FINAL PROGRAM

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October 15 – 18, 2012
University of Massachusetts | Amherst, MA

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140 Presenters + 65 Posters + 10 Workshops + 43 Exhibitors

Assessment, Remediation, Regulation and the Energy Environmental Interface

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2012 EXHIBITORS

Organization          Space
Accutest Laboratories  B30
AECOM                B22 and B25
AEHS Foundation/Student Career Booth  B43
Alpha Analytical      B12
Antea Group           B24
AquaBlok, Ltd         T3
Bio-Enhance           B14
BISCO Environmental   B27
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Con-Test Analytical Laboratory          B05
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VeruTek Technologies  B23
W.L. Gore & Associates  B33
WSP Environment & Energy  B32

Exhibit Hall Hours:
TUESDAY 9:00am – 7:00pm
WEDNESDAY 9:00am – 7:00pm
THURSDAY 9:00am – 12:00pm

SCIENTIFIC ADVISORY BOARDS

The AEHS Foundation attributes the success of this conference, in large part, to a very dedicated and hardworking Scientific Advisory Board (SAB). The SAB evaluates abstract submissions, recommends invited papers and presenters, advises with regard to session topics, and serves as conference ambassadors. The SAB is crucial to the conference development. Care is taken to create a board that represents philosophical, scientific, regulatory, and geographical balance.

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Jim Mueller, FMC Environmental Solutions
Willard Murray, Ph.D., P.E., ECC
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October 15, 2012

WORKSHOPS

All workshops are FREE to municipal, state, and federal REGULATORY personnel registered for the conference. See registration desk to sign up.

Workshop 1  8:00am – 5:00pm, Room 917

CHMM/CHMP/HMMT Hazardous Materials Management
Richard Cartwright, MECX, LP, East Amherst, NY

Given that hazardous materials are found everywhere, this workshop is a unique opportunity to learn and discuss unique beneficial chemical & physical properties of the materials, which we come in contact with every day. Properly managed, these beneficial materials help provide quality of life our society has come to expect. Improperly managed, waste products from these materials can become very hazardous. According to Paracelsus, a famous alchemist & toxicologist, it is the dose that makes the poison. An inability to properly limit public exposure to harmful hazardous materials has resulted in highly publicized environmental disasters.

Blueprints for Certified Hazardous Materials Manager (CHMM), Certified Hazardous Materials Practitioner (CHMP) and Hazardous Materials Manager in Training (HMMT) examination preparation success will be presented. Information regarding the CHMM/CHMP/HMMT credentials is available at the Institute of Hazardous Materials Management (IHMM) website, www. ihmm.org. IHMM credentials are accredited by Council of Engineering Specialty Boards (CHMM) and American National Standards Institute (ANSI). Over 15,000 professionals have been certified and work in environmental protection, public health, homeland security, transportation, safety and related fields.

IHMM Fellow and internationally-recognized course instructor, Richard Cartwright, has been teaching hazardous materials management courses since 1988. He will lead students through each section of the student workbook, which covers laws & regulations, science & technology, management principals and practical applications pertaining to hazardous materials management.

In addition to being an exam prep course, this brand new workshop can also be used as an annual certification refresher course. At the end of the course, each student will receive a training certificate which can be submitted along with the course outline for their professional certification maintenance point submissions. Certified Hazardous Materials Managers (CHMM) & Certified Hazardous Materials Professionals (CHMP) are required to accrue 100 hours of relevant training every 5 years. Note: LSP and NYSPE credit is pending approval.

Who Should Attend? Training is intended for environmental, health, & safety professionals, industrial hygienists, plant managers, and front line supervisory personnel who have stewardship responsibility for handling, storage, transportation and/or management of hazardous materials. Note: CHMM candidates must have an approved 4 year college degree, CHMP candidates must meet practitioner experience requirements, and HMMT candidates typically are college seniors or graduate students seeking employment in field of hazardous materials management.

Workshop 2  12:00pm – 2:00pm, Reading Room

Strategies for Tackling Brownfields Redevelopment Challenges
Kerry Bowie, Director of Brownfields and Environmental Justice, Massachusetts Department of Environmental Protection (MassDEP), Boston, MA

The purpose of this workshop is to discuss the regulatory, technical, and legal issues commonly involved with the cleanup and redevelopment of Brownfields sites. Case studies will be presented and the assistance provided by MassDEP, the Office of the Attorney General, and other state and federal agencies in overcoming these challenges and expediting progress at such sites will be reviewed.

2 hours of “DEP Regulatory” CEU credit available (see registration form to sign up)
Course number #1434 (Repeat Course)

Workshop 3  1:00pm – 4:00pm, Room 168

Utilization of Stable Isotopes in Environmental and Forensic Geochemistry Studies
Paul Philp, University of Oklahoma, Norman, OK

Stable isotopes have been used for decades in the petroleum industry and the development of gas chromatography-isotope ratio mass spectrometry (GCIRMS) has lead to a significant increase in applications of this approach in many areas including environmental, and forensic geochemistry. This workshop will present an introduction to stable isotope geochemistry and discuss applications of stable isotopes to various environmental problems, including their potential for monitoring attenuation of compounds such as PCE, MTBE, BTEX, etc. Topics will include an introduction to the concept of stable isotopes, with particular attention to carbon, hydrogen, and chlorine.

In forensic cases where the contaminant spill has multiple components, and the GC and GCMS data are ambiguous, relationships between source and product might only be determined through the stable isotopes of individual compounds. GCIRMS is also extremely valuable for single component contaminants, such as MTBE or PCE, where GC and GCMS will be of no use for correlation. In this workshop, particular emphasis will be placed on the chlorinated compounds, such as PCE and TCE. There are a number of examples that have already been published where GCIRMS has been used to both differentiate sources of PCE/TCE as well as studying natural attenuation at the contaminated sites.

Early applications of stable isotopes to environmental problems were limited to carbon and hydrogen isotopes. Efforts are being made to introduce the use of chlorine isotopes as an additional tool for monitoring chlorinated compounds. The approach is not as mature as with carbon and hydrogen isotopes but the methodology involved will be discussed along with problems associated with the use of chlorine isotopes. One particular area where chlorine isotopes are being successfully utilized is that of vapor intrusion. Vapor intrusion studies and differentiation of indoor sources of contaminants vs. subsurface contaminants is ideally suited for utilization of isotopes.

Finally, the use of the various fingerprinting techniques for monitoring attenuation at sites undergoing remediation will be discussed. The combined use of the stable isotopes, GC and GCMS can be extremely valuable tools monitoring remediation as well as determination of the onset of natural attenuation. Methods being developed for the incorporation of the isotope data into flow transport models will also be discussed.
All workshops are FREE to municipal, state, and federal REGULATORY personnel registered for the conference.

**Workshop 4** 1:00pm – 5:00pm, Room 908

**In-Situ Thermal Remediation**

Ralph S. Baker, Ph.D., John LaChance, and Robin Swift, TerraTherm, Gardner, MA
Kelly Clemons, TerraTherm, Baltimore, MD

In-Situ Thermal Remediation (ISTR) comprises several robust technologies that have been proven to be able to clean up DNAPL and other organic compound-contaminated source zones in a wide range of subsurface settings, including all soil types both above and below the water table, and in fractured rock. These technologies include In-Situ Thermal Desorption (ISTD), Steam-Enhanced Extraction (SEE) and Resistive Heating. This workshop covers the following topics: (a) overview of ISTR technologies, combinations thereof, and their applicability; (b) selection of target temperatures for various contaminant classes; (c) physicochemical mechanisms underlying ISTR technologies, including In-Situ destruction reactions; (d) what happens to the NAPL; (e) how ISTR can be used safely beneath buildings and adjacent to residences; (f) case studies of ISTD, SEE and resistive heating, including both lower and higher-temperature applications and their sustainability; and (g) how to choose the optimal heating technique for a site, including data needed for technology screening, cost evaluation and design.

**Workshop 5** 1:00pm – 5:00pm, Room 101

**Geochemical Evaluations of Metals in Environmental Media: How to Distinguish Naturally Elevated Concentrations from Site-Related Contamination**

Karen Thorbjornsen, P.G., Shaw Environmental, Inc., Knoxville, TN
Jonathan Myers, Ph.D., Shaw Environmental, Inc., Albuquerque, NM

Objective: Provide practical geochemistry-based approaches for identifying metals contamination in soil, sediment, groundwater, and surface water.

Do you really have metals contamination at your site? Metals concentrations in environmental media often exceed screening criteria, but they may be naturally elevated. It is well known that trace elements naturally associate with a limited number of minerals in soil and sediment (or with specific suspended particulates in groundwater and surface water) under a given set of environmental conditions. In most oxic soils, for example, arsenic and vanadium are almost exclusively associated with iron oxide minerals at consistent ratios. These processes result in positive correlations between specific trace vs. major element concentrations, which can be visualized with scatter plots. Contaminated samples are identified by their anomalously high elemental ratios relative to uncontaminated samples. For groundwater and surface water, additional factors considered include pH, redox effects, aqueous complexation, salinity gradients, and (for groundwater) well construction materials.

Unlike a purely statistical approach, geochemical evaluation: greatly reduces the probability of falsely identifying contamination; does not require a statistically valid background data set; identifies contaminated locations, thereby focusing remediation; and provides mechanistic explanations for elevated concentrations.

During this course you’ll learn geochemical evaluation techniques to distinguish natural metals concentrations from potential contamination, using existing data — without performing geochemical modeling or adding significantly to project cost. Insightful case studies are presented from the instructors’ work at hundreds of investigation sites across the U.S. and its territories. The material is presented in an accessible style and prior knowledge of geochemistry is not required. Recommended for regulatory personnel as well as consultants and site managers.

**Workshop 6** 2:30pm – 4:30pm, Room 164

**Risk Assessment, Risk Management, and the Significance of the Pickle Risk**

Paul W. Locke, Director of Response & Remediation, MA DEP Bureau of Waste Site Cleanup, Boston, MA

The Massachusetts Waste Site Cleanup Program is often described as a “risk-based” program, but the term is often misunderstood and doesn’t capture the complexity (and flexibility) of the decision-making process built into the regulations. This session will explore different approaches to risk management in environmental regulatory programs and the process specifically incorporated into the Massachusetts Contingency Plan (3w10 CMR 40). The primary focus will be the overall balance struck between the benefits of remediation and the costs of implementing response actions: how much of that balancing is dictated by regulation; how much can be determined by the LSP’s professional judgment; and what trade-offs are simply inconceivable (in a regulatory sense).

2 hours of “DEP Regulatory” CEU credit available (see registration form to sign up)
Alberta’s Oil Sands: North American Energy Security and Mitigation of Environmental Impacts

Tristan Sanregret, Executive Director, U.S. Relations, International and Intergovernmental Relations, Government of Alberta, Canada

The oil sands in Alberta, Canada have become the focus of intense global attention. In the United States, the Keystone XL pipeline has become a topic of national discussion and something of a proxy for a broader discussion of not just the oil sands but even America’s continued reliance on oil. Within Alberta, investors from Canada, the U.S., Europe and Asia are pouring tens of billions of dollars a year into the province to develop the resource while environmental groups, many of whom are based in the United States, are concerned about the cumulative impact of this development and even the challenge the oil sands presents to their long-standing narrative of “peak oil”. For others increased oil sands development in Alberta and new discoveries in the continental United States hold out the promise of North American energy independence. The government of Alberta is at the crossroads of all of these discussions.

Oil and gas development is an increasingly important source of revenues for both the Canadian federal and Alberta governments, financing the social and other government programs Canadians expect, while these same citizens demand protection for the natural environment which is such a strong part of the Canadian identity. Join the government of Alberta as they speak about the development of the largest and most strategically important hydrocarbon resource on the continent while ensuring the level of environmental protection Albertans demand.
TUESDAY AFTERNOON
October 16, 2012

PLATFORM SESSIONS

Session 1a: 1:30pm – 3:00pm, Room 164
Regulatory Panel Discussion: Grappling with Vapor Intrusion
Moderator: Ellen Moyer, CH2M Hill, Montgomery, MA

Robin Davis, Utah Department of Environmental Quality, Salt Lake City, UT
Carl Gruszczak, Jr., Connecticut Department of Energy & Environmental Protection, Hartford, CT
Richard Spiese, Department of Environmental Conservation, Waterbury, VT
Gerard Martin, MassDEP Southeast Regional Office, Lakeville, MA
Robin Mongeon, New Hampshire Dept. of Environmental Services, Concord, NH

3:00 Break

Session 1b: 3:30pm – 5:30pm, Room 164
Regulatory Programs and Policies
Moderator: Ellen Moyer, CH2M Hill, Montgomery, MA

3:30 Look Inside the Development of the Largest MA Soils Management Facilities: The Down & Dirty!
David Murphy, Tighe & Bond, Portsmouth, NH

4:00 Human PAH Exposure from Soil and Sediment: Regulatory and Scientific Developments and Future Cleanup Goals
Michael Ruby, Integral Consulting, Louisville, CO; Priscilla Tomlinson, Integral Consulting, Seattle, WA

4:30 Hurricane Irene - Big Hazmat Impact in Small Vermont Town: The Cooperative Response and Lessons Learned
Matthew Moran, Vermont Department of Environmental Conservation, Waterbury, VT; Joe Hayes, ECI, Inc., Waterbury, VT

5:00 EPA’s Spill Prevention, Control, and Countermeasure (SPCC) Program – Updates
Alex Sherrin, US EPA Region 1 New England, Boston, MA

Session 2: 1:30pm – 5:00pm, Room 101
International Soil and Groundwater Remediation Case Histories
Moderator: Richard Cartwright, MEC©, East Amherst, NY

1:30 Source Area In-Situ Bioremediation (SABRE): An International Case History
Michael Lee, Terra Systems, Claymont, DE

2:00 Evolution of Tools for Managing Soil Data
David Rich, GeoTech Computer Systems, Inc., Centennial, CO

2:30 Laboratory Treatability Studies Help Guide Foreign Remediation Projects
Michael Lee, Terra Systems, Claymont, DE

3:00 Break

3:30 ERD Pilot Study in a Residual DNAPL under Highly Alkaline Conditions in the Kingdom of Saudi Arabia
Richard Schaffner, Eric Lindhult and Steven Lamb, GZA GeoEnvironmental, Manchester, NH

4:00 Permanent and Temporary Barrier Wall Installation Case History
Minh Le, C3 Environmental Limited, Breslau, ON, Canada

4:30 Chlorinated Solvent Remediation in Brazil via In-Situ Chemical Oxidation Recirculation
Richard Cartwright, MEC©, East Amherst, NY; Isaac Aboulafia, MEC©, Houston, TX; Douglas Carvel, MEC©, New Braunfels, TX; Larry Rader, MEC©, Somonauk, IL

Session 3: 1:30pm – 4:30pm, Room 168
The Marcellus Shale Play in New York State: Closing in on Final Regulatory Approval
Moderator: Frank Peduto, Spectra Environmental Group, Latham, NY

1:30 Update on Regulatory Status in New York
Gregory Sovas, XRM, LLC, Ballston Lake, NY

2:00 Insight to the Shale Revolution
Paul Hartman, Chesapeake Energy, Albany, NY

2:30 Shallow Groundwater Quality Over the Marcellus Shale Play from Extensive Pre-Drill Sampling
A. Elizabeth Perry, AECOM, Chelmsford, MA; Rikka Bothun, AECOM, Fort Collins, CO; Bert Smith and Mark Hollingsworth, Chesapeake Energy, Oklahoma City, OK

3:00 Break

3:30 Updating Frac-Water Flowback Treatment for Recycling
William Kerfoot, Kerfoot Technologies, Inc., Mashpee, MA

4:00 Understanding the Energy Crisis (Science verse Political Science)
James Smiley, Knolls Atomic Power Laboratory - Retired, Clifton Park, NY

POSTER SESSIONS

Authors will be available for individual discussion at their posters on both Tuesday & Wednesday from 3:00pm – 6:00pm

1:30 Laboratory and Field Biodegradation of 1,2-DCA at Elevated Concentrations
Richard Royer and Angela Fisher, General Electric Global Research, Niskayuna, NY; Lisa Hamilton, General Electric, King of Prussia, PA; Matthew Schnobrich, Arcadis US, King of Prussia, PA; John Horst, Arcadis US, Newtown, PA

2:00 In-Situ Bioremediation Pilot Study of Trichloroethylene (TCE) in Fractured Bedrock Aquifer Utilizing Hydraulic Fracturing Technology
Neil Teamerson, Tetra Tech, Inc., King of Prussia, PA; Bruce Rundell and Rashmi Mathur, U.S.Environmental Protection Agency, Philadelphia, PA

2:30 Pilot Study to Evaluate Toluene Source Area Bioremediation Using Aerobic In-Situ Bioreactor® (ISBR)
Edward Sullivan, Birdsall Services Group, Cranford, NJ; Greg Davis and Dora Ogles, Microbial Insights, Rockford, TN; Kerry Sublette and Kate Key, University of Tulsa, Tulsa, OK; James Duba, Birdsall Services Group, Voorhees, NJ

3:00 Break

3:30 PCB Biodegradation by a Dhc Culture Grown on Trichlorobenzenes and Tetrachlorobenzenes
Sam Fogel, Margaret Findlay, and Donna Smoler, Bioremediation Consulting, Watertown, MA

4:00 Bioremediation of Vinyl Chloride in Groundwater by Methanotrophic and Ethenotrophic Bacteria working in Concert
Margaret Findlay, Donna Smoler, and Sam Fogel, Bioremediation Consulting, Watertown, MA; Timothy Mattey, University of Iowa, Iowa City, IA

4:30 Enhanced Anaerobic Biodegradation of Petroleum Hydrocarbons in Groundwater
Jack Sheldon, Antea Group, West Des Moines, IA; Jim Cuthbertson, Antea Group, Addison, MI

5:00 Unlocking Enhanced Reductive Dechlorination by Reducing Sulfide Toxicity in a Low-pH Aquifer
Ed Alperin, Stephen Richardson, and Jessica Keener, EOS Remediation, LLC, Raleigh, NC
**Workshop 7** 6:30pm – 9:30pm, Room 164
**Site Characterization 101 (VOC Plume Delineation)**
Javier Santillan, Ph.D., JAS Environmental Solutions, Universal City, TX

Generally it is wise to identify the illness before one applies a cure. Site restoration is no different. One must make use of existing tools to conceptualize and document in a clear and succinct transmissible format the status of the contaminated zone. One does not have to blindly select random sampling locations. A well throughout approach will save both time and funding. Accelerated Site Characterization is not new, nor is planning whether it is systematic, systemic, or strategic. This 4-hour course will allow one to more effectively characterize a site, construct a representative conceptual site model that allows decision makers to select a remedial action with a lower risk of failure. The course will focus on delineation of a TCE plume. However, the principles can be applied to all plume types. We recommend participants bring a laptop to load the exercise software.

**Workshop 8** 6:30pm – 9:30pm, Room 101
**Assessment and Evaluation of Vapor Intrusion at Petroleum Release Sites**
Robin Davis, Utah Department of Environmental Quality, Salt Lake City, UT
George DeVaul, Shell Global Solutions, Houston, TX
Tom McHugh, GSI, Houston, TX

This workshop considers the assessment and evaluation of vapor intrusion from subsurface sources into buildings from petroleum release hydrocarbons. This includes: 1) Conceptual site models and differences between petroleum and chlorinated solvent vapor intrusion; 2) The API BioVapor Model as an assessment tool; 3) Data validation of the BioVapor model and exclusion distance criteria; 4) Case examples including data evaluation, modeling, and interpretation; and 5) An update on EPA-OUST workgroup efforts.

**Workshop 9** 7:00pm – 9:00pm, Room 168
**Alberta’s Oil Sands: Technology, Economy, Security and Environment**
Tristan Sanregret, Executive Director, U.S. Relations, International and Intergovernmental Relations, Government of Alberta, Canada

While Alberta’s oil sands resource has become better known in the United States because of the debate over the Keystone XL pipeline, few Americans are likely aware that the oil sands hold the third largest oil reserves in the world, that Alberta is the single largest source of U.S. oil imports or how this oil is produced. Join the government of Alberta as they speak about the development of the largest and most strategically important hydrocarbon resource on the continent while mitigating impacts on the environment.

This workshop will delve into the nature of the oil sands resource, how it is developed, what the future holds for production, and economic and energy security implications for Canada as well as the United States. This session will also look at the environmental air, water, land and greenhouse gas emissions regulations that govern the development of the oil sands.

**Overcoming Water Scarcity in the Middle East by Progressive Development of Water Sources – The Israeli Approach for Sustaining Water Supply**
Professor Eilon Adar, Director of the Zuckerberg Institute for Water Research at Ben-Gurion University of the Negev, Israel

The history of Middle East was influenced by past global climatic changes. Warm periods caused droughts, which brought desertification, migrations and wars. Cold periods were humid and brought abundance and the settling of the deserts’ fringes. The forecast based on this correlation is that the present global warming will cause the drying up of the Middle East. Like in the past, the mitigating of this negative impact should be by the utilization of the long-term storage of the groundwater resources. This will involve deep drilling and pumping and modern irrigation methods in the framework of a new policy of “Progressive Development”, which will entail the utilization of the up-till-now, undeveloped natural water resources beyond that of present water replenishment. While the utilization of the one-time groundwater reserves is taking place a master long term comprehensive progressive development plan for the Middle East will be prepared. The Progressive Development methodology infers the step by step development of all existing water resources like treated effluents, desalinated brackish groundwater and at the end desalination of seawater. In a nutshell, Progressive Development aims to guarantee the survival and well-being of future generations of the developing world in the arid and semiarid zones, by giving priority to investment in advanced planning and development of new water resources, step by step, while observing and assessing the current and possible future impact on nature and the environment.

This presentation will emphasize the hydrological complexity in the eastern Mediterranean countries due to water shortage, massive groundwater exploitation, urbanization, agriculture and industrial impact on water availability and quality associated with the transboundary water resources.
**Session 1:** 8:30am – 12:00pm, Room 101  
**Environmental Forensics**  
**Moderator:** Dallas Wait, Gradient Corporation, Cambridge, MA

**8:30 Using Sediment Tracers to Identify Release Events, Differentiate Sources, and Assess Monitored Natural Recovery**  
Edward Garvey, Solomon Gbondou-Tugbawa, and Juliana Atmadja, The Louis Berger Group, Morristown, NJ; AmyMarie Accardi-Dey, The Louis Berger Group, Elmsford, NY

**9:00 Novel PCB Fingerprinting Approach Used in Cost Allocation**  
Eric Butler and Kim Reid, Gradient, Cambridge, MA; Remy J-C Hennet, SS Papadopulos & Associates, Bethesda, MD; Christopher Wells, Price Associates, Bar Harbor, ME

Gary Hunt, TRC Environmental, Lowell, MA

**10:00 Break**

**10:30 Calculation of Quantitative Petroleum Weathering Indices Using Loss of Leaded Gasoline from Multiple Underground Storage Tanks as the Base Model**  
Michael Wade, Wade Research, Marshfield, MA

**11:00 CVOCs Contaminated Site Investigation with Optimized CSIA Approach Help Reveal Multiple Releases**  
Yi Wang, Zymax Forensics Isotope, Escondido, CA

**11:30 Unscrambling the Egg – A Case Study in Unmixing Comingled Plumes**  
Bob Bond and Ethan Magee, Langan Engineering & Environmental Services, Doylestown, PA

**Session 3:** 9:00am – 12:00pm, Room 168  
**Recalcitrant Compound Treatment**  
**Moderator:** William B. Kerfoot, Kerfoot Technologies, Mashpee, MA

**9:00 Removing 1,4, Dioxane in Residential Well Supplies**  
Rich Abrams, BISCO Environmental, Taunton, MA

**9:30 Perfluorocompound Treatment by Peroxide-Coated Nanobubble AOP**  
William Kerfoot, Kerfoot Technologies, Inc., Mashpee, MA; Darko Strajin, Trow Associates, Inc., Brampton, Ontario, Canada

**10:00 Break**

**10:30 Completing Perozone® Sparging of a Fuel Spill in Aymamón Limestone Deposits in Puerto Rico**  
Ricardo Alvarez, On-Site Environmental, Inc., Dorado, PR

**11:00 Rapid Removal to MCLs on a Fuel Spill Site**  
Trevor King, Langan Engineering & Environmental Services, Warrington, PA

**11:30 PA Act 2 Closure of a Multiple-Remedy UST Site**  
Frederic Coll, URS Corporation, Pittsburgh, PA; Richard Moore, URS Corporation, Pittsburgh, PA

**Session 4:** 9:00am – 12:00pm, Room 164  
**Assessing and Managing Human Health Risks in the U.S. – Striking a Balance between Costs, Benefits, Efficacy and Unintended Consequences**  
**Moderators:** Michael Ruby, Integral Consulting, Louisville, CO and Russell Keenan, Integral Consulting, Portland, ME

A number of U.S. regulations are designed to reduce and manage risks to human health and the environment, using human health risk assessment (HHRA) as an integral tool to inform the risk management decision. Is the risk assessment process effective or broken? Is it truly informative or burdened with bureaucratic steps and default assumptions that make it unwieldy and prescriptive? Do improvements in the science get incorporated at the regulatory level? This special session staffed by nationally renowned practitioners and risk managers will explore HHRA as currently practiced and discuss improvements that could be made to increase its transparency and efficacy. Issues such as the use of site-specific exposure and biomonitoring data, evaluations of background conditions, precautionary toxicological evaluations, weight-of-evidence approaches, means for addressing uncertainty, and ongoing legal and legislative precedents will be discussed. The session will involve each panelist expressing their views on this topic, followed by a lively panel discussion.

**Panelists:**
- Kenneth Olden, P.H.D., Director of EPA’s National Center for Environmental Assessment, USEPA Headquarters, Washington DC
- Paul W. Locke, Director of Response and Remediation, Bureau of Waste Site Cleanup, MassDEP, Boston, MA
- Bob Forbes, FMC Corporation, Philadelphia, PA
- Nancy B. Beck, Ph.D., DABT, Senior Director, Regulatory Science Policy, Regulatory and Technical Affairs, American Chemistry Council, Washington DC
- Mike Barbara, MAB Consulting, Brookside, NJ

**POSTER SESSIONS**

Authors will be available for individual discussion at their posters on both Tuesday & Wednesday from 3:00pm – 6:00pm
Session 1: 1:30pm – 5:30pm, Reading Room
Sustainable Remediation
Moderator: Michael E. Miller, CDM Smith, Cambridge, MA
1:30 NYSDEC DER-31: A Summary of a Year of Compliance
Scott McDonough, AECOM, Latham, NY
2:00 Integrating Sustainable Remediation into Shell’s Global Soil and Groundwater Management Program
Buddy Bealer, Shell Oil Products US, Nazareth, PA; Jonathan Smith, Shell Global Solutions, Chester, United Kingdom
2:30 Vadose Zone Remediation by Sustainable Soil Vapor Extraction
Gary M. Birk, Tersus Environmental, LLC, Wake Forest, NC; Brian Riha and Jay Noonkester, Savannah River National Laboratory, Aiken, SC; Mark Kluger, Dajak LLC, Wilmington, DE
3:00 Break
Wendy Heiger-Bernays, Jade Tabony, Dominique Chambless, and Jiayang Chien, Boston University School of Public Health, Boston, MA; Valerie Burns and Jeremy Dick, Boston Natural Areas Network, Boston, MA; Emily Estes, Maia Fitzstevens and Dan Brabander, Wellesley College, Wellesley, MA
4:00 Comparing the Sustainability of Permeable Reactor Barriers
Cannon Silver, CDM Smith, Columbus, OH
4:30 Passive Groundwater Plume Treatment using Oxidant-Based Reactive Barriers
Sean Davenport and Pamela Dugan, Carus Corporation, LaSalle, IL
5:00 Novel Green-Synthesized Nano-iron Activator for Chemical Oxidation of Recalcitrant Environmental Contaminants
George Hoag and Meredith Lanoue, VeruTEK Technologies, Bloomfield, CT

Session 3: 1:30pm – 5:30pm, Room 168
Chlorinated Compounds
Moderator: Paul Dombrowski, AECOM, Wakefield, MA
1:30 Application of Biodegradable Oils (VOS™) for Treatment of cVOCs in the Vadose Zone
Bilgen Yuncu, Ed Alperin, and Stephen Richardson, EOS Remediation, LLC, Raleigh, NC
2:00 Modeling and Optimization of GEDIT for In Situ Contaminant Destruction in the Vadose Zone
Kristina Masterson and Robert Fitzgerald, CDM Smith, Cambridge, MA; Patrick Evans, CDM Smith, Bellevue, MA
2:30 Evaluating Various Organic Substrates as Soluble DVI Transport Mechanisms
Michael Slezczkowski and Donovan Smith, JRW Bioremediation, LLC, Lenexa, KS
3:00 Break
3:30 Remediation of 1,2 DCA in Fractured Bedrock Using EHC Fayaaz Lakhwada and Ravi Srinagam, FMC Environmental Solutions, Union, NJ; Ed Vanoy, BASF Corp, Florham Park, NJ; John Ash, Paul Malquist, and Brian Rosini, AMO Environmental Decisions, Inc., Danboro, PA
4:00 Dehalococciides and In-Situ Chemical Reduction Under Low pH Conditions
Robert Shoemaker, AECOM, Chelmsford, MA; Paul Dombrowski and Neil Thurber, AECOM Environment, Wakefield, MA; Patrick Gratton, AECOM Environmental, Rocky Hill, CT
4:30 The Sum is Greater than the Parts – Combining Two Thermal Technologies for Source Area Treatment
Diane Baxter and Lauren Sores, Nobis Engineering, Lowell, MA; Devon Phelan, Robin Swift, and John LaChance, TerraTherm, Gardner, MA; Derrick Golden, U.S. Environmental Protection Agency, Boston, MA; Janet Waldron, MA Department of Environmental Protection, Boston, MA
5:00 Chlorinated Solvent Remediation using Catalytic In-Situ Chemical Oxidation and Accelerated Anaerobic Biodegradation
Maureen Dooley, Regenesis, Wakefield, MA; Bryan Vigue, Regenesis, San Clemente, CA

Session 4: 1:30pm – 5:00pm, Room 164
Risk Assessment
Moderator: Peter Woodman, Risk Management Incorporated, Acton, MA
1:30 Comparison of Approaches for Identification of Background Soil Concentrations – A Case Study
Michael Murphy, Kelly Chatterton, Brian Roden, and Rebecca Devries, AMEC Environment & Infrastructure, Wakefield, MA
2:00 Dioxin in Soil: Reexamining How Clean is Clean Enough?
Christopher Teaf, Florida State University, Tallahassee, FL; Douglas Covert, Hazardous Substance & Waste Management Research Inc., Tallahassee, FL; Gregory Council, Tetra Tech GEO, GA; Talaat Ijaz, Tetra Tech GEO, Whitehouse Station, NJ
2:30 Developing Toxicity Criteria for Use in Human Health Risk Assessment: Current and Future Approaches
Ann Bradley, Integral Consulting, Brooklyn, NY
3:00 Break
3:30 High Resolution Site Characterization to Enhance the Effectiveness of Sub-Surface Environmental Assessment
Steven B. Gelb, S2C2, Raritan, NJ; James Mack, James Mack LLC, Hillsborough, NJ
4:00 A Mass Balance Trace Soil Ingestion Study of a First Nation Community Located in a Wilderness Area of Canada
Jamie Doyle, University of Ottawa, Ottawa, Canada; P.A. White, Environmental Health Sciences and Research Bureau, Ottawa, Canada
4:30 Soil Ingestion and Polycyclic Aromatic Hydrocarbon Exposure in Cold Lake, Alberta
Graham Irvine and J.M., University of Ottawa, Ottawa, Canada; P.A. White, Environmental Health Sciences and Research Bureau, Ottawa, Canada
**Workshop 10** 6:30pm – 9:30pm, Room 101

**Green and Sustainable Remediation: A Practical Framework**

Interstate Technology & Regulatory Council (ITRC)'s Green and Sustainable Remediation Team  
Buddy (LeRoy) Bealer, Shell Oil Products US, Nazareth, PA  
Christopher Carleo, AECOM, Chelmsford, MA  
Russell Sirabian, PE, PMP, Battelle Memorial Institute, White Plains, NY

A new document published by the Interstate Technology & Regulatory Council (ITRC)'s Green and Sustainable Remediation (GSR) team provides a generalized framework for integrating GSR practices into existing site investigation and remediation programs. GSR practices reduce the unintended environmental, social and/or economic footprint of a remediation project. GSR is the site-specific employment of products, processes, technologies, and procedures that mitigate contaminant risk to receptors while making decisions that are cognizant of balancing community goals, economic impacts, and net environmental effects. The ITRC framework is intended to be flexible and scalable to each phase of the remedial process and is applicable to many types of remediation programs. Users of the document are encouraged to tailor the GSR evaluation process to their individual program using the ITRC document as a guide.

Like the ITRC team’s technical and regulatory guidance document, this presentation will provide an introduction to GSR, including definitions of key terms specific to the concept of GSR. The presentation will also accomplish the following:

- Provide practitioners with three options/levels of detail for performing a GSR evaluation, ranging from the consideration and use of appropriate best management practices (BMPs) to a life-cycle assessment approach of multiple impacts of project activities and decisions
- Describe how to plan, evaluate and implement GSR concepts during each remediation phase
- Support improved stakeholder engagement throughout the GSR process
- Provide strategies for implementing the three levels of GSR evaluation
- Provide information about GSR tools that were designed by and for the remediation industry
- Highlight case studies for ten sites that provide examples and illustrations.
- Demonstrate how the GSR framework provides simplified and reproducible results.

As illustrated in the case studies, the ITRC GSR framework gives users a generalized approach for improving awareness of GSR concepts; integrating environmental, social and economic considerations into site management decisions; and assisting regulators in guiding remedial decisions to maximize the benefits of environmental remediation activities.

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**SOCIAL**

**Wednesday 5:00pm – 7:00pm Exhibit Hall**

Host Bar (limited duration), Refreshments, and Light Hors d’Oeuvres  
Free to all registered conference attendees

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To receive CEUs you must:
- Be registered to receive the CEU’s (pay the $50 administrative charge for CEUs on the registration form). If you are not registered, and would like to receive CEUs, please see the registration desk.
- Sign in AND out at the session and workshop doors (exception: LSPs sign in and out at the conference desk for the conference and at the workshop doors for workshops)
- Show a picture ID when signing in and out
- Complete and return evaluation form, if required (applies to NY PEs).

CEUs are awarded as follows:
- ½ credit per hour of session attendance (exception: LSPs receive ½ credit per hour of overall conference attendance)
- 1 credit per hour of workshop attendance.
- Some workshop(s) may be approved for DEP regulatory credit (see registration form)

All certificates are mailed mid-November.

150 Fearing St., Suite 21, Amherst, MA 01002  
Tel: 413-549-5170 Fax: 413-549-0579 www.aehsfoundation.org
Session 1: 8:30am – 12:30pm, Room 164
Remediation Case Studies
Moderators: Dawn Riley, American Seafoods International, LLC, New Bedford, MA and Cosmo Gallinaro, Common Sense Environmental, New Bedford, MA

8:30 Sustainable Remediation Approach at a Large Industrial Site Using ZVI and Pneumatic Fracturing and Injection
Robert Kelley, ARS Technologies, Inc., New Brunswick, NJ; Paul Poulsen, Hpure Technologies, Wilmington, DE

9:00 Pilot-Scale Remediation of Vegetable Garden Soil Contaminated with Toxic Elements
Domen Lestan, Masa Jelusic, and David Voglar, University of Ljubljana, Slovenia; Neza Finzgar, Envit Ltd, Ljubljana, Slovenia

9:30 Case Study: Ensuring Successful In-Situ Chemical Oxidation via Enhanced Site Investigation and Treatability Testing Techniques
Gerald Cresap, Groundwater & Environmental Services, Inc. (GES), Westford, MA

10:00 Combining Bioaugmentation with In Situ Chemical Reduction (ISCR) for Remediation of Chlorinated Ethenes in Groundwater
Fayaz Lakhwala and Ravikumar Srinivasa, FMC Environmental Solutions, Union, NJ; Damian Vanetti and Don Soltz, SSW Redevelopment of North America, Syracuse, NY

10:30 Break

11:00 Remediating a Large Volume Ethanol-Blended Gasoline (E10) Release Under the Massachusetts Contingency Plan
Kevin Trainer, GeoInsight, Inc., Littleton, MA

11:30 In Situ Thermal Treatment of LNAPLS and DNAPLS: High Energy Efficiency Pilot Test and Full Scale Remediation in Bordeaux, France
Grant Geckeler, TPS America, Corona, CA; Marten Kingmans, TPS Tech, Brussels, Belgium

12:00 Heavy Metal Soil Remediation, McGrath Park, Salem, Massachusetts
Michael Martin, Tighe & Bond, Pocasset, MA; Kenneth Gendron, Tighe & Bond, Worcester, MA; David Murphy, Tighe & Bond, Portsmouth, NH; David Knowlton, City of Salem DPW, Salem, MA

Session 3: 9:00am – 12:30pm, Room 168
 Innovative Remedial Technologies
Moderator: Matthew Burns, WSP Environment & Energy, Woburn, MA

9:00 Design and Operation of a Safe, Effective, and Reliable Remotely Operated Bedrock Injection System
Ethan Gyles and Tim Pac, ERM, Providence, RI; John McGtigue, ERM, Boston, MA

9:30 Zero Emissions - ECO SVE: Enhanced Concentrating Oxygen Soil Vapor Extraction System
Jon Pesicka, Antea Group, St. Paul, MN; Philip Gichrist, Antea Group, Monrovia, CA

10:00 Directionally Drilled and Engineered Horizontal Remediation Well Screens Accelerate Site Closure
Michael Sequina, George Lesonsky, and Garry Van Heest, Directional Technologies, Inc., Wallingford, CT

10:30 Break

11:00 Automated Web-Based Monitoring and Visualization for Sustainable Environmental Management
Mark Kluger, Dajak, LLC, Wilmington, DE; Mark Kram, Cliff Frescura, and Brian Kahl, Groundwell Technologies, Santa Barbara, CA

11:30 Ozone Transport Considerations
Marcia Berger, Clean Properties, Inc., Sudbury, MA

12:00 2nd Year Results of Ozone-based In-Situ Remediation of a PCB and Total Petroleum Hydrocarbon Release
John Mateo, Blue Lightning Underground Enterprises, LLC, Moorestown, NJ

Session 4a: 8:30am – 10:30am, Reading Room
PCBs in Building Materials – Current Regulatory and Technical Challenges
Moderators: Jennifer Griffith, Northeast Waste Management Officials’ Association, Boston, MA and Rob Clemens, EnviroSense, Londonderry, NH

8:30 Poly-Chlorinated Biphenyls in Building Materials as a Source of Soil Contamination: Environmental Impacts of Remedial Options and Case Study
Susan Cahalan, Denise Bartone, and Kathleen Campbell, CDW Consultants, Inc., Framingham, MA

9:00 Wachusett Dam PCB Assessment and Remediation
Dean Soltanian, TMC Environmental, Bellingham, MA; Russell Languex, EnviroSense, Inc.; John Nelson, MVRA

9:30 PCBs in Building Materials and Recycling of Demolition Debris
Malcolm Boeler, AECOM, Rocky Hill, CT; Marybeth Hayes, AECOM, Chelmsford, MA; Donnel Jackson, ABB Inc., Windsor, CT

10:00 PCB Building Material Disposal Management
Pete Long, EQ Northeast, Wrentham, MA

10:30 Break

Session 4b: 11:00am – 12:30pm, Room 101
Environmental Nanotechnology
Moderator: Brajesh Dubey, University of Guelph, Guelph, ON, Canada

11:00 Innovative Treatment of Vadose Zone Hexavalent Chromium (Cr+6) Contaminated Site with ZVI

11:30 Potential Environmental Toxicity of Silver and Zinc Oxide Nanoparticles to the Terrestrial Plants
Lok Pokhrel and Philip Scheuerman, East Tennessee State University, Johnson City, TN; Brajesh Dubey, University of Guelph, Guelph, ON, Canada

12:00 Plant Uptake and Translocation of Gold Nanoparticles
Lee Newman and Beverly Agtuca, State University of New York, Syracuse, NY; Tara Sabo-Attwood, University of Florida, Gainesville, FL; Francesca Polompa and Soumitra Ghoshroy, University of South Carolina, Columbia, SC; Catherine Murphy, University of Illinois at Urbana-Champaign, Urbana, IL; Jason Urrine, University of Kentucky, Lexington, KY; Benjamin Babst and Richard Ferrieri, Brookhaven National Laboratory, Upton, NY
POSTER SESSIONS

Posters may be viewed throughout the day on Tuesday, October 16th and Wednesday, October 17th. Authors will be available for individual discussion at their posters from 3:00pm – 6:00pm each day. Refreshments and hors d’oeuvres will be served during the poster sessions (3pm–6pm).

**Analysis** Room 162

*The Use of Sequential Extraction in the Study of Heavy Metal Retention by Yogyakarta Clayey Soil*

Wawan Budianta, Gadjah Mada University, Yogyakarta, Indonesia

*Boston’s Muddy River Water Monitoring Program for Inorganic Contaminant*

Mark Groendyk, Eric Schmidt, and Rachel Rotman, Wentworth Institute of Technology, Boston, MA

*Trichloroethylene Plume Migration Analysis using Hyperspectral Imaging*

Adam Hoffman, Robert Hamilton, Justin McMullen, and Lee Newman, SUNY-ESF, Syracuse, NY; David Lewis, Stennis Space Center, MS; Amy Keith, Marshall Space Flight Center, AL

*Identification of False Positives Observed during SPLP Testing*

Donald Pope, Sophia Dore, Christa Nunn, Paul Ranieri, Sussan Scroce and Alan Weston, Conestoga-Rovers & Associates, Niagara Falls, NY

*Evaluation of Aqueous Field and Equipment Blank Data and the Associated Solid Samples*

Angela Powley, Stephen Zeiner, and Joseph Pawlish, Environmental Standards, Inc., Valley Forge, PA

*Using Synchrotron-Based Techniques to Elucidate Chemical Information in Solid-State Samples*

Jennifer Seiter, Brandon Lafferty, Anthony Bednar, Sandra Brasfield, Alan Kennedy, and Mark Chappell, US Army Corps of Engineers, Vicksburg, MI

*Adsorption Selectivity of Cr(VI) and Other Anions by Cationic Hydrogels with Different Functional Groups*

Samuel Cheuk Nam Tang and Irene Man Chi Lo, Hong Kong University of Science and Technology, Hong Kong, Hong Kong

*Environmental Fate & Modeling* Room 162

*Modeling of PCBs in Indoor Air Spaces and Potential Improvements to Remedial Measures*

Malcolm Beeler, AECOM, Rocky Hill, CT; Marybeth Hayes, AECOM, Chelmsford, MA

*Impact of Uncoated Ag NP, Citrate-Coated Ag NP, and Bulk Ag Particles on Tomato Biomass and Transpiration*

Wenjun Cai, Vic Maietta, Beverly Agtuca, and Lee Newman, SUNY-ESF, Syracuse, NY; Jason White, The Connecticut Agricultural Experiment Station, New Haven, CT; Catherine Murphy, University of Illinois at Urbana-Champaign, Urbana, IL

*Application of 3-Dimensional Modeling to Display Compling of Two Groundwater Plumes*

David Carstens and David Bouchard, WSP, Woburn, MA

*Using an Agent Based Model to Examine Arsenic Flow and Uptake by Plants*

Kamaliya Ganguly and Jordan Cotlar, The University of Toledo, Toledo, OH; Jonathan Bosshenkrook, University of Toledo, Oregon, OH

*Evaluation of Vadose Zone Moisture Monitoring and Matric Potential Data Acquisition Rates for Surface Barriers*

Dan Gieser, Closure & Corrective Measures, Washington River Protection Solutions, Richland, WA

*Distribution of Polychlorinated Biphenyls (PCBs) in Sediments of the Rappahannock and York River Watersheds*

Douglas Mose and Boudin-Brutus Cooper, George Mason University, Fairfax, VA

*Optimizing LNAPL Hydraulic Recovery Systems Using LNAPL Transmissivity*

Nidhi Patel and Trevre Andrews, AECOM, New York, NY; Andrew Kirkman, AECOM, St. Paul, MN

*Procedures for DNAPL Mobility Testing*

Nidhi Patel and Trevre Andrews, AECOM, New York, NY

*Assessing Vapor Intrusion and Risk: Development of a Conceptual Site Model*

Kelly Pennell, Paul Indeglia, and Ali Moradi Garehtapheh, University of Massachusetts Dartmouth, Dartmouth, MA; Jennifer Ames, Brittnay Weldon, Leigh Friuglietti, and Madeleine K. Scammell, Boston University, Boston, MA; Michael McClean and Wendy Heiger-Bernays, Boston University School of Public Health, Boston, MA; Eric Suuberg and Rui Shen, Brown University, Providence, RI

*Database Integration and 2D/3D Visualization of Site Investigation Data for Enhancing Conceptual Site Models (CSM)*

Jason Ruf, S2C2, Raritan, NJ; Joshua Orris, Antea Group, Hershey, PA; Mike Martinson, Antea Group, St. Paul, MN

*Chromium Transport from Soil to Groundwater at a Former Industrial Landfill and Wastewater Treatment Plant*

Zackary Smith and Rory Henderson, AECOM, Rocky Hill, CT; William Penn, United Technologies Corporation, Hartford, CT

*The Effect of Storm Runoff on the Charles River*

Bryan Webb, Adriana Pepdjonovic, and Gautham Das, Wentworth Institute of Technology, Boston, MA

*Comparison of Tetrachloroethylene (PCE) Plume Extent and Isocontours Using a Variety of Methods*

A. Curtis Weeden, Jr., AECOM, Manchester, NH; Gemma Kirkwood, AECOM, Chelmsford, MA

*Comparison of Nutrient and Metal Levels from Waters Collected Inside Gunderboom® with Other Mamaroneck Areas*

Anna Yeung-Cheung, Stephen Corvini, and Jannyll Perez, Manhattanville College, Purchase, NY

*Health and Risk Assessment* Room 162

*The Potential for Safeners to Reduce the Symptoms of Heavy Metal Toxicity in Zea mays*

Funmi Afeleumo and Lee Newman, SUNY-ESF, Syracuse, NY

*Tarnishing Boston’s Emerald Necklace*

Ryan Lavorati, Derek Eisenhaur, and Patrick Hodgden, Wentworth Institute of Technology, Boston, MA

*Development of an in Vitro Method to Determine the Bioavailability of Xenoestrogens in Soil*

Katherine Neafsey Engler and Ann Lemley, Cornell University, Ithaca, NY

*Evaluation of Risk to Livestock Receptors from Chlorinated Solvents in Drinking Water*

Brian Roden and Michael Murphy, AMEC Environment & Infrastructure, Wakefield, MA

*Nanotechnology* Room 162

*Gold Nanoparticles Used in Lycopersicon esculentum (Tomato ‘Brandywine’) to Study the Toxicity and Genetic Effects in Soils and Hydroponics*

Beverly Agtuca, Wenjun Cai, and Lee Newman, SUNY-ESF, Syracuse, NY; Catherine Murphy, University of Illinois at Urbana-Champaign, Urbana, IL; Jason White, The Connecticut Agricultural Experiment Station, New Haven, CT; Tara Sabo-Attwood, University of Florida, Gainesville, FL

*Commensalistic Human Skin Bacteria and Their Sensitivity to Silver Nanoparticles Found in Consumer Products*

Arashdeep Dhillon, Justin McMullen, Adam Hoffman, and Lee Newman, SUNY-ESF, Syracuse, NY; Vishal Shah, Dowling College, Oakdale, NY

*The Effects of Titanium, Zinc, and Gold Nanoparticles on Commensalistic Human Skin Bacteria*

Justin McMullen, Adam Hoffman, Arashdeep Dhillon, and Lee Newman, SUNY-ESF, Syracuse, NY
Tuesday & Wednesday

**Remediation** Exhibit Hall (CCA)

**Overcoming Site Challenges with In-Situ Thermal Treatment**
Boyd Allen III, Nobis Engineering, Concord, NH; Joseph Francis, Nobis Engineering, Lowell, MA; Robin Swift and Devon Phelan, TerraTherm Inc., Gardner, MA; Daniel Boyd Allen III, Nobis Engineering, Concord, NH; Brian Boyd Allen III, Nobis Engineering, Concord, NH.

**Full-Scale Application of Calcium Polysulfide for in situ Reduction of Hexavalent Chromium in Groundwater**
Michael Apfelbaum, Catherine Rockwell, and David MacDonald, Woodward & Curran, Andover, MA.

**Remediation of Fuel Oil Release at Historic Residential Property in Northeastern Massachusetts**
Geoff Brown and Michael Coty, ENPRO Services, Inc., Newburyport, MA.

**Surfactant Enhanced Product Recovery (SEPR™) for Creosote Remediation**
Dustin Byttautas, George Hoag, and Meredith Lanoue, VeruTEK Technologies, Bloomfield, CT.

**Advancements in Contaminant Vapor Mitigation Technologies**
Jason Canouse, Land Science Technologies, Hoboken, NJ.

**Three Phased Remedial Approach for MGP Impacts within a Residential Neighborhood with a Focus on Community Relations and Sustainability**
Patrick Gratto and Lucas Hellerich, AECOM, Rocky Hill, CT; Paul Dombrowski, AECOM, Wakefield, MA; Scott Underhill, AECOM, Latham, NY; Tracy Blaziek, New York State Electric and Gas, Binghamton, NY.

**Trichloroethylene Degradation by Genetically Modified Tobacco (Nicotiana tabacum var. xanthi)**
Robert Hamilton, Adam Hoffman, Jonathan Cooke, and Lee Newman, SUNY-ESF, Syracuse, NY; Sarah Strycharz, Naval Research Laboratory, Washington DC.

**P-Pod: A New Technology to Remove or Treat Contaminants in Aquatic Sediments and/or Control Invasive Aquatic Plants**
Jonathan Higgins, Higgins Environmental Associates, Amesbury, MA.

**Surfactant-Enhanced In Situ Chemical Oxidation (S-ISCO) for Remediation of Recalcitrant Environmental Contaminants**
George Hoag and Meredith Lanoue, VeruTEK Technologies, Bloomfield, CT.

**Remediation and Redevelopment of Gasoline-Impacted Sites Using the ISCO-SSD Coupling Approach**
Kun-Chang Huang, Antea Group, Farmington, CT; Gordon Hinshawall and Aaron Lapine, Antea Group, Valhalla, NY.

**Incorporating Innovative Measures into Conventional Soil Treatment Scenarios**
Glenn Nicholas Issue, Groundwater & Environmental Services, Inc. (GES), Exton, PA.

**The Effectiveness of a Newly Formulated (Non Nonylphenol Ethoxylate) Surfactant in Removing TCE from Saturated Column**
Shirin Mardani and Kenneth Lee, UMass Lowell, Lowell, MA.

**Innovative Green Chemistry Technologies for Remediation of Brownfields**
Bethany McAvoy, George Hoag, and Meredith Lanoue, VeruTEK Technologies, Bloomfield, CT.

**Relationship of Light Nonaqueous Phase Liquid Thicknesses Versus Groundwater Elevation Trends at a Remediation Site in Western Massachusetts**
Nancy Milkey, Tighe & Bond, Westfield, MA.

**Outlining the Advantages of Selecting Catalyzed Hydrogen Peroxide or Activated Sodium Persulfate at Two Different Petroleum Hydrocarbon Sites**
Will Moody, Geo-Cleanse International, Inc., Matawan, NJ.

**Microbial Enumeration Study of Ozone-Based In-situ Remediation of a PCB and Total Petroleum Hydrocarbon Release**
Carla Nascimento, Antea USA, Inc, Bridgewater, NJ; John Mateo, Blue Lightning Underground, Mooresound, NJ; Samuel Fogel, BioRemediation Consulting, Watertown, MA.

**End Point Strategy - DNAPL Recovery on MGP Sites**
Shail Pandya and Trevre Andrews, AECOM, New York, NY.

**Innovative Use of Slurry Wall - A Case Study on Design and Construction of an Old Warhorse at a MGP Site**
Shail Pandya, AECOM, New York, NY; Mike Gardner and Aimee Fitzpatrick, AECOM, Chelmsford, MA; Andrew Prophete, National Grid, Brooklyn, NY.

**Technology Fusion for Coal Tar Remediation: Surfactant-Enhanced In Situ Chemical Oxidation, Pressure-Pulse Injections and Advanced Site Investigation**
Gary Stevens, George Hoag, Meredith Lanoue, and Dustin Byttautas, VeruTEK Technologies, Bloomfield, CT.

**Remediation of a Gasoline Plume Using a Combination of Remedial Strategies**
Laura Woodard, ECS, Inc., Waterbury, VT; Maureen Dooley, Regenesis, Wakefield, MA.

**Acid-Enhanced Activated Persulfate Oxidation for PAHs and Metals Removal from Field Contaminated Sediment**
Dickson Yuk Shing Yan, Visanu Tanboonchuy, and Irene Man Chi Lo, The Hong Kong University of Science and Technology, Hong Kong.

**In-Situ Treatment of Chlorinated Solvents, Explosives, Metals and Radionuclides with CoBup-H-Mg and CoBup-H-Ca**
Bilgen Yuncu, Ed Alperin, Stephen Richardson, Kirsten Hoitdahl, and Robert Borden, EOS Remediation, LLC, Raleigh, NC.

**Use of EOS-XR to Control Back Diffusion of Chlorinated Solvents from Low Permeability Zones**
Bilgen Yuncu, Ed Alperin, Stephen Richardson, and Peter Borden, EOS Remediation, LLC, Raleigh, NC.
The Annual International Conference on Soils, Sediments, Water, and Energy is pleased to announce the recipients of the Lifetime Achievement Award. This award is presented to individuals who have made significant contributions to the understanding and solution of soil, sediment, and groundwater pollution problems. This year’s winners are Samuel M. Cohen, M.D., Ph.D., University of Nebraska Medical Center and Wayne G. Landis, Western Washington University.

**Samuel M. Cohen** (M.D., Ph.D., University of Wisconsin – Madison, 1972) completed a residency in anatomic and clinical pathology at St. Vincent Hospital, Worcester, MA (1975), and became board certified the following year. He was visiting professor at Nagoya City University Medical School, Nagoya, Japan, 1976 – 1977, staff pathologist at St. Vincent Hospital, 1975 – 1981, and associate professor of pathology at the University of Massachusetts Medical School, 1977 – 1981. He has been professor of pathology and microbiology (vice chairman, 1981 – 1992; chairman, 1992 – 2007) and the Eppley Cancer Center at the University of Nebraska Medical Center since 1981. Dr. Cohen’s research has focused on mechanisms of carcinogenesis, with a focus on the role of cell proliferation in the carcinogenic process, primarily utilizing the urinary bladder as a model system. Most recently this has involved investigations into the mechanisms of bladder carcinogenesis produced by arsenicals and PPAR agonists. In addition, his research has involved clinical investigations of various aspects of urologic pathology and extrapolation between animals and humans. This research has resulted in more than 300 publications. He has been a member of numerous NIH, EPA, FDA, WHO, IARC, NTP and NAS study sections and scientific panels and is a member of the NIEHS Board of Scientific Counselors. He is associate editor or on editorial boards of five scientific journals in toxicology, pathology, and carcinogenesis, and is a reviewer for several other journals. He was president of the Carcinogenesis Specialty Section and the Central States Chapter of the Society of Toxicology (SOT). He received the University of Wisconsin Medical School Distinguished Alumnus Citation (1999), Arnold J. Lehman Award from SOT in 2001, named Distinguished Scientist in Cancer Research by the Japanese Foundation for Cancer Research in 2004, and received the George H. Scott Award from Toxicology Forum in 2012. He continues to be active in human surgical pathology and was named as one of the “Best Doctors in America.”

**Wayne G. Landis** has been the Director of the Institute of Environmental Toxicology and Chemistry, part of Huxley College of the Environment at Western Washington University since 1989. Dr. Landis is a graduate of Wake Forest University with a BA in Biology, 1974. He received an MA and a Ph.D. in Zoology from Indiana University in 1978 and 1979, respectively. Prior to his university experience he was a toxicologist for the Chemical Research Defense and Engineering Center at Aberdeen Proving Ground, Maryland. He has authored over 130 publications and 300 scientific presentations. Dr. Landis has served on a number of USEPA and other committees and has consulted for industry; NGOs; print and electronic media; and federal (U.S. and Canada), state, provincial, and local governments. In 2007 he was selected as a Fellow of the Society for Risk Analysis. During the 1980s and early 1990s he discovered and characterized enzymes that degrade organophosphates, and bacteria that metabolize riot control materials. He also conducted an extensive research program using microcosms to investigate the effects of jet fuels and other materials on the dynamics of ecological structures. Using patch dynamics models he also formulated the theory of how to incorporate landscape scale effects as part of environmental toxicology. He is the co-development of the Community Conditioning Hypothesis, and the Action at a Distance Hypothesis. Currently his efforts have been to apply ecological risk assessment at regional and landscape scales using the relative risk model. The use of the relative risk model has now been applied to contaminated sites, invasive species, forestry and species conservation and has been used across the world.
Monday, October 15, 2012 (Monday is workshops only)
Registration: 7:00am – 3:00pm
Workshop 1: 8:00am – 5:00pm, Rm. 917
CHMM/CHMP/HMMT Hazardous Materials Management
Workshop 2: 12:00pm – 2:00pm, Reading Room
Strategies for Tackling Brownfields Redevelopment Challenges
Workshop 3: 1:00pm – 4:00pm, Rm. 168
Utilization of Stable Isotopes in Environmental and Forensic Geochemistry Studies
Workshop 4: 1:00pm – 5:00pm, Rm. 908
In-Situ Thermal Remediation
Workshop 5: 1:00pm – 5:00pm, Rm. 101
Geochemical Evaluations of Metals in Environmental Media: How to Distinguish Naturally Elevated Concentrations from Site-Related Contamination
Workshop 6: 2:30pm – 4:30pm, Rm. 164
Risk Assessment, Risk Management, and the Significance of the Picke Risk

Tuesday, October 16, 2012
Registration: 7:00am – 7:00pm | Exhibit Hall Hours: 9:00am – 7:00pm
Morning Platform Sessions
8:00/9:00am – 12:00pm, Sessions are concurrent
Session 1: Vapor Intrusion, Rm. 164
Session 2: Incremental Sampling Methodology, Rm. 101
Session 3: Energy, Reading Room
Afternoon Platform Sessions
1:30pm – 5:00/5:30pm, Sessions are concurrent
Session 1a: Regulatory Panel Discussion: Grappling with Vapor Intrusion, Rm. 164
Session 1b: Regulatory Programs and Policies, Rm. 164
Session 2: International Soil and Groundwater Remediation Case Histories, Rm. 101
Session 3: The Marcellus Shale Play in New York State: Closing in on Final Regulatory Approval, Reading Room
Session 4: Bioremediation, Rm. 168
Postersession: 3:00pm – 6:00pm, Rm. 162 and Exhibit Hall (CCA)
Wine/Welcome Reception: 5:00pm – 7:00pm, Exhibit Hall (CCA) and Concours
Evening Workshops
Workshop 7: Site Characterization 101 (VOC Plume Delineation), 6:30pm – 9:30pm, Rm. 164
Workshop 8: Assessment and Evaluation of Vapor Intrusion at Petroleum Release Sites, 6:30pm – 9:30pm, Rm. 101
Workshop 9: Alberta’s Oil Sands: Technology, Economy, Security and Environment, 7:00pm – 9:00pm, Rm. 168

Wednesday, October 17, 2012
Registration: 7:00am – 7:00pm | Exhibit Hall Hours: 9:00am – 7:00pm
Morning Platform Sessions
8:30/9:00am – 12:00pm, Sessions are concurrent
Session 1: Environmental Forensics, Rm. 101
Session 2: Plant Interactions with Environmental Contaminants, Reading Room
Session 3: Recalcitrant Compound Treatment, Rm. 168
Session 4: Assessing and Managing Human Health Risks in the U.S., Rm. 164
Afternoon Platform Sessions
1:30pm – 5:00/5:30pm, Sessions are concurrent
Session 1: Sustainable Remediation, Reading Room
Session 2a: Manufactured Gas Plants (MGP), Rm. 101
Session 2b: NAPL, Rm. 101
Session 3: Chlorinated Compounds, Rm. 168
Session 4: Risk Assessment, Rm. 164
Poster Session: 3:00pm – 6:00pm, Rm. 162 and Exhibit Hall (CCA)
Social: 5:00pm – 7:00pm, Exhibit Hall (CCA) and Concours
Evening Workshop
Workshop 10: Green and Sustainable Remediation: A Practical Framework, 6:30pm – 9:30pm, Rm. 101

Thursday, October 18, 2012
Registration: 8:00am – 12:00pm | Exhibit Hall Hours: 9:00am – 12:00pm
Morning Platform Sessions
8:30/9:00am – 12:30pm, Sessions are concurrent
Session 1: Remediation Case Studies, Rm. 164
Session 2a: Sediments, Rm. 101
Session 2b: Heavy Metals, Rm. 101
Session 3: Innovative Remedial Technologies, Rm. 168
Session 4a: PCBs in Building Materials – Current Regulatory and Technical Challenges, Reading Room
Session 4b: Environmental Nanotechnology, Reading Room