

The 25th Annual International Conference on

# Soils, Sediments, Water and Energy

**October 19-22, 2009**

University of Massachusetts at Amherst

- **142 Presenters**
- **58 Posters**
- **11 Workshops**
- **48 Exhibitors**
- **4 Panel Discussions**

Assessment, Remediation, Regulation and  
the Energy Environmental Interface



**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

**Visit us at our website: [www.UmassSoils.com](http://www.UmassSoils.com)**

**Benefactors**

AECOM

**Sponsors**

American Petroleum Institute  
 CDM  
 MA DEP  
 Regenesis Bioremediation  
 Products  
 Remediation Partners

**Supporters**

Adventus Group  
 Kerfoot Technologies, Inc.  
 LSPA  
 The Dragun Corporation

**Profiles of the 2008 Life Career Award Winners Included!**

- 8:00am – 5:00pm 1) **The Benefits of a Stratified Statistical Sampling Design for Surface Soil Analyses** (168 Campus Center)  
 8:00am – Noon 2) **Assessing Vapor Intrusion at Petroleum Release Sites** (163 Campus Center)  
 1:00pm – 5:00pm 3) **BioVapor, a 1-D Vapor Intrusion Model with Aerobic Biodegradation** (163 Campus Center)  
 1:00pm – 4:00pm 4) **The MCP Audit 2009 - A Case Study Approach: Training Materials** (LSP Course #1207-09) (917 Campus Center)  
 2:00pm – 5:00pm 5) **Environmental Fate of Hydrocarbons in Soils and Groundwater** (101 Campus Center)

## AM SESSIONS

# Tuesday

### Session 1: BIOREMEDIATION I

This session starts at 9:00am  
163 Campus Center

Moderator: **Richard Raymond**,  
Terra Systems, Inc., Wilmington, DE

**9:00am**  
**EHC-O®: Oxygen Releasing Compounds for In-Situ Bioremediation of Petroleum Hydrocarbons**

Fayaz Lakhwala, Ravikumar Srirangam,  
Adventus Americas, Inc., Union, NJ  
Jim Mueller, Adventus Americas Inc., Freeport, IL  
Alan G. Seech, The Adventus Group,  
Penticton BC

**9:30am**  
**Bioremediation of Chlorinated Solvents in the Brunswick Shale of Southeast Pennsylvania**

Kevin W. Frysinger, Gerald L. Kirkpatrick,  
Environmental Standards, Valley Forge, PA

**10:00am Break**

**10:30am**  
**Microbial Ecology as an Indicator of Effectiveness of Sequential Chemical Oxidation-Bioremediation**

Arati Kolhatkar, BP, Houston, TX  
Lyle Bruce, BP, Warrenville, IL  
Paul Taylor, BP, Houston, TX  
Rick Allison, Delta, Loveland, CO  
Mark Nelson, Jared Otto, Delta, Shoreview, MN

**11:00am**  
**Field Evidence of Anaerobic Biodegradation of Benzene Coupled to Denitrification**

Edward Sullivan, Whitman, East Brunswick, NJ  
Eric C. Hince, P.G., Geovation Consultants, Inc.,  
Florida, NY

**11:30am**  
**Effect of Fe (III) Reduction in the Biodegradation of Chlorinated Ethenes**

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

### Session 2: ENERGY, AIR QUALITY AND HEALTH: FOCUS ON PARTICULATE AIR POLLUTION

101 Campus Center

Moderator: **Norman Anderson**,  
University Research Engineers and  
Associates, Winslow, ME

**8:30am**  
**Short Term Exposures To Fine Particulates: What the Health Data are Telling Us**

Dave Brown, Environment and Human Health  
Inc, Westport, CT

**9:00am**  
**Public Health Implications of Outdoor Wood Boiler Exposure**

Phil Johnson, The Heinz Endowments,  
Pittsburgh, PA

**9:30am**  
**Exposure Risk-Reduction Behavior- The New Canadian Air Quality Health Index (AQHI)**

Ken Maybee, Barbara Mackinnon, New  
Brunswick Lung Association, Fredericton, NB,  
Canada

**10:00am Break**

**10:30am**  
**Approaches to Assessing Health Care Costs Associated with Air Pollution**

Mary E. Davis, Tufts University, Medford, MA

**11:00am**  
**Panel Discussion: Achieving a New Public Health Vision for our Energy Future**

Dave Brown, Environment and Human Health  
Inc, Westport, CT  
Phil Johnson, The Heinz Endowments,  
Pittsburgh, PA  
Ken Maybee, Barbara Mackinnon, New  
Brunswick Lung Association, Fredericton, NB,  
Canada  
Mary E. Davis, Tufts University, Medford, MA

### Session 3: IN-SITU AND EX-SITU NANO TO MICROBUBBLE PEROZONE TREATMENT

168 Campus Center

Sponsored by **Kerfoot Technologies**  
Moderator: **William B. Kerfoot**,  
Kerfoot Technologies, Mashpee, MA

**8:30am**  
**Peroxide-Coated Nanobubble Ozone Emulsions for Spill cleanup in Groundwater and Fractured Rock**

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

**9:00am**  
**Perozone® Groundwater Sparging at the Days Inn Lake City Pre-Approval Site**

Edward M. Kellar, Chris Mikler, MACTEC  
Engineering and Consulting, Inc., Newberry, FL

**9:30am**  
**Ozone Oxidation for Source Removal and a Prevention Barrier at a Fire Training Academy**

Scott Michaud, Thomas C. Cambareri, Cape  
Cod Commission, Barnstable, MA

**10:00am Break**

**10:30am**  
**Experiences of Perozone® and C-Sparge™ at Two Former Dry Cleaner Sites in the Netherlands**

Bert Scheffer, Edward van de Ven, Verhoeve  
Milieu bv, Hoog-Keppel, The Netherlands  
William B. Kerfoot, Kerfoot Technologies, Inc.,  
Mashpee, MA

**11:00am**  
**Successful Integration of Perozone® and Monitored Natural Attenuation for Site Cleanup**

Matthew Burns, Michael Brown and Gigi  
Beaulieu, WSP Environmental Strategies  
LLC, Boxborough, MA

**11:30am**  
**Panel Discussion: Ozone Utilization for Treating Emerging Contaminants**

William B. Kerfoot, Kerfoot Technologies, Inc.,  
Mashpee, MA  
Edward M. Kellar, Chris Mikler, MACTEC  
Engineering and Consulting, Inc., Newberry, FL  
Scott Michaud, Thomas C. Cambareri, Cape  
Cod Commission, Barnstable, MA  
Bert Scheffer, Verhoeve Milieu bv, Hoog-Keppel,  
The Netherlands  
Michael Brown, WSP Environmental Strategies  
LLC, Boxborough, MA

### Tuesday, October 20, 2009 • Noon Lunch

Amherst Room, 10<sup>th</sup> Floor, Campus Center

#### Luncheon Speaker

#### Subsistence Seafood in Alaska is Safe, Even in the Aftermath of the Exxon-Valdez

**Steven C. Lewis, PhD, DABT,**

President and Principal Scientist, Integrative Policy & Science, Inc.,  
Washington, NJ

### Session 4: ADVANCED DIAGNOSTICS FOR SITE DESIGN, MANAGEMENT AND CLOSURE

Reading Room, Campus Center

Moderator: **Stephen Koenigsberg**,

*Environ International Corporation, Irvine, CA*

**8:30am**

#### Overview of Advanced Diagnostics for Site Design, Management and Closure

Stephen Koenigsberg, *Environ International Corporation, Irvine, CA*

**9:00am**

#### Monitoring Gene Expression to Evaluate the Effectiveness of an Oxygen Infusion System at a Petroleum Impacted Site

Dora Ogles, Brett Baldwin, *Microbial Insights, Rockford, TN*

Joel Blair, *Arctos Environmental, Long Beach, CA*

Mike Purchase, *Arctos Environmental, Berkeley, CA*

Jeffrey M. Baker, *Tesoro Companies, Inc., Auburn, WA*

Greg Davis, *Microbial Insights, Rockford, TN*

**9:30am**

#### Insights to Dehalococoides Analysis and Interpretation for Bioremediation: Opportunities and Challenges Ahead

Kirsti Ritalahti, Janet K. Hatt, Kelly E. Fletcher, Frank E. Löffler, *Georgia Institute of Technology, Atlanta GA*

**10:00am Break**

**10:30am**

#### Diagnosing the Metabolic Status of Microorganisms Involved in Subsurface Bioremediation with Antibody Quantification of Proteins

Toshiyuki Ueki, Jiae Yun, Derek R. Lovley, *University of Massachusetts Amherst, Amherst, MA*

**11:00am**

#### The Use of DNA Microarrays for Bioremediation

Aaron Peacock, *Haley and Aldrich, Oak Ridge, TN*

**11:30pm**

#### Panel Discussion: Environmental Molecular Diagnostics

Stephen Koenigsberg, *Environ International Corporation, Irvine, CA*

Dora Ogles, *Microbial Insights, Rockford, TN*

Aaron Peacock, *Haley and Aldrich, Oak Ridge, TN*

Kirsti Ritalahti, *Georgia Institute of Technology, Atlanta GA*

Toshiyuki Ueki, *University of Massachusetts Amherst, Amherst, MA*

### Session 5: STATUS OF THE SHORELINES 20 YEARS AFTER THE EXXON VALDEZ OIL SPILL

Bowker Auditorium, Stockbridge Hall

Moderator: **David Page**,

*Bowdoin College, Brunswick, ME*

**8:30am**

#### An Overview of the Exxon Valdez Oil Spill, Prince William Sound, Alaska

David S. Page, *Bowdoin College, Brunswick, ME*

Paul D. Boehm, John S. Brown, *Exponent, Maynard, MA*

Jerry M. Neff, *Neff & Associates, LLC, Duxbury, MA*

**9:00am**

#### Where and Why do Remnants of the Exxon Valdez Oil Spill Persist?

David S. Page, *Bowdoin College, Brunswick, ME*

Paul D. Boehm, John S. Brown, *Exponent, Maynard, MA*

Jerry M. Neff, *Neff & Associates, LLC, Duxbury, MA*

**9:30am**

#### What are the Form, Chemical Composition, and Location of Remnants of the Exxon Valdez Oil Spill after 18 Years?

Paul D. Boehm, *Exponent, Inc., Maynard, MA*

David S. Page, *Bowdoin College, Brunswick, ME*

Jerry M. Neff, *Neff & Associates, LLC, Duxbury, MA*

John S. Brown, *Exponent, Maynard, MA*

James A. Bragg, *Creative Petroleum Solutions, LLC, Houston, TX*

Ronald M. Atlas, *University of Louisville, Louisville, KY*

**10:00am Break**

**10:30am**

#### Would Bioremediation be Effective on 20 Year Old Exxon Valdez Spill Remnants?

Ronald M. Atlas, *University of Louisville, Louisville, KY*

James R. Bragg, *Creative Petroleum Solutions LLC, Houston, TX*

**11:00am**

#### Are Wildlife and their Prey Exposed to Exxon Valdez Spill Remnants After 18 Years?

Jerry M. Neff, *Neff & Associates LLC, Duxbury, MA*

David S. Page, *Bowdoin College, Brunswick, ME*

Paul D. Boehm, *Exponent, Maynard, MA*

**11:30am**

#### What are the Problems in Using Passive Samplers in Oil Spill Studies of Contaminated Sediments?

Paul D. Boehm, *Exponent, Inc., Maynard, MA*

David S. Page, *Bowdoin College, Brunswick, ME*

Jerry M. Neff, *Neff & Associates LLC, Duxbury, MA*

Booth	Affiliation
B1	Regenesis
B2	LSP Association
B3	JRW Bioremediation L.L.C.
B4	TRIDENT Environmental Group, LLC
B5	Thermo Scientific Niton Analyzers
B6	US EPA Technology Innovation and Field Service Division
B7	Ground/Water Treatment and Technology
B8	Accutest Laboratories
B9	Lancaster Laboratories, Inc.
B10	FEI Company
B12	Groundwater & Environmental Services, Inc.
B13	RNAS
B14	FMS, Inc.
B15	Innov-X Systems
B17	Golder Associates
B18	FMC Corporation
B19	Microbial Insights, Inc.
B20	Microseeps, Inc.
B21	Triassic Technology, Inc.
B22	AECOM
B23	Naval Facilities Engineering Command (NAVFAC)
B24	Adventus Group
B26	ZEBRA Environmental Corp.
B27	Kerfoot Technologies, Inc.
B28	Groundwater Analytical
B30	Pine Environmental Services, Inc.
B31	Emilcott
B32	Columbia Analytical Services, Inc.
B33	Strategic Diagnostics, Inc.
B34	Geotech Environmental Equipment
B35	GORE
B36	C Tech Development Corporation
B37	TerraTherm, Inc.
B38	ION Science Americas
B39	Geo-Cleanse International, Inc.
B40	Alpha Analytical, Inc.
B41	Casella Waster Service
B43	Eastern Analytical, Inc.
B44	Dexsil Corporation
T1	Student Career Booth
T2	EFI Global, Inc.
T3	The Environmental Institute
T5	Viridian Environmental Field Services

**Session 1: SUSTAINABLE  
REMEDiation**

163 Campus Center

Sponsored by CDM

Moderator: **Michael Miller**,  
CDM, Cambridge, MA**1:30pm****Sustainable Remediation –Where is it  
Going; A View from the Trenches**Richard Raymond, Michael D. Lee, W. Michael  
Free, *Terra Systems, Wilmington, DE***2:00pm****Incorporating Sustainability into the  
Air Force Remediation Program**Erica Becvar, *AFCEE Technology Transfer,  
Brooks City-Base, TX*  
Doug Ruppel, *AECOM, Brooks City-Base, TX*  
Charles Newell, Tiffany Swann, *GSI  
Environmental, Houston, TX*  
Doug Downey, *CH2M Hill, Englewood, CO***2:30pm****A Multi-Criteria Approach for  
Evaluating Sustainable Remediation  
Alternatives**Timothy J. Havranek, *ENTRIX, Inc., New  
Castle, PA*  
Douglas J. MacNair, *ENTRIX, Inc., Raleigh, NC***3:00pm Break****3:30pm****Wind Energy and Remediation: A  
Case Study**Rose Forbes, *Air Force Center for Engineering  
and the Environment, Otis ANG Base, MA***4:00pm****Improving the Sustainability of  
Source Removal**Ralph S. Baker, *TerraTherm, Inc., Fitchburg, MA*  
Uwe Hiester, *reconsite - TTI GmbH, Fellbach,  
Germany***4:30pm****Sustainable Considerations for  
Sediment Remediation**John Ryan, *AECOM Environment, Lopez  
Island, WA*  
Emese Hadnagy, *AECOM Environment,  
Westford, MA*  
Erika Germiniani, *AECOM Environment, Milan,  
Italy*  
Merv Coover, Anne Fitzpatrick, *AECOM  
Environment, Seattle, WA***5:00pm****Sustainable Environmental  
Remediation: A Case Study of  
Contaminated Groundwater in  
Wichita, Kansas**Roger Olsen, *Camp Dresser & McKee,  
Denver, CO*  
Shawn Maloney, *City of Wichita - Department of  
Environmental Services, Wichita, KS*  
Paul Anderson, *Camp Dresser & McKee, Kansas  
City, MO***Session 2:  
PHYTOREMEDIATION**

101 Campus Center

Moderators: **Lee Newman**, *Brookhaven  
National Lab, Upton, NY*; **Jason White**, *The  
Connecticut Agricultural Experiment Station,  
New Haven, CT***1:30pm****Phytoremediation as Green  
Infrastructure and a Landscape of  
Experiences**Frank Slegers, *University of Massachusetts,  
Amherst, MA***2:00pm****Selenium Enhanced Retirement of  
Mercury from Aquatic and Terrestrial  
Ecosystems**Mark P. Elless, *Edenspace Systems  
Corporation, Dulles, VA*  
Nicholas V.C. Ralston, *University of North  
Dakota, Grand Forks, ND***2:30pm****Seaweed Bloom Soaks Up PCBs from  
Superfund Site in New Bedford  
Harbor, Massachusetts**Donald Cheney, *Northeastern University,  
Boston, MA*  
Nina Farley, *Boston College, Boston, MA*,  
Scott Greenwood, Deana Aulisio, Kevin  
Gardner, *University of New Hampshire,  
Durham, NH***3:00pm Break****3:30pm****Pilot Phytoremediation of Lead  
Contamination at the Former Skeet  
Range in the Town of Sprague, CT**Julia Kuzovkina, Olena Zivotovsky, *The  
University of Connecticut, Storrs, CT***4:00pm****Isolation and Characterization of  
Genes Involved in Arsenic and DDE  
Metabolism in Plants**Om Parkash, Bibin Paulose, Sudesh Chikkara,  
*University of Massachusetts, Amherst, MA*  
Jason White, *The Connecticut Agricultural  
Experiment Station, New Haven CT***4:30pm****Use of Short-Lived Positron Emitting  
Radioisotopes to Study the Effects of  
Belowground Contaminants on Plant  
Growth and Function**Richard A. Ferrieri, *Brookhaven National  
Laboratory, Medical Department, Upton, NY***Session 3: HEAVY METALS**

168 Campus Center

Moderator: **Carol Bois**, *Bois Consulting  
Company, Inc., Framingham, MA***1:30pm****Baseline Study of Trace Metal  
Concentrations in Soils of Atlantic  
City, NJ**Claudia Dengler, Heather Mortensen, Tait  
Chirenje, *The Richard Stockton College of  
New Jersey, Pomona, NJ***2:00pm****Evaluation of Reactive Materials for  
Remediation of Heavy Metal-  
Contaminated Ground Water**Pamela J. Dugan, *Carus Corporation, Peru, IL***2:30pm****Remediation of a Hexavalent  
Chromium Release to Groundwater  
Using Ion-Specific Resins**Nancy E. Milkey, *Tighe & Bond, Westfield, MA*  
Isabel F. McCauley, *Tighe & Bond, Worcester,  
MA***3:00pm Break****3:30pm****From Flask to Field: Lessons for  
Transferring Remediation Technology  
to Contaminated Sites**Karen L. Skubal, Skip Chamberlain, *U. S.  
Department of Energy, Washington, DC***4:00pm****Attenuation Processes for Metals and  
Radionuclides**Dib Goswami, *Washington State Department of  
Ecology, Richland, WA*  
Carl Spreng, *Colorado Department of Public  
Health and Environment, Denver, CO*  
Karen Vangelas, *Savannah River National  
Laboratory, Aiken SC***4:30pm****Laboratory Investigation of Solubility  
Control for a Mercury Groundwater  
Plume**Talaat Balba, Sophia Dore, Donald Pope, Leah  
Pabst, Christa Nunn, Alan Weston,  
*Conestoga-Rovers & Associates, Niagara  
Falls, NY***Tuesday  
WORKSHOPS**  
Evening, 7:00 – 10:00pm**6) Building a Better Background Data  
Set (168 Campus Center)****7) The Revised CAM: What You Need  
to Know (163 Campus Center)****8) Perchlorate Remediation  
Technologies: an ITRC Short  
Course (101 Campus Center)**

**Session 4: MTBE**

Reading Room, Campus Center

Moderator: **Christopher Teaf,**

Florida State University, Tallahassee, FL

**1:30pm****Challenges Using Mass Flux at a Service Station**

Ken Guttman, Gannett Fleming, Baltimore, MD

**2:00pm****Using 2D MTBE Stable Isotopic Analysis to Optimize a Commercial-scale Pulsed Air Sparging/SVE System for MTBE Source Remediation**

Xiaomin Yang, David Tsao, BP Corporation

North America, Inc., Warrenville, IL

Shankar Subramanian, Timothy Dull, URS

Corporation, Chicago, IL

Thomas Tunnickliff, Atlantic Richfield Company, A

BP affiliated company, Warrenville, IL

**2:30pm****Biodegradation of Tert-butyl Alcohol (TBA) using Biological Granular Activated Carbon (Bio-GAC)**

Kayleigh Dunnett, Kevin T. Finneran, University

of Illinois at Urbana Champaign, Urbana, IL

**3:00pm Break****3:30pm****Monitoring Ex situ MTBE and TBA Biodegradation using Stable Isotope Probing**

Michael Hyman, North Carolina State University,

Raleigh, NC Kristy A. Salafrio, New York State

Department of Environmental Conservation

Region 1, Stony Brook, NY

Joseph Haas, New York Attorney General, New

York, NY

Don Trego, Ian Hofmann, Environmental

Assessment and Remediation, Patchogue, NY

**4:00pm****Biodegradation of MTBE and TBA Impacted Groundwater: Theories for Bio-GAC Vessel Design and Optimization**

Kristy A. Salafrio, New York State Department of

Environmental Conservation Region 1, Stony

Brook, NY

Michael Hyman, Burke Haywood, Denise Aslett,

North Carolina State University, Raleigh, NC

Joseph Haas, New York Attorney General, New

York, NY

Ian Hofmann, Environmental Assessment and

Remediations, Patchogue, NY

**4:30pm****The Value of Compound Specific Stable Carbon and Hydrogen Isotope Analysis of a Long Island MTBE Mega-Plume**

J. E. Haas, New York State Department of Law,

New York, NY

K. A. Krajenke, D.A. Trego, Environmental

Assessment and Remediation, Patchogue, NY

T.C. Schmidt, University Duisburg-Essen,

Duisburg, Germany

N. M. Hart, New York State Department of

Environmental Conservation, Stony Brook, NY

**Session 5: TANKER INCIDENTS: EXXON VALDEZ IF BY SEA, TANKER TRAILER TRUCKS IF BY LAND?**

Bowker Auditorium, Stockbridge Hall

Moderator: **Janine Commerford,**

MA DEP, Boston, MA

**1:30pm****2003 Buzzards Bay Oil Spill: History and Cleanup Under the MCP**

Rich Packard, MassDEP, Hyannis, MA

Kevin D. Trainer, GeoInsight, Inc., Westford, MA

Richard J. Wozmak, EnviroLogic, LLC,

Londonderry, NH

**2:00pm****Swanson Creek (MD) Oil Spill: Response and Restoration**

Erich R. Gundlach, E-Tech International Inc.,

New Paltz, NY

**2:30pm****The FAST: MassDEP Field Assessment and Support Team**

John J. Fitzgerald, MassDEP, Wilmington, MA

**3:00pm Break****3:30pm****Tankers, Tankers and More Tankers****This talk is scheduled for 1 hour**

Dan Crafton, MassDEP, Lakeville, MA

Dave Slowick, MassDEP, Springfield, MA

Kingsley Ndi, MassDEP, Wilmington, MA

Nick Child, MassDEP, Worcester, MA

**4:30pm****Biofuels and the Environment**

Gregory Wilson, U.S. Environmental Protection

Agency, Washington, DC

**5:00pm****Response Considerations for Releases of Ethanol-Blended Fuels**

Curtis C. Stanley, Shell Global Solutions (US)

Inc., Houston, TX

Brent P. Stafford, PhD, PG, Shell Global

Solutions (US) Inc.

**Call For Exhibitors**

We are happy to invite you to exhibit at the

**26th Annual International Conference on Soils, Sediments, Water and Energy****October 18-21, 2010**

The Soils, Sediments and Water Conference has become a leading national/international conference in this important environmental area. The conference attracted nearly 800 attendees last year including a wide variety of representation from state and federal agencies; the military; various industries including railroad, petroleum, transportation and utilities; the environmental engineering and consulting community; and academia.

The exhibit area is located in the center of the conference activity to assure maximum contact and exposure with interested conference participants and potential customers. Exhibition space is limited to 39 booths to insure a high ratio of attendees to exhibitors. The rental fee for an 8' by 10' exhibit booth space is \$1095.00. Outdoor areas are available for equipment demonstrations at an additional cost.

**PRESENTATION TOPICS**

- chemical analysis
- hydrocarbon identification
- site assessment /field sampling
- regulatory programs and policies
- environmental fate and modeling
- soil chemistry
- hazard, exposure, and risk assessment
- standard remedial technologies/corrective actions
- innovative remedial technologies
- diesel fuel contamination
- contamination at military installations
- contamination at shipping ports
- chlorinated hydrocarbons, pesticides and heavy metals
- jet fuel contamination
- radioactive contamination

**WHY SHOULD YOU EXHIBIT**

Attendees buy products and services such as:

- analytical instruments and services
- environmental software
- monitoring equipment
- excavation equipment
- remediation equipment and services
- training and education products and services

**THE PRICE OF YOUR BOOTH SPACE INCLUDES**

- One conference pass for admission into general sessions
- List of conference attendees
- 2' by 5' table with table cloth and two chairs
- Side and backdrop curtains
- Electrical power outlet

**SPONSORS AND SUPPORTERS**

- Adventus Americas • Alpha Analytical Labs • American Petroleum Institute • Arcadis US, Inc. • ENSR Corporation • Environmental Remediation and Financial Services, LLC • Geovation Technologies, Inc • Kerfoot Technologies, Inc. • International Tungsten Industry Association (ITIA) • LSPA • New York DEC • Northeast Analytical • Regeneration Bioremediation Products • MA DEP

**FOR MORE INFORMATION OR TO RESERVE YOUR BOOTH SPACE CONTACT**

Denise Leonard

Northeast Regional Environmental Health Center

N344, Morrill

University of Massachusetts, Amherst, MA 01003

Tel: (413) 545-1239 • Fax: (413) 545-4692

Email: dleonard@schoolph.umass.edu

**CONFERENCE CO-DIRECTORS:**

Paul Kostecki, Ph.D.

Edward J. Calabrese, Ph.D.

Clifford Bruell, Ph.D.

## Session 1: BIOREMEDIATION II

163 Campus Center

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

**8:30am**

### Treatability Study of Enhanced Anaerobic Bioremediation in a Low-pH Aquifer

Ge Chen, *CDM, Edison, NJ*  
Kent S. Sorenson, *CDM, Denver, CO*  
Chorfan Tsang, *CDM, New York, NY*

**9:00am**

### Ferric Iron Amendment Increases Carbon Oxidation and Phosphorus Removal in On-Site Wastewater (Septic Systems)

Hossain M Azam, Kevin T Finneran, *University of Illinois at Urbana Chamapign, Urbana, IL*

**9:30am**

### Bioremediation at Low PCE Levels in an Aerobic Sand Aquifer

Shamim Wright, Daniel Groher, Art Taddeo, *AECOM Environment, Westford, MA*  
Lelia McAdams, *AECOM Environment, Cincinnati, OH*

**10:00am Break**

**10:30am**

### Adjusting Aquifer pH to Improve the Performance of Halorespiring Bacteria

Robert Borden, *North Carolina State University, Raleigh, NC*  
Mark Kluger, *Dajak, LLC, Wilmington, DE*

**11:00am**

### Perchlorate Reduction Using Fine Media Fluidized Bed Bioreactor with Oxidation-Reduction Potential-based Feed Control

Mamie Nozawa-Inoue, *Environmental Resolutions, Inc., Lake Forest, CA*  
Dallas E. Weaver, *Scientific Hatcheries, Huntington Beach, CA*  
Joseph E. O'Connell, *Environmental Resolutions, Inc., Lake Forest, CA*

**11:30am**

### Perchlorate Bioremediation Using Novel Sulfur Oxidizing Bacteria: Pilot-Scale Bioreactor Studies at the Massachusetts Military Reservation

Sarina J. Ergas, Amber Boles, Klaus Nüsslein, *University of Massachusetts, Amherst, MA*  
Paul S. Nixon, *Army Environmental Command Impact Area Groundwater Study Program, Camp Edwards, MA*  
Robert McKeever, Teresa Conneely, *University of Massachusetts, Amherst, MA.*

## Session 2: SITE REMEDIATION - IN-SITU TREATMENT, DIAGNOSTICS AND APPLICATION DESIGN

101 Campus Center

Sponsored by **Regenesis**  
Moderator: **Maureen Dooley**,  
*Regenesis, Wakefield, MA*

**8:30am**

### In-Situ Chemical Oxidation used to Remediate Residual Hydrocarbon Contamination at Former Mill Warehouse Facility in Central Massachusetts

Maureen Dooley, *Regenesis, Wakefield, MA*  
William Fabbri, *WJF Geoconsultants, Wilbraham, MA*

**9:00am**

### Novel Uses of Advanced Diagnostic Tools for Chemical Oxidation and Bioremediation Applications

Matthew Burns, *WSP Environment & Energy, Woburn, MA*  
Erin Huntley, *WSP Environment & Energy, Pittsburgh, PA*  
David Bouchard, *WSP Environment & Energy, Cazenovia, NY*

**9:30am**

### Limited-Access Bioremediation in a Factory Setting

Deborah R. Farnsworth, *MyKroWaters, Inc., Concord, MA*  
Willard A. Murray, *ECC, Marlborough, MA*  
Daniel L. Bronson, *Bronson Drilling, North Cambridge, MA*

**10:00am Break**

**10:30am**

### Successful Cleanup of Chlorinated Solvents and Petroleum at Jewelry Manufacturing Facility Utilizing the Multiple Response Action Approach

Glen Cote, *Coler and Colantonio, Norwell, MA*

**11:00am**

### In-Situ Application Design Considerations for use of a Controlled-Release, High-Volume, Wide-Area Electron Donor

David S. Peterson, *Regenesis, Red Hook, NY*  
Craig Sandefur, *Regenesis, San Clemente, CA*

**11:30am**

### Removal of Perchloroethylene within a Silt Confining Layer using Hydrogen Releasing Compound®

Daniel Marsh, J. Andrew Irwin, *Irwin Engineers, Natick, MA*

## Session 3: RISK ASSESSMENT

168 Campus Center

Moderator: **Paul J. Yaroschak**, *Office of the Secretary of Defense, Arlington, VA*

**8:30am**

### Updated Summary of Regional and National Ambient Background Investigations for PAHs and Metals

Stephen Emsbo-Mattingly, *NewFields Environmental Forensics Practice, Rockland, MA*  
William Swanson, *CDM, Cambridge, MA*  
James Henderson, *NewFields Atlanta, Atlanta, GA*

**9:00am**

### Comparison of International Risk-Based Screening Levels

Amy Quintin, *AECOM, Westford, MA*  
Lucy H. Fraiser, *AECOM, Austin, TX*

**9:30am**

### Assessment of Oral and Dermal Exposure to Benzene from Contaminated Soils

Mohamed S. Abdel-Rahman, *UMDNJ - New Jersey Medical School, Newark, NJ*  
Rita M. Turkall, *UMDNJ - New Jersey Medical School, Newark, NJ*

**10:00am**

**Break**

**10:30am**

### Differential Body Burdens of Various Metals and Organic Compounds in Co-Occurring Marine Bivalves: Implications for Ecological and Human Health Risk Assessment

Jerome Cura, *The Science Collaborative, Winchester, MA*  
Dr. Donna Vorhees, *The Science Collaborative, Winchester, MA*  
James Occhialini, *Alpha Analytical, Westborough, MA*

**11:00am**

### Soil Metal Criteria Development Using the Terrestrial Biotic Ligand Model (TBLM) and Species Sensitivity Distributions

Sagar Thakali, *Gradient Corporation, Cambridge, MA*  
Herbert E. Allen, Dominic M. Di Toro, *University of Delaware, Newark, DE*

**11:30am**

### A Rapid Particle Toxicity Assay using Tetramitus rostratus Flagellates

Robert L. Jaffe, *Environmental Toxicology Laboratory, Long Island City, NY*

Wednesday, October 21, 2009 • Noon Lunch

Amherst Room, 10<sup>th</sup> Floor, Campus Center

Luncheon Speaker

**The History of Leaded Gasoline**

*Gil Oudijk, Triassic Technology, Inc., Hopewell, NJ*

# Wednesday

## Session 4: ARSENIC

This session starts at 9:00am

Reading Room, Campus Center

Moderator: **Scott Saroff**, KEMRON  
Environmental Services, Inc., Manlius, NY

9:00am

### An Investigation of the Natural and Anthropogenic Contributions of Arsenic to Urban Fill Soil

William R. Swanson, John A. Monacelli, CDM  
Inc., Cambridge, MA

9:30am

### Field Trials of Enhanced Bioremediation of Arsenic for Remediation of Contaminated Sediments

Robert Stanforth, Kent McCord, RMT, Inc.,  
Madison, WI

10:00am Break

10:30am

### Modeling and Design of Wetland Microcosms to Use in Arsenic Remediation

Matthew W. Gorr, Daryl Dwyer, University of  
Toledo, Toledo, OH

11:00am

### Microbial Transformation of Arsenic Compounds

Dominik Freikowski, Claudia Gallert, Josef  
Winter, University of Karlsruhe, Karlsruhe,  
Germany

11:30am

### Arsenic Cleanup Criteria for Soils in the US and Abroad: Comparing Guidelines and Understanding Inconsistencies

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

Douglas J. Covert, Patrick A. Teaf, Hazardous  
Substance & Waste Management Research,  
Inc., Tallahassee, FL

Michael J. Starks, Environmental Resources  
Management, Tampa, FL

# Life Achievement Award

The Annual International Conference on Soils, Sediments, Water and Energy 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 **Barbara D. Beck**, Gradient Corporation, in the area of industry, **Deborah A. Cory-Slechta**, University of Rochester School of Medicine and Dentistry in the area of academia, **Thomas F. Jenkins**, USACE Engineer Research and Development Center in the military area, and **John T. Wilson**, R.S. Kerr Research Center, in the area of government.

The members of the Life Achievement Award Committee are:

**Barbara Callahan**, University Research

**Jim Dragun**, The Dragun Corporation

**Barry Johnson**, Assistant Surgeon General (ret.)

**Dallas Wait**, Gradient Corporation

**Peter Woodman**, Risk Management Incorporated

## INDUSTRY



### Dr. Barbara D. Beck

Barbara D. Beck, Ph.D., DABT, FATS, received her AB in Biology from Bryn Mawr College and her Ph.D. in Molecular Biology and Microbiology from Tufts University. She has worked in the field of environmental health for over 30 years on a broad range of topics, including quantifying risks from soil chemicals, developing toxicity criteria for specific chemicals, and tracing the development and understanding of toxicology over time. She is the author of over 100 journal articles, book chapters, and reviews, as well as "The Use of Toxicology in the Regulatory Process." (Beck, BD; Calabrese, EJ; Slayton, TM; Rudel, R. 2008. "The use of toxicology in the regulatory process." In Principles and Methods of Tox., Fifth Edition. (Ed.: Hayes, AW), Taylor & Francis, Philadelphia, PA,

p23-74.) She actively participates in various professional risk assessment and toxicology organizations and is currently the president of the Academy of Toxicological Sciences.

After receiving her Ph.D. from Tufts, Dr. Beck conducted post-doctoral research in cell biology and biochemistry for two years. She then joined the Harvard School of Public Health as a fellow in the Interdisciplinary Programs in Health. While at Harvard, she developed a short-term animal bioassay for predicting the toxicity of particulates to the lungs. This bioassay continues to be used today as a screen for materials with limited toxicity information. She also co-authored and edited the monograph, Variations in Susceptibility to Inhaled Pollutants: Identification, Mechanisms, and Policy Implications. (Eds.: Brain, JD; Beck, BD; Warren, AJ; Shaikh, RA, Johns Hopkins University Press, Baltimore, MD, p127-141.)

After Harvard, Dr. Beck worked at Region I EPA where she was Regional Expert in Toxicology and Chief of the Air Toxics Staff. While at EPA, she oversaw the development of risk analyses of inhaled chemicals, such as trichloroethylene, and provided risk support regarding potential impacts to air of chemical releases at Superfund sites. In collaboration with her colleagues at EPA, she developed the first recommendation for a health-based permissible limit for lead in soil.

Dr. Beck has been a principal at Gradient, an environmental consulting firm in Cambridge, Massachusetts, for over 20 years. She directs Gradient's toxicology and risk assessment practice and has performed hundreds of site-specific risk assessments, both nationally and internationally. Dr. Beck has analyzed risks from exposures to constituents released from both consumer products and pharmaceuticals. She has also developed health-based permissible toxicity criteria, for both ingestion and inhalation, for a range of chemicals, including metals and complex organics, as well as for compounds with limited information using methodologies such as structure activity relationships. Dr. Beck has presented the results of her work to different audiences including regulatory agencies, the U.S. Congress, and the public. Many of her analyses have also been published in peer-reviewed literature.

Continued on page 9

**Session 1: MUNITIONS AND EXPLOSIVES OF CONCERN**

163 Campus Center

Moderator: **Mark Begley**,  
*Environmental Management Commission,  
Camp Edwards, MA***1:30pm****Characterizing the OB/OD Ground at Hingham Annex Using a Different Approach to Multi-Increment Sampling**Mark R. Koenig, *US Army Corps of Engineers,  
Concord, MA*Brad Chrigwin, Jim Madison, *Test America  
Laboratory, South Burlington, VT*Alan Hewitt, *US Army Engineer Research and  
Development Center (CRREL), Hanover, NH***2:00pm****Quantum-chemical Predictions of Environmentally Important Physical Properties of Explosives**Yana Kholod, Andrea Michalkova, Lerzy  
Leszczynski, *Jackson State University,  
Jackson, MS*Frances Hill, *U.S. Army Engineer Research and  
Development Center (ERDC), Vicksburg, MS***2:30pm****In Situ Chemical Reduction for Organic Explosives in Soil**John Valkenburg, *The Adventus Group,  
DeWitt, MI*Alan Seech, *Adventus Americas, Inc. Corona  
Del Mar, CA*Jim Mueller, *Adventus Americas Inc.,  
Freeport, IL*Fayaz Lakhwala, *Adventus Americas, Inc.  
Union, NJ*David Hill, *Adventus Remediation Technologies,  
Mississauga, ON, Canada***3:00pm Break****3:30pm****LDI-TOF-MS Studies of the Speciation of Tungsten in Environmental Samples**Adebayo Ogunidipe, Julius Pavlov, Washington  
Braida, *Stevens Institute of Technology,  
Hoboken, NJ*Agamemnon Koutsospyros, *University of New  
Haven, West Haven, CT*Gregory O'Connor, *US Army, Demilitarization  
and Environmental Technology Division,  
Piscataway, NJ***4:00pm****Comparison of Effects of Poly- and Mono-tungstates on Plant Growth**Nikolay Strigul, *Stevens Institute of Technology,  
Hoboken, NJ***4:30pm****Immobilization of W, Pb, and Cu in Mixed Munitions Firing Range Contaminated soils by Various Amendments**Antonis Karachalios, Mahmoud Wazne, Juan N.  
Bentancur, Christos Christodoulatos,  
Washington Braida, *Stevens Institute of  
Technology, Hoboken, NJ*Gregory O'Connor, *US Army, Demilitarization  
and Environmental Technology Division,  
Piscataway, NJ***5:00pm****Review of the Toxicity Profile of Tungsten and Assessment of the Adequacy of the Available Data for Risk Tungsten Toxicity and the Adequacy of the Available Data for Risk Analysis and Exposure Guidelines**Tsedash Zewdie, C. Mark Smith, Carol Rowan  
West, *Massachusetts Department of  
Environmental Protection, Boston, MA***Session 2: VAPOR INTRUSION**

101 Campus Center

Moderator: **Ellen Moyer**, *CH2M HILL,  
Montgomery, MA***1:30pm****A New High Purge Volume Sampling Method for Sub-slab Soil Gas Monitoring for the Evaluation of the Vapor Intrusion Pathway**Paul Nicholson, Todd McAlary, David Bertrand,  
Hester Groenevelt, *Geosyntec Consultants,  
Inc., Guelph, ON, Canada***2:00pm****Active Sub-Slab Depressurization System for Mitigation of Chlorinated Solvent Vapor Intrusion at a Retail Complex**Michael J. Murphy, Phillip J. Muller, Charles  
Collet, Thomas Hanlon, *MACTEC  
Engineering & Consulting, Inc., Wakefield, MA*  
Ryan Belcher, *MACTEC Engineering &  
Consulting, Inc., Portland, ME***2:30pm****A New Quantitative Passive Sampler for Vapor Intrusion Pathway Evaluation: The PDMS Membrane Sampler**Todd N. Creamer, Hester Groenevelt,  
*Geosyntec Consultants, Inc. Acton, MA*  
Tadeusz Górecki, Suresh Seethapathy,  
*University of Waterloo, Ontario, Canada***3:00pm Break****3:30pm****Indoor Vapor Intrusion at Manufactured Gas Plant (MGP) Sites Lessons learned: Four Case Studies**Atul M. Salhotra, *RAM Group of Gannett  
Fleming, Inc., Houston, TX***4:00pm****Panel Discussion: Grappling with Vapor Intrusion (scheduled for 1 hour)**John Fitzgerald, *MA DEP*  
Robin Mongeon, *NH DES*  
Henry Schuver, *US EPA*  
Dan Waddill, *US Navy*  
William Wertz, *NY DEC***Session 3a: ENVIRONMENTAL FORENSICS**

168 Campus Center

Moderator: **Dallas Wait**,  
*Gradient Corporation, Cambridge, MA***1:30pm****Quantitative Source Apportionment of Creosote-derived and Background PAHs in Urban Sediments from the Little Menomonee River, Wisconsin, using Positive Matrix Factorization**Scott A. Stout, *NewFields, Rockland, MA*  
Thomas P. Graan, *Weston Solutions, Inc.,  
Vernon Hills, IL***2:00pm****Forensic Investigation of Indoor Hydrocarbon Vapors: A Case Study**Eric L. Butler, Carrie B. Tuit, Kim R. Reid,  
*Gradient Corporation, Cambridge, MA*  
Eric J. Wannamaker, *Gradient Corporation,  
Golden, CO***2:30pm****Environmental Weathering of PCBs in Sediments**Tarek Saba, *Exponent, Inc., Maynard, MA***3:00pm Break****Session 3b: ANALYSIS**

168 Campus Center

Moderator: **Dallas Wait**,  
*Gradient Corporation, Cambridge, MA***3:30pm****Interlaboratory Study of Polychlorinated Biphenyl Congeners from Sediment Samples with High-Resolution and Low-Resolution Mass Spectrometry**Wayne J. Whipple, Amanda T. Wroble, *U.S.  
Environmental Protection Agency, Chicago, IL*  
Jaana M.H. Pietari, *Exponent Inc., Bellevue,  
WA***4:00pm****Maximizing Biodegradation Information of Oil Contamination in Soils using a 3 Dimensional Chromatography Approach**Debin Mao, Richard Lookman, Diels, *Flemish  
Institute for Technological Research (VITO),  
Mol, Belgium***4:30pm****Arsenic and Thallium Data in Environmental Samples: Fact or Fiction?**Susan D. Chapnick, *New Environmental  
Horizons, Inc., Arlington, MA*  
Leonard C. Pitts, Ph.D., *Alpha Analytical,  
Mansfield, MA*  
Nancy C. Rothman, Ph.D., *New Environmental  
Horizons, Inc., Skillman, NJ*



# Wednesday

# Life Achievement Award

Continued from page 7

## Session 4: INTERNATIONAL SOIL & GROUNDWATER CASE HISTORIES

Reading Room, Campus Center  
Sponsored by **Remediation Partners**  
Moderator: **Richard Cartwright**,  
MECX, LP, East Amherst, NY

### 1:30pm International Chemical Oxidation Case History

Isaac Abouafia, MECX, LP, Houston, TX

### 2:00pm International in Situ Bioremediation Case History

Richard Raymond, Michael D. Lee, Toru Chino,  
Terra Systems, Wilmington, DE

### 2:30pm International Site Characterization Case History

John Sohl, Columbia Technologies, Inc.,  
Baltimore, MD

### 3:00pm Break

### 3:30 pm Innovative In-Situ Injection at a Brownfield Site

Patrick Hicks, Wavefront Energy and  
Environmental, Limited, Raleigh, NC

### 4:00pm International Barrier Wall Installation Case History: Use of Waterloo Barrier Groundwater Containment Wall in Brownfields Redevelopment

Robbie Laird, C3 Environmental, Limited,  
Breslau, Ontario, Canada

### 4:30pm Challenges to Bioremediation and Phytoremediation of Oil Sands in Kuwait and Other Gulf Region Countries

Valentine Nzengung, Planteco Environmental  
Consultants, Inc., Athens, Georgia

# Wednesday

## WORKSHOPS

Evening, 7:00 – 10:00pm

9) In Situ Thermal Remediation  
(163 Campus Center)

10) Identifying Background  
(168 Campus Center)

11) In-Situ Chemical Oxidation  
Workshop (101 Campus Center)

## ACADEMIA



### Dr. Deborah A. Cory-Slechta

Dr. Deborah Cory-Slechta received her Ph.D. degree from the University of Minnesota in 1977 and worked as a junior staff fellow at the National Center for Toxicological Research before moving to the University of Rochester in 1979 to begin a post-doctoral fellowship. She was appointed to the faculty in 1982 and in 1998 became Chair of the Department of Environmental Medicine and Director of the NIEHS Environmental Health Sciences Center at the University of Rochester. From July 2000- July 2002, she was appointed and served as Dean for Research and Director of the Aab Institute for Biomedical Sciences, a newly established post at the University and as such, became the first female dean in the history of the Medical School. She served as Director of the Environmental and Occupational Health Sciences Institute (EOHSI) and Chair of the Department of Environmental and Community Medicine at the UMDNJ-Robert Wood Johnson Medical School from 2003-2007 before returning to the University of Rochester Medical School as Professor in Environmental Medicine and Pediatrics.

## MILITARY



### Dr. Thomas F. Jenkins

His research was directed at developing analytical methods for determining the concentrations of explosives related chemicals in the environment, and the development of sampling strategies that minimize the contribution of spatial heterogeneity in the uncertainty associated with site characterization. He conducted research targeting the detection of buried landmines using chemical detection of vapors of explosives, and the development of laboratory and field methods for energetic compounds in water and soil.

His achievements include the development of standardized laboratory methods for the determination of nitroaromatic and nitramine explosives in soil and water (USEPA SW846 Method 8330 and 8330B, ASTM, and the Association of Official Analytical Chemists), and onsite methods for RDX and TNT (USEPA SW846 Methods 8510 and 8515). He also helped to pioneer the use of multi-increment sampling strategies to minimize the uncertainty due to spatial heterogeneity in the distribution of energetic compounds at explosives-contaminated sites. This technique is now being applied at a variety of sites contaminated with other types of analytes. Dr. Jenkins has published over 60 journal articles and over 100 government reports and he has presented his research results at numerous professional meetings and symposia.

## GOVERNMENT



### Dr. John T. Wilson

John T. Wilson is a research microbiologist. He took his PhD in soil microbiology at Cornell University in 1978, spent one year as a postdoc at U.S. EPA's Kerr Laboratory in Ada, OK, and then joined the Agency in 1979. He has been at the Kerr Center ever since. His primary research interest is biological transformations of organic contaminants in ground water, with applications to active bioremediation and monitored natural attenuation (MNA) of contaminants. He and his wife Barbara Wilson were the first to demonstrate aerobic co-metabolism of TCE and other chlorinated solvents. They also worked together to lay much of the scientific framework for our current understanding of natural anaerobic biodegradation of BTEX compounds in ground water. John served on the EPA committee that wrote EPA's policy guidance for monitored natural attenuation.

Continued on page 11

**Session 1: DATA QUALITY  
OBJECTIVES FOR  
REMEDY SELECTION –  
A WORKING SESSION**

163 Campus Center

Sponsored by **AECOM**Moderator: **Chris Mitchell, AECOM,  
Westford, MA****SESSION IS NOT CONCURRENT  
WITH OTHER SESSIONS**

Remedial investigations often leave data gaps that make evaluation and selection of remediation alternatives difficult. This special working session will: identify the data requirements to evaluate and scope some common and innovative technologies; describe methods for streamlining the RI/FS process to accelerate remedy selection; explore barriers to collection of necessary data. Investigation, remedial evaluation, and technology experts will present technology overviews, data requirements, and case studies. A robust roundtable discussion involving the panel and the audience will follow.

**8:30 – 10:00am****Introduction**Chris Mitchell, *AECOM, Westford, MA***State of the Practice for Site  
Investigation,**Ernest Ashley, *Camp Dresser & McKee Inc.,  
Cambridge, MA***Performing Feasibility Evaluations  
with Incomplete Conceptual Site  
Models**Daniel Groher, *PE, AECOM***Scoping In-Situ Bioremediation**Maureen Dooley, *Regenesis, Inc.***Pricing an Excavation Based Remedy  
– A Working Session**Jon Simpson, *Charter Environmental,  
Wilmington, MA***Issues of Scoping Chemical  
Oxidation-Based Remediation**George E Hoag, John Collins, *VeruTEK  
Technologies, Inc., Bloomfield, CT***Source Zone Delineation Techniques  
and Needs for Thermal Remediation**John LaChance, *TerraTherm, Inc., Fitchburg, MA*  
Gorm Heron, *TerraTherm, Inc., Keene, CA*  
Ralph S. Baker, *TerraTherm, Inc., Fitchburg, MA***10:00am Break****10:30am - Noon****Panel Discussion: Roundtable  
Working Session to Evaluate Data  
Quality Objectives**Ernest Ashley, *Camp Dresser & McKee Inc.,  
Cambridge, MA*Maureen Dooley, *Regenesis, Wakefield, MA*Daniel Groher, *AECOM, Westford, MA*George E Hoag, *VeruTEK Technologies, Inc.,  
Bloomfield, CT*John LaChance, *TerraTherm, Inc., Fitchburg, MA*Jon Simpson, *Charter Environmental,  
Wilmington, MA***Session 2: REMEDIATION I**

101 Campus Center

Moderator: **Ralph Baker, TerraTherm,  
Fitchburg, MA****8:30am****Fast-Track Remedial Design of Full-  
Scale ISCO Application Using Pilot  
Scale Testing and Field Screening  
Parameters**Paul M. Dombrowski, Barbara A. Weir, Kara M.  
Kelly, *AECOM Environment, Wakefield, MA*  
James Brown, *US EPA, Region 1, Boston, MA***9:00am****A Multi-faceted Approach to  
Optimization of a Groundwater  
Remedial System**Nigel D Tindall, *CH2M HILL, Otis ANG Base, MA*  
Rose Forbes, P.E., *Air Force Center for  
Engineering and the Environment, Otis ANG  
Base, MA***9:30am****Magnesium Corrosion and  
Stabilization/Solidification  
Effectiveness Using the Toxicity  
Characteristic Leaching Procedure**Laura Nicklaus, *Bradley University, Peoria, IL***10:00am Break****10:30am****Status of In-Situ Thermal Remediation  
Technologies for CVOC DNAPL (with  
3 examples)**Ralph S. Baker, *TerraTherm, Inc., Fitchburg, MA*  
Gorm Heron, *TerraTherm, Inc., Keene, CA*  
John M. Bierschenk, John LaChance,  
*TerraTherm, Inc., Fitchburg, MA***11:00am****DNAPL Remediation at Camp Lejeune  
Using ZVI-Clay Soil Mixing**Monica Fulkerson, Jessica Skeeane, Christopher  
Bozzini, *CH2M HILL, Charlotte, NC*  
Gary Tysor, *NAVFAC Mid-Atlantic, Norfolk, VA*  
Bob Lowder, *Camp Lejeune EMD, Camp  
Lejeune, NC***11:30am****Field-scale Pilot Test of a Reactive  
Core Mat to Address MGP Coal Tar  
Seepage**Sean M. Carroll, *Haley & Aldrich, Inc., East  
Hartford, CT*  
James K. Barrett, William J. Haswell, *Haley &  
Aldrich, Inc., Manchester NH*  
Marc B. Okin, *NiSource, Inc., Columbus, OH***Session 3a: SUSTAINABILITY  
AND BROWNFIELD SITES**

168 Campus Center

Moderator: **Millie Garcia-Serano,  
MA DEP, Lakeville, MA****8:30am****The Evolution of the Brownfields  
Program in the Federal and State  
Sectors**Catherine Finneran, *Brownfields Coordinator,  
MassDEP, Boston, MA***9:00am****Applications of Sustainable Principles  
and Green Technologies at Brownfield  
Sites**John Albrecht, *AECOM Environment, Rocky  
Hill, CT*Christopher Carleo, *AECOM Environment,  
Westford, MA*David Woodward, *AECOM Environment,  
Mechanicsburg, PA*Daniel Groher, *AECOM Environment,  
Westford, MA*Michael Doherty, *AECOM Environment, Rocky  
Hill, CT***9:30am****Sustainable Remediation Practices**Glenn Nicholas Iosue, *GES, Inc., Exton, PA***10:00am Break****Session 3b: REGULATORY**

168 Campus Center

Moderator: **Millie Garcia-Serano,  
MA DEP, Lakeville, MA****10:30am****Changes to EPA's Spill Prevention,  
Control and Countermeasure (SPCC)  
Program**Alex Sherrin, *U.S. EPA New England Oil  
Program, Boston, MA***11:00am****Resolving the Munitions Challenge --  
One Item at a Time**Leonard Pinaud, *MassDEP, Lakeville, MA*  
Mark Begley, *Environmental Management  
Commission, Camp Edwards, MA*Lynne A. Jennings, *United States Environmental  
Protection Agency, Boston, MA*Michael Ciaranca, *Massachusetts Army National  
Guard, Camp Edwards, MA***11:30am****Sea Level Rise and Coastal Rhode  
Island**Janet Freedman, *Coastal Resources  
Management Council, Wakefield, RI***Thursday October 22, 2009 • Noon Lunch**Amherst Room, 10<sup>th</sup> Floor, Campus Center**Luncheon Speaker****Impacts of Climate Change on Alaska Landfills****Jennifer Roberts,***Alaska Department of Environmental Conservation, Federal Facility Manager*

## Session 4: CHEMICAL OXIDATION

Reading Room, Campus Center

Moderator: **Clifford Bruell**,

University of Massachusetts, Lowell, MA

**8:30am**

**Selection and Implementation of Ex-Situ Chemical Oxidation for Treatment of TCE-contaminated Soil**  
Janis K. Tsang, USEPA, Boston, MA

**9:00am**

**Ex-Situ Wellhead Treatment for 1,4-Dioxane Using Fenton's Reagent**

Jackson Kiker, Willard Murray, Robert Tess,  
ECC, Marlborough, MA

James Connolly, US Army Natick Soldier  
Systems Center, Natick, MA

Stuart Pearson, Stanley Reed, MACTEC,  
Portland, ME

**9:30am**

**Design and Evaluation of an In Situ Chemical Oxidation (ISCO) Pilot Test at the Massachusetts Military Reservation (MMR)**

Mary O'Reilly, CH2M HILL, Otis ANG Base, MA

Patricia de Groot, CH2M HILL, Palm Beach, FL

Rose Forbes, Air Force Center for Engineering  
and the Environment, Otis ANG Base, MA

John Glass, CH2M HILL, Chantilly VA

Tom Simpkin, CH2M HILL, Englewood, CO

**10:00am Break**

**10:30am**

**Use of Near Field-Scale Groundwater to Soil Ratios to Improve Natural Oxidant Demand Bench Testing**

Matthew Burns, WSP Environment & Energy,  
Borborough, MA

James E. Studer, ChemRem International LLC,  
Albuquerque, NM

Michael D. Lee, Ph.D., Terra Systems, Inc.,  
Wilmington, DE

**11:00am**

**An Evaluation of Residual Effects Following Alkaline Activated Persulfate Treatment**

Scott C. Crawford, Brant A. Smith, Karen

O'Shaughnessy, XDD, LLC, Stratham, NH

Nathan W. Hagelin, Richard J. Jacobson,  
Mactec Engineering and Consulting, Inc.,

Portland, ME

**11:30am**

**Prevalence and Persistence of Hexavalent Chromium During In-Situ Chemical Oxidation (ISCO) of Trichloroethylene with Permanganate**

Antony D. G. Jones, ENVIRON, Irvine, CA

Carol L. Serlin, ENVIRON, Irvine, CA

Mauricio H. Escobar, ENVIRON, Los  
Angeles, CA

Devon Rowe, ENVIRON, Irvine, CA

He was the project officer and co-author of the EPA technical protocol for evaluating MNA of chlorinated solvents, and the U.S. Air Force technical protocol for MNA of fuel hydrocarbons. In recent years, he has worked to expand the lines of evidence that are available to evaluate active remediation and MNA. He led field evaluations of the efficacy of gene probes for Dehalococcoides organisms based on the polymerase chain reaction to predict the rate of MNA for chlorinated solvents and their degradation products, and the use of compound specific stable isotope analysis to recognize the extent of natural biodegradation in field scale plumes.

In recent years, his emphasis has shifted to fuel oxygenates such as methyl tertiary butyl ether and tertiary butyl alcohol, and to the lead scavengers ethylene dibromide and 1,2-DCA, which are present in old plumes from leaded gasoline. He has also contributed to our understanding of abiotic transformations of chlorinated solvents by iron sulfide mineral, particularly iron monosulfide and magnetite.

His current work addresses natural anaerobic biodegradation of biofuels such as ethanol and biodiesel, and potential biofuels including propanol, butanol, and isobutanol. He is also working in the area of vapor intrusion of petroleum hydrocarbons. He is trying to develop site specific methods to recognize and predict the contribution of aerobic biodegradation to the attenuation of petroleum vapors in the unsaturated zones.

In addition to his published papers and reports, John provides training and technical assistance in the area of bioremediation and natural attenuation to state and EPA regulators, and to the consultants that work with the government regulators to select and implement remedies at hazardous waste sites.

---

The Annual International Conference on Soils Sediments and Water is pleased to **call for nominations for 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. The Life Achievement Award Committee is looking for nominations for the 2010 award.

Please send your nominations for next year's awards to

**Barbara Callahan, bcalla39@comcast.net.**

Include an email, phone number and mailing address for the nominee.

## ANNOUNCEMENT

We are proud to announce the

# Adventus Americas Student Award

for platform and poster presentation

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

**Session 1: REMEDIATION II**

163 Campus Center

Moderator: **Willard Murray, ECC,**  
Marlborough, MA**1:30pm****Remediation Optimization and Sustainability**Rose Forbes, *Air Force Center for Engineering and the Environment, Otis ANG Base, MA***2:00pm****Sustainable Bioreactors to Achieve Remedy in Place**Erica Becvar, Ravi Ravichandran, *AFCEE Technology Transfer, Brooks City-Base, TX*  
Doug Downey, PE, *Ch2M Hill, Evergreen, CO*  
Bruce Henry, John Hicks, Steve Brauner, *Parsons, Denver, CO***2:30pm****Parallel Lines of Evidence to Verify Natural Attenuation Processes: Results of Collaborative Effort**Diane Saber, Xiangyang Zhu, *Gas Technology Institute, Des Plaines, IL*  
Lily Young, *Rutgers University, New Brunswick, NJ*  
Robert M. Kalin, *Strathclyde University, Glasgow, Scotland***3:00 Break****3:30pm****Advantages and Case Studies of Nano Size Remediation for Petroleum Release Sites**John H. Patterson, *Continental Remediation LLC, Waltham, MA*  
Wei-xian Zhang, *Lehigh University, Bethlehem, PA*  
David Henderson, *Gitech llc, Hamilton, NJ***4:00pm****Surfactant Enhanced Desorption of PAH's Improving their Biological, Chemical and Hydraulic Availability for In-situ and Ex-situ Remediation**George A. Ivey, *Ivey International Inc., Campbell River, BC, Canada*  
Paul V. Wierbicki, *Ivey International Inc., Newington, CT***4:30pm****Assessing Waste Site Evolution and Implications for Sustained Metal and Radionuclide Attenuation at Savannah River Site**Skip Chamberlain, Karen L. Skubal, U. S. Department of Energy, Washington, DC  
Miles Denham, Karen Vangelas, *Savannah River National Laboratory, Aiken, SC***Session 2: SEDIMENTS**

101 Campus Center

Moderator: **John Bleiler,**  
AECOM, Westford, MA**1:30pm****Bentonite-Based, Saltwater Compatible Capping Material for Contaminated Sediments - Geotechnical Evaluation and Full Scale Application of Low-Permeability Material**John A. Collins, *AquaBlok, Ltd., Toledo, OH***2:00pm****Determining River Bank Erosion rates for the Prediction of Stream Bank Erodibility Using Dendrogeomorphic Methods and Exposed Tree Roots**Bryan M. Dick, Ian Jewell, *AECOM, Raleigh, NC*  
Ilona Peszlen, *North Carolina State University, Raleigh, NC*  
Richard Hey, *Birmingham University, Birmingham, UK*  
Peter Simon, *Ann Arbor Technical Services, Ann Arbor, MI***2:30pm****Natural Attenuation of Tumors in a Bottom-Dwelling Fish in the Buffalo River, New York**Darrel Lauren, *ENVIRON Int'l., Philadelphia, PA*  
David Hinton, *Duke University, Durham, NC*  
Mac Law, *North Carolina State University, Raleigh, NC*  
Mary Sorensen, *ENVIRON Int'l., Atlanta, GA*  
Jen Lyndall, *ENVIRON Int'l, Burton, OH*  
Mark Kamilow, *Honeywell Inc., New Hartford, NY***3:00pm Break****3:30pm****Tidal Sediment Contamination in Tacony-Frankford Creek, Philadelphia**Tait Chirenje, *The Richard Stockton College of New Jersey, Pomona, NJ***4:00pm****In Situ Stabilization/Solidification Pilot Testing of Coal Tar Contaminated Sediment in Sydney Harbor, Nova Scotia**Kris Carbonneau, Emese Hadnagy, John Fairclough, *AECOM Environment, Westford, MA***4:30pm****Chemical Characteristics of Sediment of the Lower Hackensack River, New Jersey**Edward Konsevick, A. Brett Bragin, *New Jersey Meadowlands Commission, Lyndhurst, NJ***Session 3: SITE ASSESSMENT**

168 Campus Center

Moderator: **Dawn Oliveira,**  
EFI Global, Inc., Fairhaven, MA**1:30pm****Floater/Sinker Site Assessment Complicated by Asbestos**Clifford A. Merritt, *Owens Corning Science and Technology Center, Granville, OH***2:00pm****Managing Soil and Other Data from the Field to the Map**David W. Rich, *Geotech Computer Systems, Inc., Centennial, CO***2:30pm****Use of Pore Water in the Ecological Assessment of a Freshwater Stream and the Utility of These Data in the Site Management Plan**Cheryl R. Montgomery, *Montgomery & Associates, Inc., Arlington, MA*  
John Lortie, *Stantec, Topsham, ME*  
Joseph Jammallo, *Cushing, Jammallo & Wheeler, Inc., Clinton, MA*  
Scott E. Furman, *Tannenbaum, Helpert, Syracuse & Hirschtritt, LLP, New York, NY***3:00pm****Break****3:30pm****Characterizing Thermogenic Hydrocarbon Migration through Highly Fractured Bedrock Using Advanced Passive Soil Gas Sampling**Hilary G. Trethewey, *W. L. Gore & Associates, Inc., Elkton, MD***4:00pm****Dye Tracer Study—Tried and True Method Yields Surprising Results**George F. Arsnaw, *CDM, Edison, NJ*  
Michael A. Vancil, *LANXESS Corporation, Pittsburgh, PA*  
Robert P. Schreiber, *CDM, Cambridge, MA*  
Cristina N. Ramacciotti, *CDM, Edison, NJ*

## Scientific Advisory Boards

The tremendous success of past conferences has been the result of the dedication and hard work of our Scientific Advisory Board (SAB) members and this year's conference is no exception. The SAB evaluates abstract submissions, recommends invited papers and presenters, advises on special sessions and activities and generally serves as conference ambassadors encouraging colleagues to participate and attend. The creation of the SAB is the first crucial step in conference development, and care is taken to insure philosophical, scientific, regulatory and geographical balance.

### GENERAL

Ernest C. Ashley, *CDM Inc.*

Ralph S. Baker, Ph.D., *TerraTherm, Inc.*

Bruce Bauman, *American Petroleum Institute*

Mark Begley, *Environmental Management Commission*

B.K. Behera, M. D. *University Rohtak*

Scott R. Blaha, *GE*

Carol de Groot Bois, LSP, *Bois Consulting Company, Inc.*

Clifford J. Bruell, Ph.D., *University of Massachusetts at Lowell*

Matthew Burns, *WSP Environment & Energy*

Barbara Callahan, Ph.D., *University Research*

Robert H. Clemens, *Golder Associates Inc.*

Cynthia Cogan, *AECOM*

Andrew Coleman, Ph.D., *Lehigh University*

Janine Commerford, *MA DEP*

Marcelo Conti, *University of Rome*

Kathy Creighton, *Shaw Group*

Maureen Dooley, *Regenesys*

James Dragun, *The Dragun Corporation*

John W. Duggan, *Wentworth Institute of Technology*

Mohamed Elnabarawy

Kevin T. Finneran, Ph.D., *University of Illinois at Urbana/Champaign*

John Fitzgerald, *MA DEP*

Millie Garcia-Serrano, MPH, *MA DEP*

P. K. Jaiwal, *M. D. University*

Robert Kelley, *Regenesys*

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

Stephen S. Koenigsberg, *ENVIRON International Corporation*

Fayaz Lakhwala, *Adventus Group*

Kenneth Y. Lee, *University of Massachusetts Lowell*

David Ludwig, *Arcadis U.S.*

Rick McCullough, *MA Turnpike Authority*

Chris Mitchell, *AECOM*

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

Jim Mueller, *Adventus Americas Inc.*

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

Lee Newman, Ph.D., *Brookhaven National Lab*

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

Dawn Oliveira, *EFI Global, Inc.*

Om Parkash (Dhankher), *University of Massachusetts Amherst*

Gopal Pathak, *Birla Institute of Technology*

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

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

Paul Rakowski, P.E., *BCEE, Booz | Allen | Hamilton*

Richard Raymond, *Terra Systems*

Paula L. Sturdevant Rees, Ph.D., *University of Massachusetts Amherst*

Paolo Ricci, *University of Massachusetts Amherst*

Joe Robb, *AMEC Earth and Environmental*

Scott Saroff, *KEMRON Environmental Services, Inc.*

Julia Sechen, *MA DEP*

David F. Sullivan, *Clean Harbors*

Frank Sweet, *AECOM*

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

James C. Todaro, *Alpha Analytical Labs*

Stephen P. Truchon, *ARCADIS*

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

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

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

Jason C. White, Ph.D., *The Connecticut Agricultural Experiment Station*

Paul A. White, *Health Canada*

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

Raymond S.H. Yang, *Colorado State University*

Luo-Ping Zhang, *Xiamen University*

### FEDERAL

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

John Glaser, *US Environmental Protection Agency, ORD*

Douglas W. Grosse, *US EPA*

Ann Marie Jarabek, *US EPA*

Leslie Karr, *Naval Facilities Engineering Service*

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

Alex Sherrin, *US EPA Boston*

Paul J. Yaroschak, *Office of the Secretary of Defense*

## Call For Papers

### 26th Annual International Conference on Soils, Sediments, Water and Energy

October 18-21, 2010

University of Massachusetts, Amherst  
*Assessment, Remediation, Regulation and the Energy Environmental Interface*

#### ENERGY ENVIRONMENT INTERFACE

##### TOPICS INCLUDE:

- "green" remedial technologies
- "green" brownfields
- leadership in energy and environmental design (LEED)
- renewable energy projects on closed landfills and contaminated sites
- carbon footprint and life-cycle analysis
- environmental concerns of alternative energy from cradle to grave
- recycling of demolition debris

##### GENERAL TOPICS:

- bioremediation
- chemical analysis
- cleanup standard setting
- environmental fate and modeling
- hazard exposure and risk assessment
- heavy metals
- hydrocarbon identification
- alternative and innovative technologies
- petroleum 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
- biotechnology
- chlorinated hydrocarbons
- pesticides (PCBs, etc.)
- contaminants of concern,
- contamination at military installations
- dioxin
- ecological risk assessments
- environmental forensics
- MECs
- MTBE
- mercury
- perchlorate
- phytoremediation
- risk based cleanups (RBCA)
- state regulatory programs

#### SUBMISSION INFORMATION AVAILABLE AT [www.UMassSoils.com](http://www.UMassSoils.com)

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 5, 2010

#### FOR MORE INFORMATION CONTACT

Denise Leonard  
Northeast Regional  
Environmental Health Center  
N344, Morrill  
University of Massachusetts  
Amherst, MA 01003  
Tel: (413) 545-1239 • Fax: (413) 545-4692  
Email: [dleonard@schoolph.umass.edu](mailto:dleonard@schoolph.umass.edu)

## ANALYSIS

### A Comparison of PID Technologies Designed to Combat Humidity Issues in Headspace Analysis of Soils

Geoff F Hewitt, *ION Science (Americas), Waterbury, VT*

## ARSENIC

### Real-Time Portable Sensor for Measuring Arsenic Concentration in Water

Badawi Dweik, Ph.D., *Giner Inc., Newton, MA*

### Collection and Analysis of Arsine Gas from Contaminated Marsh Sediments

Kent McCord, Robert Stanforth, *RMT, Inc., Madison, WI*

## BIOFUELS

### Oxidized Extracellular Electron Shuttles (Quinones) Increase Biobutanol Production

Anne Haluska, Xiaofeng Ye, Kevin Finneran, *University of Illinois at Urbana-Champaign, Urbana, IL*

### Extracellular Quinone/Hydroquinones Increase Bio-Hydrogen and Bio-Solvent Production (Butanol and Acetone) in Growing and Resting Cells of *Clostridium beijerinckii*

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

## BIOREMEDIATION

### Bioremediation of PCBs from Composted PCB-Accumulating Plants

J. Scott Greenwood, A. Barbara Zeeb, *Royal Military College of Canada, Kingston, Ontario, Canada*

### Maintaining Neutral pH in Deep Soils and Ground Water with Insoluble Colloidal Buffers

James Piegat, William A. Newman, *Remediation and Natural Attenuation Services, Inc., Brooklyn Center, MN*

### Changes in the Structure of the Microbial Community of a PAH-Contaminated Soil During Bench-Scale Bioremediation

Caroline G. Rose, Paul A. White, *Health Canada, Ottawa, Ontario, Canada*  
Iain Lambert, Suzanne Paterson, *Carleton University, Ottawa, Ontario, Canada*

### Biosurfactants from *Acinetobacter calcoaceticus* BU03 Enhance the Bioavailability and Biodegradation of Polycyclic Aromatic Hydrocarbons (PAHs)

Jonathan W.C. Wong, Z. Y. Zhao, *Hong Kong Baptist University, Hong Kong SAR, P.R. China*

### Bioremediation of Organochlorine Pesticides Contaminated Soil with Microemulsion

GY Zheng, J.W.C Wong, *Hong Kong Baptist University, Hong Kong SAR, P.R. China*

## CHEMICAL OXIDATION

### The Use of Permanganate at Two Chlorinated Ethene Sites

Michael F. Dacey, *Geolnsight, Inc., Manchester, NH*

### A "Green Oxidant" for In-Situ Chemical Oxidation for the Treatment of Contaminated Soils

Maureen Dooley, *Regenesis, Wakefield, MA*  
Ben Mork, *Regenesis, San Clemente, CA*

### Micro-Encapsulated Oxidant Technology: Enhancing In Situ Chemical Oxidation (ISCO) with Selective Oxidation and Controlled-Release Permanganate

Pamela J. Dugan, Beth Vlastnik, Sheryl Ivy, *Carus Corporation, Peru, IL*  
Lindsay Swearingen, Jason Swearingen, *Specialty Earth Sciences, New Albany, IN*

### Aggressive Remediation of NAPL and Coal Tar Impacted Sites Using Ozone and Hydrogen Peroxide Injection

Charles Whisman, *Groundwater & Environmental Services, Inc., Exton, PA*

## ENVIRONMENTAL FATE

### Adsorption of Hydrophobic Organic Compounds (HOCs) on Inorganic Surfaces in Aqueous Systems

Yuan Qian, Torsten C. Schmidt, *University Duisburg-Essen, Duisburg, Germany*

## HEAVY METALS

### Wipe Sampling Methodologies to Assess Exposure to Lead and Cadmium in Urban Canadian Homes

Lauren McDonald, Pat E. Rasmussen, Marc Chénier, Christine Levesque, *Health Canada, Ottawa, Ontario, Canada*

### Report of Mercury Deposition from Rain and Snow in Virginia

Douglas Mose, James Metcalf, *George Mason University, Fairfax, VA*

### Media Filtration of Metals in Runoff Water from a Small Arm Shooting Range, in situ

Arnliot E. Strømseng, Marita Ljønes, Espen Mariussen, *Norwegian Defence Research Establishment, Kjeller, Norway*

### Impact of Spatial Interpolation Methods for the Soil Heavy Metal Contaminated Area Estimating

Yunfeng Xie, *Chinese Academy of Science (CAS), Beijing, P.R.China*

Tongbin Chen, Mei Lei, Doctor, Bo Song, Xiaoyan Li, *Institute of Geographic Sciences and Natural Resources Research, (CAS), Beijing, P.R.China*

### Sampling and Statistical Analysis of Background Mercury Groundwater Concentrations in an Industrial-Commercial Area

A. Curtis Weeden, Karen Madsen, *AECOM Environment, Westford, MA*  
Brian Harootyan, *AECOM Environment, Cincinnati, OH*

### Mercury Testing in Soil Gas and Ambient Air using Passive Vapor Sampling

James E. Whetzel, W. L. Gore and Associates, *Inc., Elkton, MD*

## MISCELLANEOUS

### The Ice Storm of 2008 and Emergency Response Coordination throughout Western and Central Massachusetts

Jason J. Barroso, *Tighe & Bond, Westfield, MA*  
Sarah A. Rocklin, *Tighe & Bond, Westfield, MA*  
Kenneth J. Gendron, *Tighe & Bond, Worcester, MA*

### A New Way to Collect Household Hazardous Waste

John Grabs, Christopher Martel, *Camp Dresser & McKee, Chicago, IL*  
Kevin Schnoes, *Chicago Department of Environment, Chicago, IL*

## MODELING

### Hydrodynamic Modeling to Enhance a Conceptual Model of a Tidally-driven Creek and Superfund Site

Jeremy Grush, Dan Herrema, *LimnoTech, Inc., Ann Arbor, MI*

Andrew Hopton, *CH2M HILL, Philadelphia, PA*  
Rich Galloway, *Honeywell International, Morristown, NJ*

### Solute Flux Rate Uncertainty Evaluation at a Monitored Boundary

David E. Langseth, *WRE Gradient Corporation, Cambridge, MA*

### Using Genetic Algorithms on Groundwater Modeling Problems in a Consulting Setting

Karen M. Madsen, A. Elizabeth Perry, *AECOM, Westford, MA*

## MUNITIONS AND EXPLOSIVES OF CONCERN

### A Release of Perchlorate from Blasting Compounds

Elissa Brown, *AECOM, Concord, MA*

### Development of Pilot Electrochemical Treatment Systems to Destroy RDX in a Process Wastewater

David B. Gent, Jared L Johnson, *US Army Engineer Research & Development Center, Vicksburg, MS*

Greg O'Connor, *U.S. Army Armament Research, Development and Engineering Center, Picatinny, NJ*

Deborah R. Felt, Steven L. Larson, *US Army Engineer Research & Development Center, Vicksburg, MS*

Bob Winstead, *Holston Army Ammunition Plant, Kingsport, TN*

### Episodic Discharge of Lead, Copper and Antimony from a Norwegian Small Arm Shooting Range

Espen Mariussen, Marita Ljønes, *Norwegian Defence Research Establishment, Kjeller, Norway*

Loella Bakka, *Norwegian Pollution Control Authority, Oslo, Norway*

Arnliot E. Strømseng, *Norwegian Defence Research Establishment, Kjeller, Norway*

### Evaluation of Treatment Approaches to Reduce Ejecta from Projectile Impact on Sand Catchboxes

Victor F. Medina, Scott Waisner, Joe Tom, Dick Read, *U.S. Army Engineer Research & Development Center, Vicksburg, MS*

## **A Novel Approach for the Remediation of Mixed Lead and Tungsten Contaminated Fire Range Soil**

Juan N. Bentancur, Mahmoud Wazne, Deok Hyun Moon, Washington Braida, Christos Christodoulatos, *Stevens Institute of Technology, Hoboken, NJ*  
Gregory O'Connor, *US Army, Picatinny, NJ*

## **PESTICIDES**

### **Use of Biomarkers and Predicted Environmental Concentrations to Select Relevant Pesticides Applied to Soil**

Juan Carlos Sánchez Meza, Victor F. Pacheco Salazar, *Universidad Autónoma del Estado de México, México*  
Pedro Avila Pérez, *Instituto Nacional de Investigaciones Nucleares, México*  
Manuel Borja Salin, *Instituto Tecnológico de Toluca, México*  
Tom LaPoint, *North Texas University*

## **PHYTOREMEDIATION**

### **One Generation Plants a Tree, the Next One Gets the Shade**

Erica Becvar, Mahalingam (Ravi) Ravichandran, *AFCEE/TDV, Brooks City-Base, TX*  
Bill Doucette, *Utah State University, Logan, UT*  
William Plaehn, *Parsons, Denver, CO*

### **In Situ Phytoextraction of Polychlorinated Biphenyls (PCBs) from Contaminated Soils using Weeds**

S.A. Ficko, B.A. Zeeb, *Royal Military College of Canada, Kingston, Ontario, Canada*  
A. Rutter, *Queen's University, Kingston, Ontario, Canada*

### **Lowering TCE in Groundwater at a DOT site: Results from Air Sparging and Phytoremediation**

Mary V. O'Reilly, *New York State Department of Transportation, Binghamton, NY*  
Joseph Graney, *Binghamton University, Binghamton, NY*  
Ruth Ann Trudell, *New York State Department of Transportation, Albany, NY*

### **Naturally Occurring Phytoremediation? Using Native Trees to Assess Remediation Potential for TCE in Groundwater**

Devon Rowe, Carol Serlin, Antony Jones, *ENVIRON International Corporation, Irvine, CA*

### **Impacts of Transpiration on As Accumulation in Different Ecotypes of *Pteris vittata***

Xiaoming Wan, Mei Lei, Tongbin Chen, Yingru Liu, *Chinese Academy of Sciences (CAS), Beijing, P.R. China*

### **In Situ Investigation of Phosphorus Dynamics in the Rhizosphere Solution of Wetland Plants in Field**

Zhenyu Wang, Rong Wan, Shengfang Wen, *Ocean University of China, Qingdao, China*  
Baoshan Xing, *University of Massachusetts, Amherst, MA*

## **RADIONUCLIDES**

### **Multiyear Study of Radon Removal from Municipal and Single Home Potable Water Systems**

Douglas Mose, James Metcalf, *George Mason University, Fairfax, VA*

## **REMEDIATION**

### **Aquablok+Organoclay as Permeable Barriers**

George R. Alther, *Biomim Inc., Oak Park, MI*

### **Rheological Characteristics of Manufactured Gas Plant Tars and Implications for Remediation**

Pamela Schultz Birak, Scott C. Hauswirth, Cass T. Miller, *University of North Carolina at Chapel Hill, Chapel Hill, NC*

### **In Situ Soil Washing by Sedimentation Method for Contaminated Sandy Soil**

Wawan Budianta, *Gadjah Mada University, Yogyakarta, Indonesia*  
Chris Salim, Hirofumi Hinode, Hideki Ohta, *Tokyo Institute of Technology, Tokyo, Japan*

### **Remediation of Acid Tar Lagoon**

Branko Druzina, Andrej Perc, *University of Ljubljana, Ljubljana, Slovenia*

### **Remediation in Skykomish Washington**

Michael Byers, *AECOM Environment, Seattle, WA*  
Mike Gardner, *AECOM Environment, Westford, MA*  
Aimee Fitzpatrick, *AECOM Environment, Belmont, NH*

### **Limited-Access Bioremediation in a Factory Setting**

Deborah R. Farnsworth, *MyKroWaters, Inc., Concord, MA*  
Willard Murray, *ECC, Inc., Marlborough, MA*  
Daniel Bronson, *Bronson Drilling, Cambridge, MA*

### **Optimization of a Multi-Well Groundwater Pump and Treat System: Managing Hydraulic Stagnation Zones**

Mark D. Hilyard, *CH2M HILL, Otis ANG Base, MA*  
Rose H. Forbes, *Air Force Center for Engineering and the Environment, Otis ANG Base, MA*

### **EHC® In Situ Chemical Reduction (ISCR) Technology for In Situ Treatment of Volatile Organic Compounds (VOCs)**

Fayaz Lakhwala, Ravikumar Srirangam, *Adventus Americas, Inc., Union, NJ*  
Jim Mueller, *Adventus Americas Inc., Freeport, IL*  
Josephine Molin, John Valkenburg, *The Adventus Group*

### **Nitrate Removal from Synthetic High Nitrate Aaste by a Denitrifying Bacterium**

Rashmi R. Nair, Stanislaus F. D'Souza, *Bhabha Atomic Research Centre, Mumbai, India*

### **Comprehensive Study on Sorption of Polycyclic Aromatic Hydrocarbons on Black Carbon**

Hongwen Sun, *Nankai University, Tianjin, P.R. China*  
Zunlong Zhou, *Zhejiang University of Technology, Zhejiang, P.R. China*

### **The Capability of Binary Systems Containing Water-soluble Ionic Liquids for Extraction of Typical Endocrine Disrupting Chemicals from Sediments**

Lei Wang, Guohua Zhang, Hongwen, Teng Tu, *Nankai University, Tianjin, PR China*

## **SEDIMENTS**

### **Assessment of Background in a Sediment Evaluation of a Great Lakes Estuarine Environment**

Kristen Durocher, *AECOM, Belmont, NH*  
Bill Gregg, *AECOM, St. Louis Park, MN*  
Mark Gerath, *AECOM, Westford, MA*  
Janet Barker-Stonebrook, *NiSource, Columbus, OH*

### **Sediment Oxygen Demand in Van Cortland Park Lake and the Passaic River Constructing and Refining Ex-Situ Measurement Apparatus**

Eric Spargimino, *Camp Dresser & McKee Inc., Cambridge, MA*

### **Heavy Metal Characterization and Leachability of Organic Matter-Rich River Sediments in Hanoi, Vietnam**

Nguyen Thi Lan Huong, Masami Ohtsubo, Takahiro Higashi, Motohei Kanayama, *Kyushu University, Fukuoka, Japan*

### **Leachability of Heavy Metals from Contaminated Sediments of the To Lich and Kim Nguu River Systems in Hanoi, Vietnam**

Nguyen Thi Lan Huong, Masami Ohtsubo, *Kyushu University, Fukuoka, Japan*

## **SITE ASSESSMENT**

### **Relating Manufacturing Processes and Sample Location to the Composition and Properties of MGP Tars**

Scott C. Hauswirth, Pamela Schultz Birak, Cass T. Miller, *University of North Carolina at Chapel Hill, Chapel Hill, NC*

### **Ground-Penetrating Radar: Enhanced 3D Graphics Using Low-Cost Visualization Software**

Gary G. LaFrance, *Civil Engineering Consultant, Harrisburg, PA*

### **A Comparison of Three Soil Characterization Methods on a Soil Formed in Sandy Glacial Outwash**

Michael W. Morris, *Jacobs Engineering, Bourne, MA*  
Aimee Comeau, *ECC, Otis ANGB, MA*  
John T. Ammons, Ryan Blair, *University of Tennessee, Knoxville, TN*

## **SUSTAINABLE REMEDIATION**

### **Addressing and Implementing the Six Core Elements of Green Remediation in Environmental Remediation Projects**

Ann Rosecrance, *Conestoga-Rovers & Associates, Emeryville, CA*  
Fred Taylor, *Conestoga-Rovers & Associates, Natick, MA*

## **VAPOR INTRUSION**

### **Advanced Passive Soil Gas Sampling Increases Accuracy in Vapor Intrusion Investigations**

James E. Whetzel, Hilary Trethewey, Jay Hodny, *W. L. Gore & Associates, Inc., Elkton, MD*

# Conference at a Glance

## MONDAY, OCTOBER 19, 2009

Workshops: Workshop #1, 8:00am – 5:00pm; Workshop #2, 8:00am – noon; Workshop #3, 1:00pm – 5:00pm; Workshop #4, 1:00pm – 4:00pm; Workshop #5: 2:00 – 5:00pm

- 1) **The Benefits of a Stratified Statistical Sampling Design for Surface Soil Analyses** (168 Campus Center)
- 2) **Assessing Vapor Intrusion at Petroleum Release Sites** (163 Campus Center)
- 3) **BioVapor, a 1-D Vapor Intrusion Model with Aerobic Biodegradation** (163 Campus Center)
- 4) **The MCP Audit 2009 - A Case Study Approach: Training Materials** (LSP Course #1207-09) (917 Campus Center)
- 5) **Environmental Fate of Hydrocarbons in Soils and Groundwater** (101 Campus Center)

## TUESDAY, OCTOBER 20, 2009

**Morning 8:30am – Noon**, Sessions are concurrent

- Session 1: **Bioremediation I (starts at 9:00am)** (163 Campus Center)  
Session 2: **Energy, Air Quality and Health: Focus on Particulate Air Pollution** (101 Campus Center)  
Session 3: **In-situ and Ex-situ Nano to Microbubble Perozone Treatment** (168 Campus Center)  
Session 4: **Environmental Molecular Diagnostics for Remedial Design, Management and Closure** (Reading Room, Campus Center)  
Session 5: **Status of the Shorelines 20 Years after the Exxon Valdez Oil Spill** (Bowker Auditorium, Stockbridge Hall)

**Afternoon 1:30 to 5:30pm**, Sessions are concurrent

- Session 1: **Sustainable Remediation** (163 Campus Center)  
Session 2: **Phytoremediation** (101 Campus Center)  
Session 3: **Heavy Metals** (168 Campus Center)  
Session 4: **MTBE** (Reading Room, Campus Center)  
Session 5: **Tanker Incidents: Exxon Valdez if by Sea, Tanker Trailer Trucks if by Land?** (Bowker Auditorium, Stockbridge Hall)

**Poster session 4:00 – 6:00pm**

**Social 4:30 – 6:00pm**, exhibit area, 1<sup>st</sup> floor

**Workshops** (Evening, 7:00 – 10:00pm)

- 6) **Building a Better Background Data Set** (168 Campus Center)
- 7) **The Revised CAM: What You Need to Know** (163 Campus Center)
- 8) **Perchlorate Remediation Technologies: an ITRC Short Course** (101 Campus Center)

## WEDNESDAY, OCTOBER 21, 2009

**Morning, 8:30am – Noon**, Sessions are concurrent

- Session 1: **Bioremediation II** (163 Campus Center)  
Session 2: **Site Remediation - In-Situ Treatment, Diagnostics and Application Design** (101 Campus Center)  
Session 3: **Risk Assessment** (168 Campus Center)  
Session 4: **Arsenic (starts at 9:00am)** (Reading Room, Campus Center)

**Afternoon, 1:30 – 5:30pm**, Sessions are concurrent

- Session 1: **Munitions and Explosives of Concern** (163 Campus Center)  
Session 2: **Vapor Intrusion** (101 Campus Center)  
Session 3a: **Environmental Forensics** (168 Campus Center)  
Session 3b: **Analysis** (168 Campus Center)  
Session 4: **International Soil & Groundwater Case Histories** (Reading Room, Campus Center)

**Poster session 4:00 – 6:00pm**

**Social 4:30 – 6:00pm**, exhibit area, 1<sup>st</sup> floor

**Workshops** (Evening, 7:00 – 10:00pm)

- 9) **In Situ Thermal Remediation** (163 Campus Center)
- 10) **Identifying Background** (168 Campus Center)
- 11) **In-Situ Chemical Oxidation Workshop** (101 Campus Center)

## THURSDAY, OCTOBER 22, 2009

**Morning 8:30am – Noon** Sessions are concurrent

- Session 1: **Data Quality Objectives for Remedy Selection – A Working Session** (163 Campus Center)  
*This session is NOT concurrent with the others*  
Session 2: **Remediation I** (101 Campus Center)  
Session 3a: **Sustainability and Brownfield Sites**  
Session 3b: **Regulatory** (168 Campus Center)  
Session 4: **Chemical Oxidation** (Reading Room, Campus Center)

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

- Session 1: **Remediation II** (163 Campus Center)  
Session 2: **Sediments** (101 Campus Center)  
Session 3: **Site Assessment** (168 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**