns & McDonnell Engineering, Inc., Downers Grove, IL*

Amine Dahmani, Hanibal Tayeh, *Spectrum Analytical, Inc., Agawam, MA*

9:00am

Deep Soil Amendment Alternative for Foundation Construction & Treatment of LNAPL Impacted Soil Deposits

Brandon J. Fagan, Mark Balfe, *Haley & Aldrich, Inc., Boston, MA*

9:30am

Remediation of Trichloroethene DNAPL and Groundwater Plume Using Enhanced Anaerobic Degradation Technology and Natural Attenuation

Charla Reinganum, *Phoenix Environmental Associates, Inc., Highland Park, IL*

Curtis R. Michols, *Abbott Laboratories, Abbott Park, IL*

Michael Stanforth, *Excel Environmental Associates, LLC, Gastonia, NC*

10:00am Break

10:30am

Electrical Resistance Heating of Soils at C-Reactor at the Savannah River Site

Robert Blundy, *Washington Savannah River Company*

Michael R. Morgenstern, Joseph A. Amari, *Bechtel Savannah River Co.*

Anna Marie M. Herb, Mark E. Farrar, *Savannah River National Laboratory*

Terry P. Killeen, *Washington Savannah River Co.*

Paul A. Eisenstat, *Bechtel Savannah River Co.*

11:00am

An Overview of CERCLA Process Remedial Action for a Navy Base Realignment and Closure (BRAC)-closed Facility Site

Scott Gromko, *U.S. Navy, BRAC PMO West, San Diego, CA*

11:30am

Nanomaterials for Remediation: Applications and Implications

Brenda E. Barry, Betsy Ruffle, Art Taddeo, *ENSR, Westford, MA*

Session 3: REGULATORY

168C Campus Center

Moderator: **Kathy Creighton**, *Shaw Group, Stoughton, MA*

8:30am

Beyond Horse Trading: Legal Defenses to Natural Resource Damages Claims

Neal H. Weinfield, *Greenberg Traurig, LLP, Chicago, IL*

9:00am

PCBs in Precipitation and Surface Waters in Georgia: Are Water Quality Standards Achievable?

Mark B. Meyers, David Glaser, John P. Connolly, *Quantitative Environmental Analysis, LLC, Montvale, NJ*

Randy McAlister, *General Electric Company, Fairfield, CT*

9:30am

Urban Polycyclic Aromatic Hydrocarbons (PAHs): A Florida Perspective

Christopher M. Teaf, *Florida State University, Tallahassee, FL*

Douglas J. Covert, Srikant Kothur, *Hazardous Substance & Waste Management Research, Tallahassee, FL*

10:00am Break

10:30am

Review of EPA-Approved Risk-Based Cleanups for PCBs under TSCA

Mary B. Hayes, Michelle Snyder, *ENSR, Westford, MA*

Erin Coughlan, *McGill University, Montreal, Canada*

11:00am

Changes to EPA's Spill Prevention, Control, and Countermeasure (SPCC) Program

Melanie Morash, *U.S. EPA New England Oil Program, Boston, MA*

11:30am

US Environmental Protection Agency Response to the Danversport Explosion Site

Mike Nalipinski, Ted Bazenas, Dan Wainberg, Catherine Young, Alex Sherrin, *US EPA Region I New England, Boston, MA*

Session 4: COATED AND UNCOATED MICROBUBBLE OZONE REMEDIATION PROJECTS

Reading Room, Campus Center

Sponsored by

Kerfoot Technologies, Inc.

Moderator: **William B. Kerfoot**, *Kerfoot Technologies, Inc., Mashpee, MA*

8:30am

Managing Uncertainty: Perozone Sparging Under a Fixed-Price Contract

Christopher J. Watt, Franziska von Herrath, *LACO Associates-Consulting Engineers, CA*

9:00am

In-Situ Remediation of Hydrocarbons and MTBE in a Low-Yielding Aquifer - A Practical Approach

Daniel P. Cusick, *Conestoga-Rovers & Associates, Inc., Pittsburg, PA*

9:30am

Source Area Control Using Peroxide-Coated Ozone Microbubbles - A Key Component to Whole Site Cleanup

Matthew Burns, *WSP Environmental Strategies LLC, Boxborough, MA*

Stephen Koenigsberg, *WSP Environmental Strategies LLC, Irvine, CA*

10:00am Break

10:30am

Rapid Source Reduction by Coated Microbubble Injection at a Former Wood-Treating Site

J. Geoffrey Gay, *MACTEC Engineering and Consulting, Inc., Kennesaw, GA*

Andrew Brolowski, *Kerfoot Technologies, Inc., Mashpee, MA*

11:00am

Effective Removal of Recalcitrant Contaminants Using Peroxide-Coated Ozone Microbubbles

William B. Kerfoot, *Kerfoot Technologies, Inc., Mashpee, MA*

A.M. Scheffer, Edward van de Ven, *Verhoeve Milieu bv, Dordrecht, The Netherlands*

11:30am

Panel Discussion

Life Achievement Award

(continued from page 3)

responses of *Geobacter* to different environmental conditions. This microbiological model is being coupled to hydrological and geochemical models in order to aid in the design of bioremediation strategies. While at UMASS Dr. Lovley has won numerous awards including the Proctor and Gamble Award in Applied and Environmental Microbiology and the ISI's 'Most Highly Cited' (H-factor,70), and was recently featured in Time magazine's profile of top innovators in environmental science. He has more than 250 publications, with more than 25 in the journals of Nature and Science. His research team of approximately 60 investigators is supported by the Department of Energy, the Office of Naval Research, the National Science Foundation, and Toyota.

Dr. Mike Reynolds



Dr. Mike Reynolds is a soil scientist at the US Army Corps of Engineers (USACE), Engineer Research and Development Center - Cold Regions Research and Engineering Laboratory (ERDC-CRREL) in Hanover, NH, where he established and leads ERDC's Soil Microbiology Laboratory. His research has focused on understanding, implementing, and monitoring low-cost bioremediation and phytoremediation appropriate for cold regions, remote locations, and sites lacking infrastructure. The unifying theme in his group's research is unraveling soil biochemical processes for their use in beneficial and cost effective ways. He has been invited to present his findings at national and international conferences, including Canada, Korea, Russia, the Czech Republic, and India, and has authored or co-authored over 110 publications and reports. ERDC soil microbiology research team's recent projects include persistence and fate of non-indigenous microorganisms in surface soil under dynamic conditions, limitations and interferences of bio-inspired and nano-based sensors in surface soils, chem-bio decontamination in sub-freezing temperatures, and hyperspectral signature techniques for monitoring soil and microbial systems.

Reynolds regularly serves on graduate student committees, science panels, and editorial boards, including AEHS Soils Conference Scientific Advisory Board, Senior Associate Editor for the International Journal of Phytoremediation, and the Steering Committee for the International Conference on Contaminants in Freezing Ground. He is a member of Sigma Xi, Phi Kappa Ph, and Gamma Sigma Delta and a recipient of ERDC-CRREL awards, including "Building Sustainable Programs" in 2007, "Excellence in Leadership" in 2006, "Technology Transfer Achievement in bio- and phytoremediation in cold climates" in 2004, and received a Commendation in 2001 for "reformulating research to address DoD needs in bioterrorism from 1998 to 2001."

Dr. Rosalind A. Schoof



Dr. Rosalind A. Schoof is a consultant in toxicology and risk assessment. She is a board certified toxicologist with more than 25 years of experience in assessing human health effects and exposures from chemical substances, and has coordinated and reviewed numerous risk assessments of chemical substances in air, groundwater, soil and surface water. Dr. Schoof has directed evaluations of chemical toxicity, derivation of risk based exposure levels, health risk assessments for cancer and noncancer end points, and multimedia assessments of exposure to environmental chemicals for diverse mining and mineral processing sites, manufacturing sites, landfills, incinerators, and other sources of exposure.

Dr. Schoof is an internationally recognized expert on evaluation of arsenic and metals in the environment and on the bioavailability of metals from soil, with many publications in peer reviewed journals on these topics. She has given invited talks on bioavailability at numerous national conferences and workshops, and directed the development of guides on the evaluation of bioavailability of metals in soil for the U.S. Department of Defense and the Ontario Ministry of the Environment.

She has also directed research on dietary exposures to arsenic and metals. Dr. Schoof has served on numerous peer review panels for U.S. agencies and Canadian ministries, and has been a member of several National Research Council committees. She has served as a member of the British Columbia Contaminated Sites Science Advisory Board and the Expert Advisory Panel of the Canadian Metals in the Human Environment-Research Network.

Prior to her consulting career, Dr. Schoof worked for a pharmaceutical company where she developed safety assessment research programs for new drug candidates, designed protocols and directed mammalian toxicity studies in accordance with Good Laboratory Practices, and oversaw the conduct of such studies in contract laboratories. She also worked for the U.S. Environmental Protection Agency in the office of Toxic Substances.

John P. Christopher, Ph.D., D.A.B.T.



John Christopher has served for nearly 20 years as a Staff Toxicologist with the Department of Toxic Substances Control of the California Environmental Protection Agency in Sacramento. His most important contributions during that time have been in the regulatory evaluation of contamination at military bases and the statistics of human and ecological risk assessment. The Department has recognized his service with awards on three occasions.

He received his bachelor's degree in biology from Georgetown University in 1967, his master's degree in pharmacology from Stanford University in 1971, and his doctorate in biological sciences from Oregon State University in 1979. He performed his doctoral research at Argonne National Laboratory in the area of chemical carcinogenesis. From 1979 to 1985, Dr. Christopher was a study director and department manager in contract laboratories, responsible for animal safety testing of drugs, food additives, chemical warfare agents, and medical devices.

(continued on page 9)

Novel Strategies Employing Microbes and Electrodes for Remediation of Metals, Hydrocarbons and Chlorinated Solvents in Subsurface Environments

Derek R. Lovley, *Distinguished Professor, Department of Microbiology, University of Massachusetts Amherst, Amherst, MA*

**PM
SESSIONS**

Wednesday

Session 1: GASOLINE OXYGENATES II

Campus Center Auditorium

Sponsored by

American Petroleum Institute

Moderator: **Cristin L. Bruce**, *Shell Global Solutions (US), Houston, TX*

1:30pm

Predicting MTBE Legacy Impacts to the Sole Source Aquifer of Long Island, NY
Kristy A. Salafrio, Joseph E. Haas, II, *New York State Department of Environmental Conservation, Stony Brook, NY*

2:00pm

Microbial Production and Consumption of tertiary Butyl Alcohol
Michael R. Hyman, *North Carolina State University, Raleigh, NC*

2:30pm

Anaerobic MTBE & TBA Biodegradation - Microbial Respiratory Processes versus Extent of Biodegradation
Kevin T. Finneran, *University of Illinois at Urbana/Champaign, Urbana, IL*

3:00pm Break

3:30pm

Stable Isotope Probing with ¹³C-MTBE-amended Bio-Sep® Beads in MTBE-degrading Microcosms
Xiaomin Yang, *BP Corporation North America, Warrenville, IL*
John Wilson and Cheri Adair, *U.S. EPA, Ada, OK*
Jennifer Busch-Harris, Kerry Sublette and Eleanor Jennings, *University of Tulsa, Tulsa, OK*
Tomasz Kuder and Paul Philp, *University of Oklahoma, Norman, OK*
Greg Davis, *Microbial Insights, Inc., Rockford, TN*
William E. Holmes, *University of California, Davis, CA*

4:00pm

Stable Isotope Fractionation Resulting from Biotic and Abiotic MTBE Attenuation Processes
Tomasz Kuder, Paul Philp, Jon Allen, *University of Oklahoma, Norman, OK*

4:30pm

Panel Discussion

Session 2: PERCHLORATE/MECS

101 Campus Center

Moderator: **Ellen Moyer**, *Greenenvironment, LLC, Montgomery, MA*

1:30pm

Containment of a Perchlorate Plume from the use of Road Flares in a Wellhead Protection Area
Thomas C Cambareri, Scott Michaud, *Cape Cod Commission, Barnstable, MA*

2:00pm

Perchlorate Remediation using a Novel Autotrophic, Perchlorate-Reducing Microbial Community
Teresa A. Conneely, Ashish K. Sahu, Sarina J. Ergas, Klaus Nüsslein, *University of Massachusetts, Amherst, MA*

2:30pm

Effects of Reducing Conditions on the Fate and Transport of RDX in Groundwater
Michael W. Morris, Lonnie Fallin, *Jacobs Engineering, Bourne, MA*

3:00pm Break

3:30pm

Quantitative Analysis of Potential Impact to Groundwater by UXO from a Former Grenade-Launcher Range, MMR
Changsheng Lu, *Jacobs Engineering, Oak Ridge, TN*
Michael W. Morris, *Jacobs Engineering, Bourne, MA*
Jim Defenderfer, *Jacobs Engineering, Oak Ridge, TN*
Thom Davidson, *U.S. Army Corps of Engineers, Concord, MA*
Mike Goydas, *Environmental Chemical Corporation, Otis ANG Base, MA*

4:00pm

Field Evaluation of Release of Explosives Compounds from a Cracked UXO Item Using a Pan Lysimeter
Christopher Abate, Kim Groff, Herbert Colby, Jacob Zaidel, *AMEC Earth & Environmental, Westford, MA*
William Gallagher, *U.S. Army, Camp Edwards, MA*
Scott Greene, *U.S. Army Corps of Engineers, Concord, MA*

4:30pm

Grenade Range Management Using Lime for Dual Role of Metals Immobilization and Explosives Transformation Treatability Study
Steven L. Larson, Jeffrey L. Davis, W. Andy Martin, Deborah R. Felt, *U.S. Army Engineer Research and Development Center, Vicksburg, MS*
Gene Fabian, *Aberdeen Test Center, Aberdeen, MD*
Catherine Nestler, *Applied Research Associates, Inc., Vicksburg, MS*
Gregory O'Connor, *US Army Armament, Research, Development and Engineering Command, Picatinny Arsenal, NJ*

5:00pm

Military Munitions Response Program Site Inspections for Formerly Used Defense Sites – Munitions Constituents Sampling
Deborah Dixon Walker, *US Army Engineer Support Center Huntsville, Huntsville, AL*

Session 3: ANALYSIS

168C Campus Center

Sponsored by **Northeast Analytical**
Moderator: **Robert E. Wagner**, *Northeast Analytical, Schenectady, NY*

1:30pm

Interlaboratory Study on PCB Analysis of Natural Waters by Method 1668A
Julio A. Zimbron, *GE Global Research, Niskayuna NY*
David R. Blye, *Environmental Standards, Inc., Valley Forge, PA*

2:00pm

An Assessment and Overview of PCB and Congener Specific PCB Testing Methodologies
Jason Homrighaus, Robert E. Wagner, Ann C. Casey, *Northeast Analytical, Inc., Schenectady, NY*

2:30pm

Compliant Analysis of Water, Wastes and Related Solid Environmental Samples Using Inductively Coupled Plasma Atomic Emission and Mass Spectrometry - A Critical Comparison of QA/QC Requirements of EPA and Standard Method Procedures
I.B. Brenner, *Environmental Analytical Services, Malkha, Jerusalem, Israel*

3:00pm Break

3:30pm

The Nylon Plasticizer, N-(n-butyl)benzenesulfonamide, Misidentified as Diesel Contamination in Groundwater
Steven D. Gregory, Harry R. Beller, Ph.D., Victor Madrid, *Lawrence Livermore National Laboratory, Livermore, CA*

4:00pm

Low Thermal Mass Gas Chromatography – Analysis at MACH Speed
Robert E. Wagner, Ann C. Casey, Inga Hotaling, *Northeast Analytical, Inc., Schenectady, NY*

4:30pm

Lessons Learned on the Implementation of CRREL Multi-Increment Sampling (MIS) and Analysis by SW-846 Method 8330B
Mark R. Koenig, *USACE Project Chemist, New England District, Concord, MA*
Laurie Ekes, *Environmental Chemical Corporation, Otis ANGB, MA*
Brad Chrigwin, *STL-Burlington, South Burlington, VT*
Alan Hewitt, Thomas F. Jenkins, Marianne Walsh, *US Army Engineer Research and Development Center, Hanover, NH*

(continued from page 7)

5:00pm

Risk-Based Characterization of Extractable Petroleum Hydrocarbon Contamination Using Comprehensive Two-Dimensional Gas Chromatography with Dean's-Switch Modulation

Robert G. Brown, *Lancaster Laboratories, Lancaster, PA*
John V. Seeley, *Oakland University, Rochester, MI*
James D. McCurry, *Agilent Technologies, Wilmington, DE*
Stacy K. Seeley, *Kettering University, Flint, MI*
Steve V. Bandurski, *Oakland University, Rochester, MI*

Session 4: CHEMICAL OXIDATION

Reading Room, Campus Center
Moderator: **Cliff Bruell**, *University of Massachusetts Lowell, Lowell, MA*

1:30pm

Control of MnO₂ Particles during Permanganate-ISCO through Use of Chemical Stabilization Aids

Saebom Ko, Michelle Crimi, Mark Quickel, Bradley Martin, Hilary Cartwright, *East Tennessee State University, Johnson City, TN*

2:00pm

Pilot Study: Evaluation of ISCO on TCE Impacted Ground Water Residing in Granitic Mass

Mauricio H. Escobar, *ENVIRON International Corporation, Los Angeles, CA*
Antony Jones, Carol Serlin, *ENVIRON International Corporation, Irvine, CA*

2:30pm

Phase III ISCO with Catalyzed Persulfate of Chloro Benzenes in Glacial Till and Bedrock, Corinna, ME

Ian T. Osgerby, *USACE New England District, Concord MA*
Kenneth L. Sperry, *XDD, LLC, Quakertown, PA*
Denis McGrath, *Nobis Engineering Inc., Concord, NH*

3:00pm Break

3:30pm

Chemical Oxidation of Sulfa Drugs, Barbiturates and Chlorinated Solvents in Groundwater: A Bench Test Evaluation

Neal D. Durant, *Geosyntec Consultants, Columbia, MD*
Leah MacKinnon, Evan E. Cox, *Geosyntec Consultants, Guelph, Ontario, Canada*
Sandra Dworatzek, *SIREM Laboratory, Guelph, Ontario, Canada*
Torben H. Jørgensen, *COWI Consulting Engineers and Planners, Odense, Denmark*

4:00pm

Site Remediation of Chlorinated Solvent Contaminated Groundwater via In Situ Application of Activated Persulfate

Shawn Tollin, Philip Block, Marguerite Carpenter, *FMC Corporation, Philadelphia, PA*
John Haselow, *Redox Tech, Cary, NC*

4:30pm

Treatment of Non-Aqueous Phase Liquids (NAPLs) using Surfactant-Enhanced In-Situ Oxidation (S-ISCO®)

George E. Hoag, John Collins, *VeruTEK Technologies, Inc., Glastonbury, CT*
Ken Hwang, *VeruTEK Technologies, Inc., Willington, CT*

Dr. Christopher has been certified by the American Board of Toxicology since 1984. He hopes to see his 25th year as a member of the Society of Toxicology next year. He was a founding member of the Risk Assessment Specialty Section of SOT, serving as its President in 1995-1996. He was a founding member of the Northern California Chapter of SOT, serving as its President in 1996-1997. Both the Specialty Section and the Northern California chapter has given him distinguished service awards.

Dr. Christopher has reviewed risk assessments and actively participated in project teams for cleanup at more than 35 active and closed military bases in California. The most complex and interesting of these have been Fort Ord (near Monterey), Mare Island Naval Shipyard (northeast of Oakland), and Long Beach Naval Complex (Los Angeles area). After long and complex assessment of the effects of contamination on the health of humans and non-human species at these former bases, large tracts have been returned to productive use for industry, housing, and higher education.

His specialties have been risk assessment of metals and statistics of risk assessment. He is the Department's contact person for multi-media assessment of the effects of lead. He authored guidance on identifying ambient concentrations of metals, which is widely used outside California. He is currently actively involved in bringing evaluation of the bioavailability of arsenic into regular use in risk assessment for assessment of California many former mining sites. He has chaired symposia at the Department on the subjects of bootstrapping methods for exposure point concentrations and the bioavailability of lead and arsenic in soil.

Dr. Christopher has participated more than 25 extra-governmental peer review panels during the last dozen years, offering his expertise on hazard identification and dose-response assessment of industrial and environmental chemicals. His advice has been sought by U.S. EPA, Health Canada, and the American Chemistry Council. Most recently, he has served on panels evaluating risk assessment of chemicals in children and health effects of non-lethal weapons.

WORKSHOP

7 pm – 10 pm

- 13) **Critical Exposure Pathways** (101 Campus Center)
- 14) **Characterizing PAH Bioavailability in Sediments for Remedial Decision-Making** (168C Campus Center)
- 15) **Theory and Application of Molecular Biological Tools ("MBTs") and Biogeochemistry to Bioremediation Process Monitoring and Monitored Natural Attenuation Programs Environmental** (Reading Room, Campus Center)
- 16) **Geochemical Evaluations of Metals in Environmental Media: How to Distinguish Naturally Elevated Metals Concentrations from Site-Related Contamination** (917 Campus Center)

Session 1: BIOREMEDIATION

Campus Center Auditorium

Moderator: **Kevin Finneran**, *University of Illinois at Urbana/Champaign, Urbana, IL*

8:30am

Using Field Pilot-Testing Results to Design a Full-Scale Enhanced Bioremediation Approach to Remediate DNAPL TCE

Lucas A. Hellerich, *Metcalf & Eddy / AECOM, Wallingford, CT*
 Paul Dombrowski, *Metcalf & Eddy / AECOM, Wakefield, MA*
 John L. Albrecht, *Metcalf & Eddy / AECOM, Wallingford, CT*
 Dave Hart, *Noranda Metals Industries, Inc., New Madrid, MO*

9:00am

Use of Degradable Non-oxidizing Biocides and Biodispersants for Maintenance of Capacity in Nutrient Injection Wells

Brad Horn, *Redux Technology, Newfane, VT*
 Gary Richards, *Redux Technology, Downingtown, PA*

9:30am

Mechanisms and Kinetics of Extracellular Electron Shuttle Mediated Cyclic Nitramine (RDX and HMX) Biodegradation

Man Jae Kwon, Kevin T. Finneran, *University of Illinois - Urbana Champaign, Urbana, IL*

10:00am Break

10:30am

Influence of Carbon Source on Microbial Community in Passive ARD Treatment System

Jana Schmidtova, Susan A. Baldwin, *University of British Columbia, Vancouver, BC, Canada*

11:00am

Replacement of a Groundwater Extraction System with Bioremediation to Treat Trichloroethylene in Fractured Bedrock

Carl R. Elder, Douglas G. Larson, *Geosyntec Consultants, Inc., Acton, MA*
 John E. Vidumsky, *DuPont Corporate Remediation Group, Wilmington, DE*

11:30am

Transport of Lactate and in-situ Bioremediation of Tetrachloroethylene (PCE) under Direct Current

Xingzhi Wu, *Northeastern University, Boston, MA*
 David B. Gent, *US Army Engineer Research and Development Center, Vicksburg, MS*
 Akram Alshawabkeh, *Northeastern University, Boston, MA*
 Jeffrey L. Davis, *US Army Engineer Research and Development Center, Vicksburg, MS*

Session 2: REMEDIATION II

101 Campus Center

Moderator: **Paul Rakowski**, *Booz | Allen | Hamilton, Norfolk, VA*

8:30am

Application of Electrochemical Techniques for the Remediation of Soils Contaminated with Organic Pollutants

Elisa Ferrarese, Gianni Andreottola, *University of Trento, Trento, Italy*

9:00am

Comparison of Remedial Systems Employed at Drycleaner Sites

Bob Jurgens, *Kansas Dept. of Health & Environment, Topeka, KS*
 William Linn, *Florida Dept. of Environmental Protection, Tallahassee, FL*
 Nancy Boisvert, *Tennessee Drycleaner Environmental Response Program, Nashville, TN*

9:30am

Adjustable Depth Air Sparging Case Study

Michael C. Marley, *XDD, LLC, Stratham, NH*
 Matthew T. Walsh, *XDD, LLC, Allentown, PA*
 Andrew S. Drucker, *Naval Facilities Engineering Service Center, Port Hueneme, CA*

10:00am Break

10:30am

Remediation of Asbestos in Soil under the New Massachusetts Department of Environmental Protection Regulations

James R. Fair, Prasanta K. Bhunia, *Weston & Sampson Engineers, Inc., Peabody, MA*

11:00am

Five-Year Performance Evaluation of a Permeable Reactive Barrier, Needham, Massachusetts

Peter Richards, *Massachusetts Department of Environmental Protection, Wilmington, MA*

11:30am

Re-Remediating: Post-Closure Excavation after Source Zone Translocation and MNA Ineffectiveness – A Case Study

Stephen J. Druschel, *Nobis Engineering, Inc., Lawrence, MA*
 Jay Snyder, Vener Mustafin, Teri McMillan, *Golder Associates, Inc., Albuquerque, NM*
 Patrick DeGruyter, *New Mexico Environment Department, Albuquerque, NM*

Session 3: MODELING

168C Campus Center

Moderator: **Eric Nichols**, *LFR/Levine-Fricke, Newfields, NH*

8:30am

A Spreadsheet-Based Multi-Layer Vadose Zone Leaching Model

Phillip C. de Blanc, *Groundwater Services, Inc., Houston, TX*

9:00am

Use of SEVIEW Software in Determining Groundwater Impacts at POCs

Michael R. Kulbersh, *U.S. Army Corp of Engineers, Concord, MA*

9:30am

A Permanganate Natural Oxidant Demand Kinetic Model

Laura Jones, Xiuyuan Xu, Neil R. Thomson, *University of Waterloo, Waterloo, ON, Canada*

10:00am Break

10:30am

A Proposal for a Quantitative Petroleum Weathering Model to Replace Today's Qualitative or Descriptive Categories

Michael J. Wade, *Wade Research, Inc., Marshfield, MA*

11:00am

Evaluating the Impacts of Uncertainty in Geomorphic Channel Changes on Predicting Mercury Transport and Fate in the Carson River System, Nevada

John J. Warwick, Rosemary Carroll, *Desert Research Institute, Reno, NV*

11:30am

BIOSCREEN, AT123D, and MODFLOW/MT3D, a Comprehensive Review of Model Results

Robert A. Schneiker, *Environmental Software Consultants, Inc., Madison, WI*
 Liliana Cekan, *McLane Environmental, LLC, Princeton, NJ*

Session 4: RISK ASSESSMENT

Reading Room, Campus Center

Moderator: **Betsy Ruffle**, *ENSR, Westford, MA*

8:30am

Health Effects of Exposure to Soils Contaminated by Hydrocarbon or Heavy Metal Compounds

Mohamed S. Abdel-Rahman, *UMDNJ, New Jersey Medical School, Newark, NJ*
 Gloria A. Skowronski, *UMDNJ, New Jersey Medical School, Newark, NJ*
 Rita M. Turkall, *UMDNJ, School of Health Related Professions, Newark, NJ*

9:00am

Moss Point Community Exposure to Contaminants from a Releasing Facility

Paul Rosenfeld, *UCLA School of Public Health, Los Angeles, CA*
 Rob Hesse, *Soil/ Water/ Air Protection Enterprise, Santa Monica, CA*
 Amy Hensley, *UCLA School of Public Health, Los Angeles, CA*
 Andrew Scott, *Soil/ Water/ Air Protection Enterprise, Santa Monica, CA*

9:30am

Soil Vapor Intrusion Data – Planning and QA/QC Evaluation for Risk Assessment

Nancy C. Rothman, *New Environmental Horizons, Inc., Skillman, NJ*
 Susan D. Chapnick, *New Environmental Horizons, Inc., Arlington, MA*

10:00am Break

10:30am

Application of Geostatistics and Risk Assessment to Property Divestitures

Betsy Ruffle, Marcia Greenblatt, Kathleen Nolan, M.S., *ENSR, Westford, MA*
 J. Douglas Reid-Green, *BASF Corporation, Florham Park, NJ*

11:00am

Unintended Environmental Risks from Processes and Products Intended to Reduce Environmental Risk

William A. Farone, *Applied Power Concepts, Inc., Anaheim, CA*

11:30am

Quite a challenge: Assessment of the Human Health Risks of Asbestos in Soils. A Tiered Approach

Frank A. Swartjes, *National Institute of Public Health and the Environment (RIVM), Bilthoven, The Netherlands*

New England Environmental Challenges for the Next Generation

Ira W. Leighton, Deputy Regional Administrator, EPA New England, Boston, MA

PM SESSIONS

Thursday

Session 1: HEAVY METALS

Campus Center Auditorium

Moderators: **Gopal Pathak**, Birla Institute of Technology, Ranchi, India

Leonard Pitts, Alpha Analytical, Westborough, MA

1:30pm

Lead in Soil by Field Portable X-Ray Fluorescence Spectrometry - An Examination of Paired In-Situ and Laboratory ICP-AES Results

David A. Binstock, William F. Gutknecht, Andrea C. McWilliams, RTI International, Research Triangle Park, NC

2:00pm

Soil-Lead Partitioning in Southern and Northern Hemisphere: A Comparative Evaluation

Maria Marin, Carol J. Miller, Wayne State University, Detroit, MI

2:30pm

In-Situ Stabilization of Metals Contaminated Soils Using Phosphate Based Admixture

Rick Greiner, Conoco Phillips Company, Houston, TX

Gary M. Garfield, URS Corporation, Salem, NH

Michael Stiller, URS Corporation, Boston, MA

Russ Wilder, URS Corporation, Salem, NH

3:00pm Break

3:30pm

In-situ Remediation of Chromium with Nanoiron

David Henderson, New Jersey Department of Environmental Protection, Hamilton, NJ

Harch S. Gill, PARS Environmental, Inc., Robbinsville, NJ

4:00pm

Boston Mine: Cleanup of Mercury at an Abandoned Placer Gold Mine

David Lawler, US Department of the Interior Bureau of Land Management, Sacramento, CA

Joel Bauman, Gregory J. Reller, Tetra Tech EM, Inc., Rancho Cordova, CA

4:30pm

Restoring Silver Bow Creek in the Upper Clark Fork River Basin in Western Montana

Gregory J. Mullen, Natural Resource Damage Program, Helena, Montana

Session 2: INNOVATIVE TECHNOLOGIES

101 Campus Center

Moderator: **Ralph S. Baker**, TerraTherm, Inc., Fitchburg, MA

1:30pm

Contaminant Removal during Large-Scale Experiments of Thermal Remediation of DNAPL Sources in Aquifers

Ralph S. Baker, John C. LaChance,

TerraTherm, Inc., Fitchburg, MA

Gorm Heron, TerraTherm, Inc., Keene, CA

Uwe Hiester, Hans-Peter Koschitzky, Oliver

Trötschler, University of Stuttgart, Stuttgart,

Germany

Myron Kuhlman, MK Tech Solutions, Inc.,

Houston, TX

2:00pm

High Mass Delivery Gas Infusion Systems for Active Bioremediation, Modification of Groundwater Geochemistry and NAPL Removal

James F. Begley, MTER/inVentures

Technologies, Plymouth, MA

Karen D. Greer, Water and Earth Science

Associates Ltd., South Kitchener, Ontario,

Canada

Peter Guerra, AMEC Earth & Environmental,

Inc., Albuquerque, NM

2:30pm

Real-Time Contaminated Soil & Groundwater Remediation Optimization via the Information Superhighway

Richard Cartwright, MECX, LLC, East Amherst,

NY

3:00pm Break

3:30pm

Fluorescent Dyes Define Ground Water Flow Paths in Unconsolidated Aquifers

Edward Hinchey, ERM-Northeast, Inc.,

Syracuse, NY

Martin Otz, ERM and NannoTrace Technologies

4:00pm

Innovative Groundwater Imaging Technology

Mark Kluger, Dajak, LLC, Wilmington, DE

4:30pm

Innovative Off-Gas Treatment Technology Allows Recycling of Extracted Soil Vapor

Cannon F. Silver, Battelle, Columbus, OH

Carol Winell, G.E.O., Inc., Orange, CA

Session 3: SITE ASSESSMENT

168C Campus Center

Moderator: **Dawn Oliveira**, EFI Global, Inc., Fall River, MA

1:30pm

Laser-Induced Fluorescence for the Delineation & Characterization of Fuel-Contaminated Soils in Subarctic Climates

Kenneth R. Andraschko, Charley S. Peyton,

U.S. Army Corps of Engineers, Alaska District,

Elmendorf AFB, AK

2:00pm

Use of a Collaborative Dataset to Enhance Data Representativeness

Louis Burkhardt, Raytheon, Sudbury, MA

R. Joseph Fiacco, Jr., Michael Ravella, Maelle

Duquoc, Camillo Coladonato, Johannes Mark,

Eric J. Moore, ERM, Boston, MA

2:30pm

Use of Borehole Geophysical Logging, Packer Testing, and Discrete Groundwater Sampling in Assessment and Remediation of a Release of #2 Fuel Oil at a Western Massachusetts Residence

Jeffrey W. Garretson, Geoffrey A. Brown,

ENPRO Services, Inc., Newburyport, MA

Mario Carnevale, Hager GeoScience, Inc.,

Woburn, MA

3:00pm Break

3:30pm

Sampling Sediment Porewater in the Lower Duwamish Waterway Using a Passive Sampler

Jay W. Hodny, W. L. Gore & Associates, Inc.,

Elkton, MD

Teri A. Floyd, Floyd and Snider, Inc., Seattle,

WA

George Shaw, W L Gore & Associates, Inc.

4:00pm

A Study of Tritium in Municipal Solid Waste Leachate

Robert D. Mutch, Jr., HydroQual, Inc., Mahwah,

NJ

Richard Carbonaro, Manhattan College,

Riverdale, NY

4:30pm

The Repeated Trespass of Tritium-Contaminated Water into a Surrounding Community from Repeated Waste Spills from a Nuclear Power Plant

Paul Rosenfeld, Amy Hensley, UCLA School of Public Health, Los Angeles, CA

Andrew Scott, James Clark, Soil/ Water/ Air

Protection Enterprise, Santa Monica, CA

**TUESDAY,
OCTOBER 16, 2007**

ARSENIC

Experimental and Biogeochemical Modeling Studies on Arsenic Release in Soil under Anaerobic Condition
Halim Md. Abdul, Razzak Abdur, Oda Keita, Hiroshiro Yoshinari, Jinno Kenji, *Kyushu University, Fukuoka, Japan*

Arsenic Contamination in Groundwater of Vietnam
Sunbaek Bang, Kyoung-Woong Kim, Van Anh Nguyen, *Gwangju Institute of Science and Technology (GIST), Gwangju, Korea*
Hung Viet Pham, *Hanoi University of Science, Hanoi, Vietnam*

Arsenic Contamination of Ground Water in some parts of Eastern India and its Remedial Measures
Gopal Pathak, *Birla Institute of Technology, Mesra, Ranchi, India*

Applicability of Biological Techniques for the Remediation of Arsenic Contaminated Soils
Nymphodora Papassiopi, Katerina Vaxevanidou, *National Technical University of Athens, Athens, Greece*

ENVIRONMENTAL FATE

Sorption Behaviors of Organic Contaminants on Insolubilized Humic Acid
Hui Chen, Mingguang Ma, Yiqing Yang, Yuan Zhang, Yingqin Wu, *Northwest Normal University, Lanzhou, Gansu, P.R. China*

Risk Assessment and Remediation Criteria of Oil Leaking from Fluid-filled Underground Power Cables
Carlos A. Gotelli, Mariano J. Gotelli, Alfredo Lo Balbo, *Centro de Investigaciones Toxicológicas, Ciudad de Buenos Aires, Argentina*

Behaviour of Phenanthrene in Water-Polymerin-Alumina Three-Phase System
Marianna Iorio, *University of Naples "Federico II", Portici (NA), Italy and University of Massachusetts, Amherst, MA*
Bo Pan, *University of Massachusetts, Amherst, MA*
Renato Capasso, *University of Naples "Federico II", Portici (NA), Italy*
Baoshan Xing, *University of Massachusetts, Amherst, MA*

Dendrochemical Application to Evaluate the Absorption of Diesel and Hydrocarbon Contaminants in Tree Rings for Recent Contamination Event
Patricia Duplessis, Diane Saint-Laurent, *Université du Québec à Trois-Rivières, Trois-Rivières, QC, Canada*
Joëlle Marion, *INRS-ETE, Rue de la Couronne, QC, Canada*

ENVIRONMENTAL FORENSICS

Use Dendrochronological and Dendrochemical Methods for Dating Hydrocarbon Contamination of the Saint-François and Massawippi Riverbanks
Julien St-Laurent, Diane Saint-Laurent, Patricia Duplessis, *Université du Québec à Trois-Rivières, Trois-Rivières, QC, Canada*
Joëlle Marion, *INRS-ETE, Rue de la Couronne, QC, Canada*

PESTICIDES

Enhanced Atrazine Natural Attenuation in Agricultural Soil Exposed to a Major Spill
Elizabeth A. Shaffer, *Malcolm Pirnie Inc., Tampa, FL*
Gerald K. Sims, *USDA Agricultural Research Service, Urbana, IL*

PHYTOREMEDIATION

A Novel Non-tissue Culture Approach for Developing Transgenic Plants of a Potential Phytoremediator, Brassica juncea with Agrobacterium tumefaciens
Sudesh Chhikara, M. D., Pawan K. Jaiwal, M. D. *University, Rohtak, India*

Plant Spacing for Optimal Arsenic Phytoremediation using *Pteris cretica*
Joshua Goldowitz, Sean O'Neil, *Rochester Institute of Technology, Rochester, NY*

Analysis of Arsenic-Induced Transcriptome of *Crambe abyssinica* to Isolate Genes for Phytoremediation of Arsenic
Bibin Paulose, Asma Zulfiqar, Om Parkash Dhankher, *University of Massachusetts, Amherst, MA*

Isolating Chromium-Induced Genes from *Crambe abyssinica* for Phytoremediation of Chromium Contamination
Asma Zulfiqar, Bibin Paulose, Om Parkash Dhankher, *University of Massachusetts, Amherst, MA*

REMEDICATION

Organoclays Trap Recalcitrant Organic Compounds and Metals in Sediments Simultaneously
George R. Alther, *Biomim, Inc., Ferndale, MI*
Eric C. Hince, Eric L. Zimmer, *Geovation Engineering, Rochester, NY*

Case Study of the Design and Operation of a Deep Air Sparging System to Remediate Petroleum Impacted Groundwater
James F. Cuthbertson, Jason Phillips, *Delta Environmental Consultants, Inc., Novi, MI*

Performance-Based ERH Remediation of DNAPL in a Tight Soil Matrix
Robert F. Davis, Jr., Christopher Pike, *Tetra Tech NUS, Inc., Pittsburgh, PA*
Anthony B. Robinson, *Naval Facilities Engineering Command, North Charleston, SC*
Dan W. Waddill, *Naval Facilities Engineering Command, Norfolk, VA*
Howard Hickey, *NAVFAC Midwest, Great Lakes, IL*

Habitat Restoration and Challenges Faced in Remediation of Coal Tar in the Connecticut River
Nathan Henderson, *Metcalf & Eddy | AECOM, Wakefield, MA*
John Albrecht, *Metcalf & Eddy | AECOM, Wallingford, CT*
Paul J. Boison, *Northeast Utilities Service Company, Berlin, CT*

Pilot Testing Pneumatic Fracturing to Enhance Petroleum Hydrocarbon Recovery
Chester A. Hitchens, *Delta Environmental Consultants, Inc., Loveland, CO*

Economic Optimization of Existing Pump and Treat Groundwater Remediation Systems
Brad Johnson, *CH2M HILL, Otis ANG Base, MA*
Rose Forbes, *Air Force Center for Environmental Excellence, Otis ANG Base, MA*
Ken Martins, *CH2M HILL, Santa Ana, CA*

Evaluation of Pneumatically Induced Fractures for Enhanced Delivery of Substrates within Low Permeable Soils
Michael Liskowitz, *ARS Technologies, Inc., New Brunswick, NJ*
Charlotte Riis, Anders Christensen, *NIRAS, Allerød, Denmark*

EDC Remediation with Microbubble Ozone Diffusion
Dennis L. Mast, *Shine Holdings, Inc., Apex, NC*

Pilot Experiment of Immobilization of Contaminants In-situ
Jiří Mužák, DIAMO, Ludvík Kašpar, DIAMO, *Straz pod Ralskem, Czech Republic*

Design and Implementation of a Comprehensive Thermal Remedy at a Former Drum Disposal Site
Thomas J. Phelan, Carl R. Elder, Douglas G. Larson, Christopher A. Sullivan, Robin R. Swift, Peter J. Zeeb, *Geosyntec Consultants, Inc., Acton, MA*

Case Study - The Excavation of MGP Residuals in Soil Adjacent to an Active Rail Line and within a Residential Community
Mikel Pype, Barry Raus, Lindsay Guiliano, *Jacques Whitford Company, Inc., Plymouth Meeting, PA*
Joseph Foglio, *GZA GeoEnvironmental, Inc., Fort Washington, PA*

Low Permeability Barrier Wall for Control of Groundwater Contamination: Performance Verification and Case Histories
David Smyth, *Golder Associates, Mississauga, ON, Canada*
Robbie Laird, *C3 Environmental Limited, Breslau, ON, Canada*
Robin Jowett, *Waterloo Barrier Inc., Rockwood, ON, Canada*

Design vs. Reality: An Analysis of the Design and Performance of a Dual Phase Extraction System
Paul Uzgiris, Frank Ricciardi, *Weston & Sampson Engineers, Inc., Peabody, MA*

Kinetic Study of Nitrate Reduction with Nanoparticle Bimetallic Fe-Ni
Kuang-Chung Yu, Li-Jyur Tsai, Shien-Tsong Ho, *Chia-Nan University of Pharmacy and Science, Tainan, Taiwan*

SEDIMENTS

PAH Bioavailability and Toxicity in Freshwater Sediments
Nick Azzolina, Joseph P. Kreitinger, *ENSR Corporation (dba The RETEC Group, Inc.), Ithaca, NY*
David V. Nakles, *ENSR Corporation (dba The RETEC Group, Inc.), Monroeville, PA*
Edward F. Nehauser, *National Grid, West, Syracuse, NY*

Adsorption Behavior of Phthalate Acid Esters on Sediments along the Yellow River in China
Hui Chen, Yuan Zhang, Mingguang Ma, Yingqing Wu, *Northwest Normal University, Lanzhou, Gansu, P.R. China*

Phosphorus Fractionation in Marine Sediments, Singapore using a Fractionation Extraction Procedure
Dang The Cuong, Jeffrey Philip Obbard, *National University of Singapore, Singapore*

Up-to-date Technology for Treatment Dredged Sediments and its Beneficial Applications in Ago Bay, Japan
Daizo Imai, *Mie Industry and Enterprise Support Center, Shima, Ago, Mie, Japan*
Ahmed H.A. Dabwan, *Anotsu Research Institute for Environmental Restoration, Tsu, Mie, Japan*
Tadaya Kato, *Mie Industry and Enterprise Support Center, Tsu, Mie, Japan*
Satoshi Kaneco, Hideyuki Katsumata, Tohru Suzuki, Kiyohisa Ohta, *Mie University, Tsu, Mie, Japan*

Funnel and Gate Design for the Capping of Impacted Sediments
Fayaz Lakhwala, *Adventus Group, Union, NJ*
Joanna Moreno, *Adventus Group, Conifer, CO*
Michael Duchene, *Adventus Group, Waterloo, Ontario, Canada*
John Hull, *Toledo, OH*

Enclosing Dioxins Contaminated Sediment by Geotextile Tubes

Yugo Masuya, Hitoshi Taninaka, Isamu Takahashi, Hidetoshi Kohashi, *Public Works Research Institute, Tsukuba City, Ibaraki Prefecture, Japan*

Assessment of Risk of the Release of Combustible Vapors during Solidification/Stabilization Treatment of Highly Contaminated Sediment

Talaat Balba, Sophia Dore, Donald Pope, Jennifer Smith, Alan Weston, *Conestoga-Rovers & Associates, Niagara Falls, NY*

Remediating Sediment with Hydraulic Dredging and Geotubes®

Marilyn M. Wade, *URS Corporation, Salem, NH*

TUNGSTEN**International Tungsten Industry Association (ITIA) Global Stewardship Program**

Salvatore Giolando, *ARCADIS Inc., Hamilton, OH*
Carmen Venezia, *CIH, OSRAM, Towanda, PA*
Zan Persichetti, *Kennametal Inc., Latrobe, PA*
Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*

Sustainable Manufacturing: A Case Study from the Tungsten Hardmetal Industry

Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*

Hardmetal Safety: An Industry Perspective

Zan Persichetti, *Kennametal Inc., Latrobe, PA*
Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*
Dianne Green, *ARCADIS Inc., Hamilton, OH*

Tungsten Carbide/Cobalt Hardmetal Powder: Are they Carcinogenic?

John D. Schell, *ARCADIS Inc., Houston, TX*
Salvatore Giolando, *ARCADIS Inc., Hamilton, OH*
Michael J. Pardus, *ARCADIS Inc., Pittsburgh, PA*

VAPOR INTRUSION**Comparison of Naphthalene Measurements between Laboratory Methods and an Ultra-Fast Field Gas Chromatograph**

A. Rezendes, *Alpha Analytical*
M. Marando, P. King, *GEI Consultants, Inc.*

A Vapor Intrusion Study Using Multiple Lines of Evidence

Christine J. Weaver, Paul J. Bovitz, *Weston Solutions Incorporated, Edison, NJ*
James T. Moore, *US Army Corps of Engineers - New York District, East Brunswick, NJ*
James A. Kelly, *US Army Corps of Engineers - New England District, Concord, MA*

Vapor Intrusion Investigations Utilizing Passive Soil Gas Sampling

James Whetzel, Harry Anderson, Jay Hodny, W. L. Gore and Associates, Inc., *Elkton, MD*

WEDNESDAY, OCTOBER 17, 2007**ACID MINE DRAINAGE****Bioremediation of Acid Mine Drainage in a Uranium Deposit by Means of a Multibarrier**

Stoyan N. Groudev, Marina V. Nicolova, Plamen S. Georgiev, Irena I. Spasova, *University of Mining and Geology, Sofia, Bulgaria*
Ludo Diels, *VITO, Mol, Belgium*

ANALYSIS**Analysis of Sulfur in the Copper Basin and Muddy River Sites Using Portable XRF Instrumentation**

Michael Berger, *Simmons College, Boston, MA*
Laura Stupi, Robert Schleicher, *Thermo Fisher Scientific, Billerica, MA*

Analysis Method for Congener Isomer by Series of Polar and Non-polar Column GC Combination

Jong-Heub Jung, Seok-Won Eom, *Seoul Metropolitan Government Research Institute of Public Health and Environment, Seoul, Korea*
Seung-Gu Ahn, *University of Seoul, Seoul Korea*

Congener Specific Analysis of PCBs by High Resolution GC with Low Resolution MS – The Need For a Standardized Method

Robert E. Wagner, Kari Lantiegne, Ann C. Casey, Jason Homrighaus, Roy Smith, *Northeast Analytical, Inc., Schenectady, NY*

1,4-Dioxane: The Impact of Analytical Method – A Case Study

P. James Linton, *Blasland, Bouck and Lee, Inc., Tampa, FL*
Tina Armstrong, *Lockheed Martin Company, Bethesda, MD*
John Alonso, Ben Foster, *Blasland, Bouck and Lee, Inc., Tampa, FL*

Determination of Acidic Pharmaceutically Active Compounds in Seawater by on Field Solid Phase Extraction and Liquid Chromatography – Tandem Mass Spectrometry

Yen Ling Tan, Jie Zhang, Hian Kee Lee, Jeffrey Philip Obbard, *National University of Singapore, Singapore*

BIOREMEDIATION**Results of Detailed Field Pilot Study Applications of Magnesium Sulfate Solution to Remediate Petroleum Impacted Groundwater**

James F. Cuthbertson, Lisa Noblet, *Delta Environmental Consultants, Inc., Novi, MI*
Lyle G. Bruce, *BP Products North America Inc, Warrenville, IL*

Characterization and Testing a Novel Biological Reduction Cell to Remediate Heavy Metal and Acid-Containing Mineral Processing Leachates, Heybridge, Tasmania

Alison L. Dann, John P. Bowman, *University of Tasmania, Hobart, Tasmania*
Rodney Cooper, *Echo Remediation PL, Wynyard, Tasmania*

Spill Cleanup of Fuel Contaminated Soils after Roadway Accidents Using In Situ Bioremediation

Satya Ganti, *Sarva Bio Remed, LLC, Trenton, NJ*
Bob Frye, *GEC Environmental Contracting Corp., Lovettsville, VA*

Bioremediation of TOCs present in Fuel-contaminated Desert Mining Soil and Sawdust in the Atacama Region (Chile)

Lorenzo Reyes Bozo, *Pontificia Universidad Católica de Chile, Santiago, Chile and Centro de Investigación Minera y Metalúrgica, Santiago, Chile*
Dr Blanca Antizar-Ladislao, *Universidad de Cantabria - Campus de Torrelavega, Spain*
Dr César Sáez Navarrete, *Pontificia Universidad Católica de Chile, Santiago, Chile*
Alex Godoy-Faúndez, *Universidad Andrés Bello, Santiago, Chile*

Bioluminescence Bioassays by Testing Whole Solid and Their Solid-Aqueous Extracts from Various Sites in Korea

In Chul Kong, Honggyung Jung, *Yeungnam University, Kyungbuk, Korea*
Kyung Sok Ko, *Korea Institute of Geoscience & Mineral Resources, Daejeon, Korea*

Comparison of In-Situ Groundwater Bioremediation Technologies at a Dry Cleaner Release Site

Joseph P. Kracyk, Gerald L. Kirkpatrick, *Environmental Standards, Inc., Valley Forge, PA*

Feather Wastes as Petroleum Sorbents: Study of its Structural Biodegradation

Norma G. Rojas-Avelizapa, *Centro de Investigación en Ciencia Aplicada y Tecnología Avanzada, Querétaro, México*
Elsa Cervantes-González, Luz I. Rojas-Avelizapa, Ramón Cruz-Camarillo, *Escuela Nacional de Ciencias Biológicas, Mexico City, México*
Jaime García-Mena, *CINVESTAV, Mexico City, Mexico*

Enhanced Bioremediation Pilot Study of a Cr (VI)-Impacted Overburden Groundwater System in Kanpur, Uttar Pradesh, India

I. Richard Schaffner, Jr., *GZA GeoEnvironmental, Inc, Manchester, NH*
Rajiv Kumar Singh, *Govt. of India, Gontinagar, Uttar Pradesh, India*
Steven R. Lamb, Donald N. Kirkland, *GZA GeoEnvironmental, Inc, Manchester, NH*

Use of Denitrifying Bioretention Systems to Control Non-Point Sources of Nitrogen

Ryan Siegel, Sarina J. Ergas, *University of Massachusetts, Amherst, MA*
Sukalyan Sengupta, *University of Massachusetts Dartmouth, North Dartmouth, MA*

Aerobic Degradation of 3-Nitrophenol by Pseudomonas aeruginosa Strain 3-NP-1 Isolated From Sewage Treatment Plant

Deepak Singh, Leela Iyengar, Gurunath Ramnathan, *Indian Institute of Technology, Kanpur, India*

BROWNFIELDS**Remediating Asbestos at a Brownfields Site Under the New MCP Regulations**

Ronald Richards, Jason Anderson, Christen Sardano, *Shaw Environmental & Infrastructure, Stoughton, MA*

CHEMICAL OXIDATION**Chemical Oxidation Treatment at the Former Nitchequon Meteorological Station**

Eric Bergeron, Mathieu Barbeau, Kateri Normandeau, *Golder Associés Innovations Appliquées (GAIA) Inc., Montreal, Quebec, Canada*
Adriana Peisajovich, *Transport Canada, Dorval, Quebec Canada*
Ginette Lajoie, *Cree Regional Authority, Montréal, Quebec, Canada*

Evaluation of In Situ Chemical Oxidation of Soils at a Mixed Waste Site and Assessment of Effects on Ground Water Quality

Richard C. Bost, Robert G. Perry, *Environmental Resources Management, Houston, TX*

The Application of Sodium Persulfate to Achieve Drinking Water Standards

James R. Fair, George D. Naslas, *Weston & Sampson Engineers, Inc., Peabody, MA*

In-situ Chemical Oxidation of Residual Chlorinated Solvents - A Case History

Philip J. Knotts, *URS Corporation, Salem, NH*

A Pilot Study Using The iSOC® System To Remediate Diesel Range Petroleum Hydrocarbons

Daniel Servetas, *Shaw Environmental, Inc., Latham, NY*
Cecelia Campbell, *Shaw Environmental, Inc., Monroeville, PA*
Heather Fariello, *Shaw Environmental, Inc., Latham, NY*
Paul J. Kurzanski, *CSX Transportation, Inc., Jacksonville, FL*

EMERGING ISSUES WITH ENERGY IN THE ENVIRONMENT

Production of Electricity from Low Cost Oxy-hydrogen Bio-fuel Cell Using Hydrogen from Blue Green Algae

B. K. Behera, M. D., KK Dubey, M. D., Rambir, M. D., Bhanu P. Singh, M. D. *University, Rohtak, India*

Biofuels: Development or a New Threaten to Brazilian Ecosystems?

Julieta Laudelina de Paiva, *FAPERJ, Petrópolis, RJ, Brazil*

Municipal Solid Waste Used as Bioethanol Sources and its Related Environmental Impacts

Aiduan Li, Majeda Khraisheh, *University College London, London, UK*

Sustainable Geothermal Energy Systems - Lessons Learned and Future Designs

Paul F. Ormond, John R. Kastrinos, *Haley & Aldrich, Boston, MA*

HEAVY METALS

Effects of P Amendments on Lead, Zinc and Cadmium Uptake by Triticale from Industrially Polluted Soils

Violina R. Angelova, Krasimir I. Ivanov, Stefan V. Krustev, *Agricultural University, Plovdiv, Bulgaria*

Stabilization and Removal of Arsenic and Other Metals from Groundwater Using EHC-M

Fayaz Lakhwala, *Adventus Group, Union, NJ*
Joanna Moreno, *Adventus Group, Conifer, CO*
Jim Mueller, Josephine Molin, *Adventus Group, Freeport, IL*

David Hill, Eva Dmitrovic, *Adventus Group, Mississauga, Ontario, Canada*

Andrzej Przepiora, *Adventus Group, Waterloo, Ontario, Canada*

Recent Record of Mercury in Precipitation in Central Virginia

Amy Friedlander, George Mushrush, Douglas Mose, *George Mason University, Fairfax, VA*

Remediation of Mercury Impacts to a Public Water Supply System

George D. Naslas, Paul Uzgiris, James Fair, *Weston & Sampson Engineers, Inc., Peabody, MA*

Cadmium: A Sufficient or Holistic Approach towards Risk Assessment and Regulation within the Danish Landscape!

Billa Cyprian Nkem, Srikanth Vangapandu, Sreedhar Reddy Javaji, *Roskilde University, Roskilde, Denmark*

Demonstration Project: Immobilization of Lead in Soil and Groundwater using Apatite II™

David Morin, Annie Morin, Caroline Scalzo, *TechnoRem Inc., Laval, Québec, Canada*

Adriana Peisajovich, *Transport Canada, Dorval, Québec, Canada*

Judith Wright, *PIMS NW, Inc., Carlsbad, NM*

In Situ Stabilization of Zinc in Soil and Groundwater

Bernd W. Rehm, *ReSolution Partners, LLC, Madison, WI*

Robert Kondelin, *Environmental Alliance, Inc., Wilmington, DE*

Steve Markesic, *Redox Technology, LLC, Downers Grove, IL*

Kinetics and Isotherm Equilibrium Adsorption of Copper(II) Ions onto Chemically Modified Barley Waste

Li-Jyur Tsai, Kuang-Chung Yu, Shien-Tsong Ho, *Chia-Nan University of Pharmacy and Science, Tainan, Taiwan*

Application of Calcium Oxyphosphate and Ferrous Sulphate for Pb and As Stabilization

Anthimos Xenidis, *National Technical University of Athens, Athens, Greece*

MECS

Passive Reactive Berm (PRBerm) to Provide Low Maintenance Lead Containment at Active Small Arms Firing Ranges

Steven L. Larson, Charles Weiss, Philip Malone, W. Andy Martin, *U.S. Army Engineer Research and Development Center, Vicksburg, MS*

Gene Fabian, *Aberdeen Test Center, Aberdeen, MD*

Gregory O'Connor, *US Army Armament, Research, Development and Engineering Command, Picatinny Arsenal, NJ*

Micheal Warminsky, David Mackie, *AMEC, Somerset, NJ*

Munitions and Explosives of Concern (MEC) Investigation of an Open Burn/Open Demolition (OB/OD) Area

Erin Healy, *ICF International, Lexington, MA*

Sheila Holt, *New England District - US Army Corps of Engineers, Concord, MA*

Victoria L. Rystrom, *Risk Reduction Resources, Harpers Ferry, WV*

MISCELLANEOUS

Microbial Toxicity of Manufactured Nanomaterials

Wei Jiang, Hamid Mashayekhi, Baoshan Xing, *University of Massachusetts, Amherst, MA*

Teaching Green – Upper Cape Cod Regional Technical School a Renewable Energy Pioneer

Frank Ricciardi, *Weston & Sampson Engineers, Inc., Peabody, MA*

Kevin Farr, *Upper Cape Regional Technical High School, Bourne, MA*

Multiresistant Microorganisms of Sewage from Leaky Sewers Pass the Urban Underground and Enter the Groundwater

M. Paul, C. Gallert, Dr. J. Winter, *University of Karlsruhe, Karlsruhe, Germany*

MTBE

Anaerobic MTBE and TBA Biodegradation under Different Terminal Electron Accepting Processes

Na Wei, Kevin T. Finneran, *University of Illinois - Urbana Champaign, Urbana, IL*

RADIONUCLIDES

Inexpensive Removal of Waterborne Radon From Private Wells

Wayne Hill, *Marah Water Treatment, Centreville, VA*

Jahan Mazharideh Kordi, Douglas Mose, George Mushrush, *George Mason University, Fairfax, VA*

RISK ASSESSMENT

Derivation of Soil Ecotoxicity Guidelines for Petroleum Hydrocarbons Derived Using the Target Lipid and Equilibrium Partitioning Models

Aaron Redman, *HydroQual, Inc., Camillus, NY*

Joy McGrath, *HydroQual, Inc., Mahwah, NJ*

Thomas Parkerton, *ExxonMobil Biomedical Sciences Inc., Annandale, NJ*

Dominic Di Toro, *University of Delaware, Newark, DE*

Somerville Community Exposure to Contaminants from Wood Treatment Facility Emissions

Paul Rosenfeld, *UCLA School of Public Health, Los Angeles, CA*

Rob Hesse, *Soil/ Water/ Air Protection Enterprise, Santa Monica, CA*

Amy Hensley, *UCLA School of Public Health, Los Angeles, CA*

Andrew Scott, James Clark, *Soil/ Water/ Air Protection Enterprise, Santa Monica, CA*

Risk Assessment of Sewage from Leaky Sewers in Urban Underground for Soil and Groundwater

J. Hua, P. An, M. Paul, C. Gallert, Prof. Dr. J. Winter, *University of Karlsruhe, Karlsruhe, Germany*

SITE ASSESSMENT

The Value of Characterizing the Hyporheic Zone at a Variety of Contaminant Sites

Mark Emmons, *Resource Laboratories, LLC, Portsmouth, NH*

Richard S. Behr, Troy Smith, Brian Beneski, *Maine Department of Environmental Protection, Augusta, ME*

Utilizing LNAPL Laboratory Testing Methods to Evaluate Mobility for Site Characterization & Selection of Remedial Alternatives

Brandon J. Fagan, *Haley & Aldrich, Inc., Boston, MA*

Michael Brady, *PTS Laboratories, Inc., Santa Fe Springs, CA*

No-Purge Groundwater Sampling Evaluation at the Massachusetts Military Reservation

Matthew Greenberg, Nigel Tindall, *CH2M HILL, Otis ANG Base, MA*

Rose Forbes, *Air Force Center for Environmental Excellence, Otis ANG Base, MA*

The Trace Metals and Natural Radionuclides in Seawater from around Oil Field Offshore Platforms. Environmental Study

Sergio F. Jerez Veguería, *Universidade Federal Fluminense, Niterói, RJ, Brazil*

José M. Godoy, *Pontificia Universidade Católica do Rio de Janeiro, Rio de Janeiro, RJ, Brazil and Comissão Nacional de Energia Nuclear, Rio de Janeiro, RJ, Brazil*

Cleanup Standards and Goals for Urban Fill Soil

Bill Swanson, Pam Lamie, *CDM Inc., Cambridge, MA*

Can Fractured Bedrock Sites be Characterized Sufficiently to Recommend Viable Remedial Technologies?

Jim Vernon, Mark Kauffman, Patrick Haskell, *ENSR, Westford, MA*

Phosphorus Enrichment in Weihe River of China

Jialong Lu, *Northwest Agriculture and Forestry University, Shaanxi, China and University of Massachusetts, Amherst, MA*

Baoshan Xing, *University of Massachusetts, Amherst, MA*

Call For Papers

24th Annual International Conference on Soils, Sediments and Water

October 20 - 23, 2008
University of Massachusetts, Amherst

Analysis, Site Assessment, Fate, Environmental and Human Risk Assessment, Remediation and Regulation

General topics

- bioremediation
- chemical analysis
- cleanup standard setting
- environmental fate and modeling
- hazard exposure and risk assessment
- heavy metals
- hydrocarbon identification
- innovative technologies
- jet fuel contamination
- regulatory programs and policies
- sediments
- site assessment/field sampling
- soil chemistry
- standard remedial technologies/corrective actions
- case studies on any of the above

Special Topics

- acid mine drainage
- arsenic
- bioindicators
- biotechnology
- chlorinated hydrocarbons, pesticides (PCBs, etc.)
- contamination at military installations
- dioxin
- ecological risk assessments
- environmental forensics
- MECs
- MTBE
- mercury
- phytoremediation
- radionuclides
- railroad sites
- risk based cleanups (RBCA)
- state regulatory programs

Submission Information

For either a paper or poster to be considered please submit a one-page abstract containing:

- presentation title
- 300 word narrative
- and for each author, name, degree, title, affiliation and complete address and phone number. Please indicate your choice of either oral presentation or poster.

Publication of manuscripts from both platform and poster presentations will be considered for the general proceedings, *Contaminated Soils Vol. 14*

Deadline for submissions is February 6, 2008

For more information contact

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Amherst, MA 01003
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Email: dleonard@schoolph.umass.edu

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Stephen S. Koenigsberg, *Regenesis Bioremediation Products*

Fayaz Lakhawala, *Adventus Group*

David Ludwig, *ARCADIS BBL*

Rick McCullough, *MA Turnpike Authority*

Chris Mitchell, *ENSR Corporation*

Ellen Moyer, Ph.D., P.E., *Greenenvironment, LLC*

Jim Mueller, Ph.D., *Adventus Group*

Willard Murray, Ph.D., P.E.

Lee Newman, Ph.D., *University of South Carolina*

Eric Nichols, PE, *LFR/Levine-Fricke*

Dawn Oliveira, *EFI Global, Inc.*

Om Parkash, *University of Massachusetts*

Gopal Pathak, *Birla Institute of Technology*

Frank Peduto, P.E., *Spectra Environmental Group*

Ioana G. Petrisor, Ph.D., *Haley & Aldrich, Inc.*

Paul Rakowski, *Booz | Allen | Hamilton*

Julia Sechen, *MA DEP*

Frank Sweet, *ENSR Corporation*

Christopher Teaf, Ph.D., *Florida State University*

James C. Todaro, *Alpha Woods Hole Labs*

Mark Vigneri, *Environmental Remediation and Financial Services, LLC*

Robert Wagner, *Northeast Analytical*

A. Dallas Wait, Ph.D., *Gradient Corporation*

Richard Waterman, *EA Engineering, Science, and Technology, Inc.*

Jason White, *The Connecticut Agricultural Experiment Station, New Haven, CT*

Paul A. White, *Health Canada*

Katie Winogroszki, *3M*

Peter Woodman, Ph.D., *Risk Management Incorporated*

FEDERAL

John Cullinane, *US Army Engineer Waterways Exp. Sta.*

John Glaser, *US EPA*

Douglas W. Grosse, *US EPA*

Leslie Karr, *Naval Facilities Engineering Service*

Mike Reynolds, Ph.D., *USA - Cold Regions Research and Engineering Laboratory*

Alex Sherrin, *US EPA*

Henry H. Tabak, *US EPA*

Conference at a Glance

MONDAY, OCTOBER 15, 2007

Workshops: workshop #1-2 9:00am – 5:00pm; workshop #3 10:00am – 5:00pm; workshops #4, 5, & 6 1:00pm – 5:00pm; workshop #7 2-4pm; workshop #8 2-5pm

- 1) **Compliant Analysis of Water, Wastes and Related Solid Environmental Samples Using Inductively Coupled Plasma Atomic Emission and Mass Spectrometry** (917 Campus Center)
- 2) **In-Situ Chemical Oxidation Workshop** (904-08 Campus Center)
- 3) **Theory and Use of Field Portable X-ray Fluorescence for Soil Analysis** (804-08 Campus Center)
- 4) **The 2007 MCP Audit – A Case Study Approach** (Cape Cod Lounge, Student Union)
- 5) **“Lies, Damned Lies, and Statistics”: Avoiding Pitfalls in Environmental Sampling** (101 Campus Center)
- 6) **Evaluating Monitored Natural Attenuation of MTBE and TBA** (Reading Room, Campus Center)
- 7) **Environmental Forensic Techniques for Classic and Emerging Contaminants** (174-76 Campus Center)
- 8) **Environmental Fate of Hydrocarbons in Soils and Groundwater** (168C Campus Center)

TUESDAY, OCTOBER 16, 2007

8:30am – 9:00am **Conference Welcome and Overview** (Campus Center Auditorium)

Platform Presentations

9:00am – Noon Sessions are concurrent

Session 1: **Ethics in Environmental Practice: Responsibilities, Benefits & Case Examples** (Campus Center Auditorium)

Session 2a: **Pesticides** (101 Campus Center)

Session 2b: **Vapor Intrusion** (101 Campus Center)

Session 3a: **Brownfields** (168C Campus Center)

Session 3b: **Fisherville Mill - Assessment and Cleanup of a Brownfields Site on the Blackstone River** (168C Campus Center)

Session 4a: **Environmental Fate** (Reading Room, Campus Center)

Session 4b: **Sediments** (Reading Room, Campus Center)

1:30pm – 5:30pm Sessions are concurrent

Session 1: **Phytoremediation** (Campus Center Auditorium)

Session 2: **Biotechnology** (101 Campus Center)

Session 3: **Tungsten** (168C Campus Center)

Session 4: **Combining Chemical and Biological Technologies for Soil and Groundwater Remediation** (Reading Room, Campus Center)

Session 5: **Environmental Forensics** (Cape Cod Lounge, Student Union)

Poster Session 4:00pm – 6:00pm, Exhibit Area, First Floor, Campus Center

Social 4:30 – 6:00pm, Exhibit Area, First Floor, Campus Center

Workshops (Evening 7:00pm – 10:00pm)

9) **In-Situ Thermal Remediation** (168C Campus Center)

10) **Applied Chemical Fingerprinting in Environmental Forensics** (Reading Room, Campus Center)

11) **Utilization of Stable Isotopes in Environmental and Forensic Geochemistry Studies** (917 Campus Center)

12) **Professional Ethics, Professional Conduct, and Environmental Professionals** (101 Campus Center)

WEDNESDAY, OCTOBER 17, 2007

Platform Presentations

8:30am – Noon Sessions are concurrent

Session 1: **Gasoline Oxygenates** (Campus Center Auditorium)

Session 2: **Remediation I** (101 Campus Center)

Session 3: **Regulatory** (168C Campus Center)

Session 4: **Coated and Uncoated Microbubble Ozone Remediation Projects** (Reading Room, Campus Center)

1:30pm – 5:30pm Sessions are concurrent

Session 1: **Gasoline Oxygenates** (Campus Center Auditorium)

Session 2: **Perchlorate/MECs** (101 Campus Center)

Session 3: **Analysis** (168C Campus Center)

Session 4: **Chemical Oxidation** (Reading Room, Campus Center)

Poster Session 4:00pm – 6:00pm, Exhibit Area, First Floor, Campus Center

Social 4:30 – 6:00pm Exhibit Area, First Floor, Campus Center

Workshop (Evening 7:00pm – 10:00pm)

13) **Critical Exposure Pathways** (101 Campus Center)

14) **Characterizing PAH Bioavailability in Sediments for Remedial Decision-Making** (168C Campus Center)

15) **Theory and Application of Molecular Biological Tools (“MBTs”) and Biogeochemistry to Bioremediation Process Monitoring and Monitored Natural Attenuation Programs Environmental** (Reading Room, Campus Center)

16) **Geochemical Evaluations of Metals in Environmental Media: How to Distinguish Naturally Elevated Metals Concentrations from Site-Related Contamination** (917 Campus Center)

THURSDAY, OCTOBER 18, 2007

Platform Presentations

8:30am – Noon Sessions are concurrent

Session 1: **Bioremediation** (Campus Center Auditorium)

Session 2: **Remediation II** (101 Campus Center)

Session 3: **Modeling** (168C Campus Center)

Session 4: **Risk Assessment** (Reading Room, Campus Center)

1:30pm – 5:00pm Sessions are concurrent

Session 1: **Heavy Metals** (Campus Center Auditorium)

Session 2: **Innovative Technologies** (101 Campus Center)

Session 3: **Site Assessment** (168C Campus Center)

EXHIBITS

Throughout the First Floor Concourse.

POSTER SESSION

Over 90 posters on display Tuesday and Wednesday 4:00-6:00pm, in back of Exhibit Area

SOCIALS (CASH BAR)

Tuesday and Wednesday 4:30-6:00pm Exhibit Rooms – interact with poster presenters, exhibitors and other conferees

JOB LISTING/ RESUME BOARD

Located outside the doors to the Campus Center Auditorium

ADDITIONAL LISTINGS

See the Daily Activity Board beside the Registration Desk for additional listings of Breakfast Forums, Socials and other Special Events

MESSAGES

Remember to check the Message Board just outside the doors to the Campus Center Auditorium. It's where you'll find your messages from other conferees, as well as those from home or home office.

IF YOU NEED TO BE REACHED

during the conference, tell co-workers and family to call: (413) 545-2591 or fax (413) 545-0050