The Association for Environmental Health and Sciences (AEHS) Foundation is proud to announce

The 26th Annual International Conference on

Soil, Water, Energy, and Air

March 21-24, 2016
Mission Valley Marriott, San Diego, California

Conference Directors: Paul Kostecki, Ph.D. and Edward J. Calabrese, Ph.D., University of Massachusetts, Amherst, MA
CONFERENCE at a GLANCE

Conference map is located on back of program

MONDAY, MARCH 21
Registration: 10:00am – 5:00pm, Foyer
Afternoon Break: 3:00pm – 3:30pm, Foyer

WORKSHOPS
Workshop 1: 1:30pm – 5:30pm, California’s Environmental Choices, Sierra 5
Workshop 2: 1:00pm – 5:00pm, Recent Developments in the Use of Temperature for Environmental Applications, Pavilion
Workshop 3: 1:00pm – 4:00pm, Environmental Forensics - Utilization of Established and Evolving Techniques, Salon H
Workshop 4: 1:00pm – 5:00pm, In Situ Thermal Remediation Short Course, Salon G
Workshop 5: 1:00pm – 5:00pm, Evaluations of Metals in Groundwater at VOC-Impacted Sites, Santa Fe 3

TUESDAY, MARCH 22
Registration: 7:30am – 7:00pm, Foyer
Exhibit Hall Hours: 9:00am – 7:00pm, Exhibit Hall, Salons A-F
Breaks: 10:00am and 3:00pm (30 min), Exhibit Hall, Salons A-F

MORNING PLATFORM SESSIONS/WORKSHOP, 9:00am – 12:00pm
Session 1: Petroleum Hydrocarbon Risk, Sierra 5
Session 2: Chlorinated Compounds, Salon G
Session 3: Energy, Santa Fe 3
Workshop 6 (part 1) 8:30am – 12:00pm, Recalcitrant Chemical Vapor Intrusion, Pavilion
Luncheon: 12:00pm – 1:30pm, Poolside
Lunch Speaker: “California Adapts to Climate Change, Mitigates for Climate Change” Steven Moore, State Water Resources Control Board, Sacramento, CA

AFTERNOON PLATFORM SESSIONS/WORKSHOP
1:30pm – 5:00pm
Session 1: NSZD and NAPL Management, Sierra 5
Session 2: Constituents of Emerging Concern, Santa Fe 3
Session 3: Addressing Soil, Water, Energy, and Air Impacts of Drought and Water Shortage, Salon G
Workshop 6 (part 2) 1:30pm – 5:00pm, Recalcitrant Chemical Vapor Intrusion, Pavilion
Poster Presentations & Social, 3:00pm – 6:00pm, Sunroom & Foyers
Welcome Reception/Wine and Cheese Social, 5:00pm – 7:00pm, Exhibit Hall, Salons A-F
(Free to all registered conference attendees)

EVENING WORKSHOPS
Workshop 7 6:30pm – 9:30pm, Recent Developments in the Evaluation of the Vapor Intrusion at Petroleum Release Sites, Salon G
Workshop 8 6:30pm – 9:30pm, Integrated DNAPL Site Characterization and Tools Selection, Sierra 5
Workshop 9 7:00pm – 9:00pm, Environmental Forensics: Challenges & Solutions, Santa Fe 3

WEDNESDAY, MARCH 23
Registration: 7:30am – 7:00pm, Foyer
Exhibit Hall Hours: 9:00am – 7:00pm, Exhibit Hall, Salons A-F
Breaks: 10:00am and 3:00pm (30 min), Exhibit Hall, Salons A-F

MORNING PLATFORM SESSIONS, 8:30/9:00am – 12:00pm
Session 1: Petroleum Hydrocarbon Vapor Intrusion I, Pavilion
Session 2: Environmental Fate and Transport, Sierra 5
Session 3: Environmental Impact of Nanotechnology, Salon G
Session 4: Innovative Remedial Technologies, Santa Fe 3
Luncheon: 12:00pm – 1:30pm, Poolside
Lunch Speaker: “Pushing the Envelope: How California Policy Has Driven an Electric Grid Revolution” Elliot Hinds, Cowerell & Moring, San Francisco, CA

AFTERNOON PLATFORM SESSIONS, 1:30pm – 4:30/5:00pm
Session 1: Petroleum Hydrocarbon Vapor Intrusion II, Pavilion
Session 2: Beyond Screening Levels: Tools to Refine Risk Evaluations, Sierra 5
Session 3: Environmental Forensics, Salon G
Session 4: Site Assessment/Field Sampling, Santa Fe 3
Poster Presentations & Social, 3:00pm – 6:00pm, Sunroom & Foyers
Evening Social, 5:00pm – 7:00pm, Exhibit Hall, Salons A-F
(Free to all registered conference attendees)

EVENING WORKSHOPS
Workshop 10 7:00pm – 9:00pm, Mass Flux and Mass Discharge: The ITRC Approach, Santa Fe 3
Workshop 11 7:00pm – 9:00pm, Practical Use of Environmental Diagnostics (EMDs) for Remediation and Forensics, Salon G

THURSDAY, MARCH 24
Registration: 7:30am – 12:00pm, Foyer
Exhibit Hall Hours: 9:00am – 12:00pm, Exhibit Hall, Salons A-F
Break: 10:00am (30 min), Exhibit Hall, Salons A-F

MORNING PLATFORM SESSIONS, 8:30/9:00am – 12:00
Session 1: Vapor Intrusion, Pavilion
Session 2: Greener Cleanups, Salon G
Session 3: Bioremediation, Santa Fe 3

DRAWING
Enter to win a free registration to one of our next two conferences! Entry and drawing will take place during each of the three Thursday morning sessions.

WINNERS IN EVERY SESSION!
Must be present to win. Several second place winners will receive free 2016 AEHS Foundation Membership! Drawings will take place at the conclusion of each session.

GENERAL INFORMATION

Exhibit Hours (Ballroom Salons A-F and Foyer)
Tuesday, March 22................................................. 9:00 am – 7:00 pm
Wednesday, March 23............................................. 9:00 am – 7:00 pm
Thursday, March 24.............................................. 9:00 am – 12:00 pm

Poster Presentations (Sunroom and Foyer)
Tuesday, March 22................................................. 3:00 pm – 6:00 pm
Wednesday, March 23............................................. 3:00 pm – 6:00 pm

Socials
Tuesday, March 22................................................. 3:30 pm – 6:00 pm
Accompanies Poster Session (Sunroom/Patio)
Tuesday, March 22................................................. 5:00 pm – 7:00 pm
Wine/Welcome Reception (Ballroom Salons A-F)
Wednesday, March 23............................................. 3:30 pm – 6:00 pm
Accompanies Poster Session (Sunroom/Patio)
Wednesday, March 23............................................. 5:00 pm – 7:00 pm
Evening Social (Ballroom Salons A-F)

Exhibitors (See floor plan handout for booth locations or download our App)
ALS Environment
Antea Group
AquaBlk
Blaine Tech Services
Cascade Drilling
Centek Laboratories
Clean Vapor LLC
Confluence Environmental
Cox-Colvin & Associates
DEXIS Corporation
Directed Technologies Drilling
Eos Remediation
FRx
GeoSearch
Geotech Computer Systems
Global Remediation Solutions
H&P Mobile Geochemistry
Hepure Technologies
Innovative Construction Solutions
In-Situ
JRW Bioremediation
Microbial Insights
National Exploration Wells & Pumps
NextGen Fluid Innovations
OnMaterials
Pace Analytical (Sponsor)
PerkinElmer
PeroxyChem
Pine
ProHydro, Inc./Snap Sampler
RadonAway
Ramboll Environ
Regenesis (Supporter)
SGS Accutest
SKC-West
Solinst Canada Ltd.
Specialty Earth Sciences, LLC
Wayne Perry
Willowstick Technologies
XOS
Yellow Jacket Drilling
**Announcing the 7th Annual AEHS Foundation Achievement Awards**

The Annual International Conference on Soil, Water, Energy, and Air is pleased to announce the recipients of the AEHS Foundation Achievement Award. This award is presented to individuals or organizations that have shown significant contributions to the field as well as outstanding environmental stewardship. This year’s winners are Ioana Petrisor, Great Ecology and Todd Ririe, BP.

**Dr. Ioana G. Petrisor** is a biochemist with over 20 years of experience specializing in environmental forensics/litigation support. She has applied a large variety of fingerprinting techniques to track the source and age-date contaminants. Dr. Petrisor has served as an expert witness in California courts to testify on fate and transport, as well as sources and age of environmental contamination. Dr. Petrisor is the Editor-in-Chief of the Environmental Forensics Journal and the author of the recently published book *Environmental Forensics Fundamentals – A Practical Guide*. She has extensive publication experience including 1 invention patent, 6 book chapters, over 70 research and review articles, 12 editorials, and 3 technical guidelines. Dr. Petrisor serves as an instructor with AEHS Foundation and EOS Alliance teaching both on-line and in-class courses. She has managed and conducted innovative research for U.S. DOE, U.S. DOD, and European Community on innovative remedial techniques including a variety of bioremediation remedies for soil, sediments, and water. Dr. Petrisor has a Ph.D. in Biochemistry from the Romanian Academy of Sciences and a Bachelor in Chemistry from the Bucharest University, Romania.

**G. Todd Ririe** is an environmental technical specialist with BP’s Remediation Technology Group in La Palma, CA. Todd has worked at BP since 2006 and prior to this worked at Unocal. He provides environmental technical support to operations primarily on the West Coast and as needed throughout various business units. He has a B.A. in Geology from Cornell College, and Ph.D. in Geology from the University of Iowa. He is a registered professional geologist in California. Todd has over 25 years of experience in applied geology, geologic instruction, and environmental applications of geology. Since 1990, his primary focus has been on environmental projects related to petroleum hydrocarbon site assessment, vapor intrusion, and application of effective remedial approaches to reach closure.
Recalcitrant* Chemical Vapor Intrusion: Reducing Intrusion Risks & Costs through a Better Understanding of CVI, Methods, and Guidance

Presenters:
Paul Johnson, President, Colorado School of Mines
Richard Kapucinski (OSRITI), Brian Schumacher (ORD), John Zimmerman (ORD), and Henry Schuver (ORCR), USEPA (HQ & ORD)
Todd McAlary, Helen Dawson, Dave Folkes, and Bill Wertz, Geosyntec, Inc.
Chris Lutes and Chad Holton, CH2M HILL
Dan Carr and David Shea, Sanborn Head & Associates
Ian Hers, Golder Associates
Walter Avramenko, Colorado Dept. of Public Health and Environment
Alyssa Sellwood, Wisconsin Dept. of Natural Resources
Lenny Siegel, Director, Center for Public Environmental Oversight
Robert Truesdale, RTI International

This full-day workshop will feature a two-hour session devoted to USEPA’s recently finalized 2015 OSWER Technical Guide for Vapor Intrusion (VI), including case examples and discussions of “What’s working and What’s not working so well?” The guide provides the flexibility necessary to accommodate a variety of methods and improved understandings of the VI phenomenon. A wide range of case studies from around the country, and some from the latest research, will be explored in the remainder of this ‘State of the Science’ workshop. The 2016 workshop will continue the theme of the 2015 conference (Long-Term Evidence-Based Protection & Sustainability) with a focus on overall health protection and cost-effectiveness, so realistic and efficient management of the VI exposure pathway can be implemented. Presentations by national and international leaders are planned to address:

- Existing residential, multi-family, and large non-residential buildings
- Redevelopment and new construction scenarios
- Local government’s role at the forefront of VI protection
- Use of VI Indicators (e.g., radon and pressure) for RCRA Environmental Indicator Determinations
- Improved understanding of the role and influence of ‘preferential’ pathways
- Use of advanced tests for conventional and alternative preferential VI pathways/ sources
- Increasing availability of data-rich/continuous monitoring methods
- Large building HVAC manipulations and controlled pressure testing
- Advances in mass-flux analyses and modeling
- Statistical analysis of vapor intrusion monitoring data
- Long-term risk management cost-effectiveness analyses
- Update on the Soil Gas Mitigation ‘standard,’ (by AARST for ANSI)
- Efficiencies gained by matching the nature of the risk, the mitigation method effectiveness needed, and the rigor and duration of follow-up monitoring
- Initiation of EPA research on external/area-wide mitigation techniques using Soil Vapor Extraction (SVE)
- Optimization for various intrusion-reducing mitigation techniques
- Retrospectives on significant progress/close-out of VI sites

*Typically slow to degrade and thus can commonly persist through the entire VI pathway and result in indoor air exposures.
LUNCHEON SPEAKER

Tuesday, March 22, 2016
12:00pm – 1:30pm, Poolside

California Adapts to Climate Change, Mitigates for Climate Change

Steven Moore, State Water Resources Control Board, Sacramento, CA

California is experiencing variable weather, hot temperatures, forest fires, sea level rise – all characteristics of climate change. The effect has been to redouble efforts to use water wisely, become more efficient in everything from growing food to making concrete; and the outcomes are a resilient economy and trend-setting standards for technology.

Speaker Biography: Steven Moore was appointed to the board by Governor Brown in 2012. He previously served on the San Francisco Bay Regional Water Board from 2008-2012 under the Brown and Schwarzenegger administrations and held staff positions at that Regional Water Board at various times between 1992 and 2006. He has worked 10 years as an engineering consultant on a wide variety of water infrastructure projects, stream and wetland restoration projects, and Environmental Impact Reports throughout California. Mr. Moore has held staff and managerial positions for 12 years in various clean water regulatory programs, including discharge permits, wetland permits, water quality standards, Surface Water Ambient Monitoring Program (SWAMP), and grant funding and administration. He served on the Federal Aquatic Nuisance Species Task Force from 2002 to 2006, specializing in ballast water management. He contributed to the 2007 update of the San Francisco Bay Estuary’s Comprehensive Conservation and Management Plan (CCMP), focusing on drainage infrastructure renewal and pollution prevention. Mr. Moore holds a B.S. in Biological Sciences and an M.S. in Civil Engineering, both from Stanford University, and is a member of the American Society of Civil Engineers.
The following posters will be presented on Tuesday only
Sunroom & Foyers

**Land Degradation Assessment by Integrating Different Methodologies and Remote Sensing Data using GIS Spatial Modeling**
Mohamed AbdelfRahman, National Authority for Remote Sensing and Space Sciences, Cairo, Egypt

**Land Resource Assessment of Port Said in Coastal Zones using Remote Sensing and GIS Techniques**
Mohamed AbdelfRahman, National Authority for Remote Sensing and Space Sciences, Cairo, Egypt

**Sea Level Rise in Developing Countries**
Richard Asamadu and Yiadom Boakye-Akoto, Hohai University, Nanjing, China

**Soil Vapor Extraction using a Horizontal Remediation Well at a Hydrocarbon Contamination Site**
Sam Bailey, Jim Finegan, and Mark Pate, Kleinfelder, Riverside, CA

**Comparison of Permeable Reactive Barrier Matrices to Treat 1,2-Dichloropropane**
Christa Bucior, Alan Weston, Sophia Dare, Ryan Thomas, and Donald Pope, GHD, Niagara Falls, NY

**Effect of Iron Removal on Photochemical Formation of Hydroxyl Radical from Effluent Organic Matter Photolysis**
Kylie Couch, California State University, Fountain Valley, CA; Stephen P. Mezyk, California State University, Long Beach, CA; Garrett McKay and Fernando L. Rosario-Ortiz, University of Colorado, Boulder, CO

**Degradation of Alkyl Nitrates from Wastewaters using Advanced Oxidative Processes**
Brittany Daws, Stephen P. Mezyk, and Michael Schramm, California State University, Long Beach, CA

**Analysis of Micro Nutrients (Anions and Cations) in Water by Ion Chromatography**
Jay Gandhi, Metrohm USA, Houston, TX; Chunlong Zhang, University of Houston - Clearlake, Houston, TX

**Applied Ion Analysis of Various Water Matrices in a Hydraulic Fracturing Process**
Jay Gandhi and Anne Shearrow, Metrohm USA, Houston, TX

**Simple Isocratic Analysis of Trace Level Perchlorate and Bromate Analysis in Various Water Matrices using Suppressed Ion Chromatography**
Jay Gandhi, Metrohm USA, Houston, TX

**Limiting Site Characterization to Consequential Contamination**
Mark Gemperline, MCG Geotechnical Engineering, Inc., Morrison, CO

**Development of a Bioaccumulation Model for DDTs in a Pelagic Food Web**
Melissa Grover, Ramboll Environ, San Diego, CA; Jennifer Arblaster, Ramboll Environ, Irvine, CA; Jason Conder, Geosyntec, Huntington Beach, CA; Elsa Bizzotto, Ramboll Environ, Milan, Italy

**Implications of Climate Change for Sediment Management**
Melissa Grover and David Moore, Ramboll Environ, San Diego, CA; Rick Wenning, Ramboll Environ, Portland, ME; Victor Magar, Ramboll Environ, Chicago, IL

**Assessing Productivity Index for Soil Contaminated with Petroleum Hydrocarbon**
Mohammad Hajabbasi, Isfahan University of Technology, Isfahan, Iran

**Evaluation of Hydrophobicity and Physical Quality in a Petroleum-contaminated Soil with Planted Maize Inoculated with Piriformospora indica**
Mohammad Hajabbasi and Javad Zamani Babgohari, Isfahan University of Technology, Isfahan, Iran

**Residual Effects of Burning on Some Soil Chemical and Physical Properties in Fereydan Pastures**
Mohammad Hajabbasi and Mohammad Davoudi, Isfahan University of Technology, Isfahan, Iran

**ANSI-AARST Soil Gas Mitigation Standard (Release Status 2016 and Content Update)**

**Evulation of Chemical Cleaning Efficiencies During the Removal of the Biofouling Layer on Osmotically Driven Membrane Surfaces**
Duksoo Jang and Seoktai Kang, KAIST, Daejeon, Republic of Korea; Am Jang, Sungkyunkwan University, Gyeonggi-do, Republic of Korea; Seokho Ko, Kyung Hee University, Gyeonggi-do, Republic of Korea; Byung-Uk Bae, Daejeon University, Daejeon, Republic of Korea; Chae-Young Lee, University of Suvon, Gyeonggi-do, Republic of Korea

**Application of Carbon Black Activation Persulfate Oxidation for Degradation PAH in Sediment**
Yu-Zhe (Joe) Jhuang, Cheng-Di Dong, Chiu-Wen Chen, and Chang-Mao Hung, National Kaohsiung Marine University, Kaohsiung City, Taiwan

**Surfactants Based Removal of Polycyclic Aromatic Hydrocarbons (PAHs) from the Contaminated Marine Sediments**
Shuo-Cheng Li and Chih-Yang Huang, China Medical University, Taichung City, Taiwan; Cheng-Di Dong and Te-San Chen, National Kaohsiung Marine University, Kaohsiung City, Taiwan

**Determining the Source Relationship Between Indoor Airs and Chlorinated Solvent Groundwater Plumes using Compound-Specific Isotope Analysis**
Jun Lu, AECOM, Long Beach, CA; Jim Refermat, AECOM, Destin, FL

**Achieving Sustainability in Road Construction using Lignin**
Eyram Norgbey, Jing Yu Huang, Prince Atta Opoku, and Theresa Oteng Apraku, Hohai University, Nanjing, China

**Water Supply to Poor Urban Communities – The Cost and Techniques**
Eyram Norgbey and Jing Yu Huang, Hohai University, Nanjing, China; Samson Oduro-Kwarteng and Saeed Naeem Ahmed, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

**Wind Effects and Vapor Intrusion Exposure Risks**
Kelly Pennell, MohammadYousef Roghani, and Elham Shirazi, University of Kentucky, Lexington, KY

**Lessons Learned: Vapor Intrusion Field Measurements and Model Predictions**
MohammadYousef Roghani, Elham Shirazi, and Kelly Pennell, University of Kentucky, Lexington, KY

**Comparison of Natural Source Zone Depletion (NSZD) Methodologies**
Jonathon Smith, Arcadia, Novi, MI; Steven Gaito, Arcadia, Braintree, MA

**Optimizing Electron Donor Distribution for In Situ Bioremediation**
Bill Walsh and Brad Elkins, EOS Remediation, Raleigh, NC

**Vapour Intrusion Prevention through Activated Carbon Systems**
Trent Weise, AEI Consultants, San Jose, CA; Parker Hertz, Mitchell Greenwood, and Nicholas Papanicolaou, University of Sydney, Sydney, Australia

**Remediation of Polycyclic Aromatic Hydrocarbons (PAH) – Contaminated Sediment with Surfactants**
Po-Chang Wu, Cheng-Di Dong, Chiu-Wen Chen, and Chih-Feng Chen, National Kaohsiung Marine University, Kaohsiung City, Taiwan
**Workshop 7** 6:30pm – 9:30pm, Salon G

**Recent Developments in the Evaluation of the Vapor Intrusion at Petroleum Release Sites**

Robin Davis, Utah Department of Environmental Quality, Salt Lake City, UT  
George DeVaull, Shell Global Solutions, Houston, TX  
Blayne Hartman, Hartman Environmental Geoscience, Solano Beach, CA  
Todd Ririe, BP, La Palma, CA  
Jim Weaver, EPA, Ada, OK

This workshop will focus on presenting updates to the assessment and evaluation of vapor intrusion from subsurface sources into buildings from petroleum release sites. With many new guidance documents recently becoming available from ITRC and EPA, focus will be on a review of these documents and how they can be used to evaluate the PVI vapor pathway. In addition, new information will be provided on topics including: 1) the EPA PVIScreen model, 2) biodegradation of lead scavengers and PVI, 3) sampling and analytical updates and case studies to illustrate what should and should not be done, 4) update on exclusion criteria and how it is incorporated into the new guidance documents, and 5) a set of PVI case studies and lessons learned.

---

**Workshop 8** 6:30pm – 9:30pm, Sierra 5

**Integrated DNAPL Site Characterization and Tools Selection**

Ryan A. Wymore, P.E., CDM Smith, Denver, CO  
Naji Akladiss, P.E., Maine DEP, Augusta, ME  
Michael B. Smith, Vermont Department of Environmental Conservation, Montpelier, VT  
Tamzen Macbeth, Ph.D., P.E., CDM Smith, Helena, MT

This workshop will be a detailed presentation on the recently released ITRC guidance document of this same title. We will discuss the changes in the DNAPL and contaminant fate and transport conceptual site models, including the controlling roles of geology and the interaction of DNAPLs and dissolved phase contaminants with geology, effects of DNAPL types and properties, and interactions with the subsurface on contaminant fate and transport. We will introduce the ITRC’s Integrated Site Characterization approach including the importance of high-resolution characterization, goals-based characterization objectives, and contaminant phases. We will also provide a live demonstration of the web-based ITRC characterization tools table.

---

**Workshop 9** 7:00pm – 9:00pm, Santa Fe 3

**Environmental Forensics: Challenges & Solutions**

Ioana G. Petrisor, Ph.D., Great Ecology, San Diego, CA  
Jeffrey L. Caufield, Caufield & James LLP, San Diego, CA  
Santino Tropea, Esq., Caufield & James, San Diego, CA

Environmental Forensics focuses on re-construction of past contamination events in order to establish the source and age of environmental contaminants and to allocate between responsible parties. The key for success lies in applying independent lines of evidence using the wealth of available knowledge and advanced techniques from various sciences.

This workshop will present a series of challenging case studies and will show how appropriate strategies were developed in order to provide defensible and cost-effective solutions. The focus will be on effective strategy building from both scientific and legal perspectives. The presented case studies involve a variety of contaminants in soil and water. The used fingerprinting techniques include state-of-the-art techniques such as chiral, mineralogical and tree-ring fingerprinting. The presented challenging cases include:

- Evaluation of the source of petroleum hydrocarbons at a mitigated site in the City of Lyon, France
- Identifying the source of PCBs in air, soil and sediments at sites in the U.S. and U.K.
- Establishing site-specific clean-up limits for metals in soil at a historical foundry in France
- Age-dating historical releases at a former gas station in NY state

Ultimately, the goal of the workshop is to provide a forum for sharing the knowledge and strategic ideas to tackle complex environmental and legal cases.
Session 1: Petroleum Hydrocarbon Vapor Intrusion I
Session Chair: Todd Ririe, BP La Palma, CA
8:30 Petroleum Vapor Intrusion Strategies at UST and non-UST Sites under 2015 EPA and 2014 ITRC Guides
Christopher Lutes, CH2M HILL, Raleigh, NC; Loren Lund, CH2M HILL, Shelley, ID; John Lowe, CH2M HILL, Spokane, WA; Keri Hallberg, CH2M HILL, Charlotte, NC
9:00 Case Study – Petroleum Vapor Intrusion Study: EPA 2002 Guidelines versus EPA 2015 Guidelines
Robert Sweeney, E. & P. Geochemistry, Etna, CA
9:30 Application of PVI Guidance in Australia
Jackie Wright, Environmental Risk Sciences Pty Ltd., Carlingford, Australia
10:00 BREAK
10:30 Indoor Air Background Concentration Trends
Robert Ettinger, Geosyntec Consultants, Santa Barbara, CA
11:00 Exposure Pathway Analysis using a Passive Diffusion Air Sampling Method Applied to Sample Sewer Air in Manholes, Cleanouts, and Other Areas
Olivia Jacobs and James Jacobs, Clearwater Group, Point Richmond, CA; Kelly Pennell, University of Kentucky, Department of Civil Engineering, Lexington, KY
11:30 Automated Continuous Real-Time Indoor Air Monitoring: Case Histories & Ramifications on Indoor Air Sampling
Blayne Hartman, Hartman Environmental Geoscience, Solana Beach, CA; Mark Kram, Groundswell Technologies, Santa Barbara, CA

Session 2: Environmental Fate and Transport
Session Chair: Chuck Lambert, Intrinsik, Venice, CA
9:00 Evolution and Innovation of Hydraulic Capture Analysis Methodology, Stringfellow Superfund Site, Riverside County, CA
Jim Finegan and Sam Bailey, Kleinfelder, Riverside, CA; Biniam Zerai, Kleinfelder, Los Angeles, CA
9:30 Metal Accumulation Distribution of Aquatic Organisms, Water, and Sediments in the Aquaculture Pond
Megan Hung, University of California, San Diego, CA; Cheng-Di Dong, Chiu-Wen Chen, Yun-Ru Ju, Chih-Feng Chen, and Xiang-Ying Chuang, National Kaohsiung Marine University, Kaohsiung City, Nanzih District, Taiwan
10:00 BREAK
10:30 Subsurface One-Dimensional Transport of Dioxin Beneath an Uncontrolled Dump Site – A Case Study
Mark Gempertline, MCG Geotechnical Engineering, Inc., Morrison, CO; Kehsun Lin, Fairchild Semiconductor, San Jose, CA
11:00 Reduction, Adsorption, and Precipitation of Heavy Metals by ZVI, Sulfides, and Related Reactive Minerals
Alan Seech, PeroxyChem Environmental Solutions, Corona Del Mar, CA; Daniel Leigh, PeroxyChem Environmental Solutions, Walnut Creek, CA

Session 3: Environmental Impact of Nanotechnology
Session Chair: Stephen Wall, Ph.D., Cal Dept. of Public Health Laboratory, Richmond, CA
9:00 Nanotechnologies and Society: Innovation, Implications, and Risk Governance
Christian Beaudrie, M.Eng., Ph.D., Institute for Resources, Environment and Sustainability, University of British Columbia/Compass Resource Management Ltd., Vancouver, BC, Canada
9:30 Release and Detection of Nanosized Copper from a Commercial Antifouling Paint
Adeyemi Adeleye, Ph.D. and Arturo Keller, Ph.D., University of California, Santa Barbara, CA
10:00 BREAK
10:30 High Throughput Screening and Predictive Toxicological Approach for Hazard Ranking of Nanomaterials
Tian Xia, Ph.D., Center for Environmental Implications of Nanotechnology, University of California, Los Angeles, CA
11:00 California’s Safer Consumer Products Regulations: A Regulatory Framework That Includes Nanomaterials
Jeff Wong, Ph.D., Safer Products and Workplaces Program, California Department of Toxic Substances Control, Cal/EPA (retired), Sacramento, CA
11:30 Panel Discussion

Session 4: Innovative Remedial Technologies
Session Chair: Ryan Wymore, CDM Smith, Denver, CO
8:30 Standard Heats of Permanganate and Persulfate Oxidation for Characterized Soils
Nicole Moulton, Stephen P. Mezyk, and Matt Becker, California State University, Long Beach, CA
9:00 Full Scale In-Situ Gaseous Reduction of Hexavalent Chromium in Vadose Zone Soils with H2S Gas
Brian Hitchens and Chad Bird, Geosyntec Consultants, San Diego, CA; Kirk Craig, Geosyntec Consultants, Phoenix, AZ
9:30 Status of Commercialization - Biogeochemical Reductive Dehalogenation (BiRD) Groundwater Treatment Process: Bench, Pilot, and Full Scale
James Studer, InfraSUR LLC, Albuquerque, NM
10:00 BREAK
10:30 Unique Injection Well Design and Implementation for ISCO at an Active Shopping Center
Hao Zhang and Carl Lenker, Tetra Tech, Inc., Irvine, CA
11:00 Novel Method for Activating Klozur Persulfate: Fundamental Science and Key Characteristics
Brant Smith, PeroxyChem, Philadelphia, PA; Stacey Telez, PeroxyChem, Newport Beach, CA
11:30 In-Situ Microbial Activity Sensing using Microbial Fuels Cell Technology
Scott Burge, Burge Environmental, Tempe, AZ

LUNCHEON SPEAKER
Wednesday March 23, 2016
12:00pm – 1:30pm, Poolside
Pushing the Envelope: How California Policy Has Driven an Electric Grid Revolution
Elliot Hinds, Crowell & Moring, San Francisco, CA

Policies designed to encourage change in an industry don’t always work, but California has seen remarkable success in driving a burgeoning industry in storage and new technologies to empower customers. The result is a complete re-evaluation of how the electric industry is looking at how we get our power. This talk will offer a contrast to other countries where the results were not as promising and a discussion of why California’s model has worked.
Session 1: 1:30pm – 5:00pm, Pavilion  
**Petroleum Hydrocarbon Vapor Intrusion II**  
**Session Chair:** Todd Ririe, BP La Palma, CA

1:30 Effect of Environmental Variables on Vapor Transport  
Bart Ek Lund, AECOM, Austin, TX

2:00 Including Volatilization and Biodegradation in Surficial Soils Criteria  
George DeVault, Shell Global Solutions US, Inc., Houston, TX

2:30 Screening Distance Criteria to Evaluate Vapor Intrusion Risk from Lead Scavengers  
Ravi Kolhatkar, Emma Hong Luo, and Natasha Shiota, Chevron Energy Technology Company, Houston, TX; Gary Jacobson, Chevron Environmental Management Company, San Ramon, CA; Qing (June) Lu and Janice Paslawski, SNC-Lavalin, Inc. - Environmental and Water, South Saskatoon, SK, Canada

3:00 BREAK

3:30 Petroleum Vapor Intrusion Assessment with PVIScreen  
James Weaver, US Environmental Protection Agency, Ada, OK

4:00 Controlled Release Experiments on Methane Fate in the Vadose Zone  
Douglas Mackay, Nicholas de Sieyes, Juan Peng, Radomir Schmidt, Mark Felice, Maya Beulow, Ioana Petcan, Nicole Spadone, Miriam Tsumura, and Kate Scov, University of California, Davis, CA

4:30 Controlled Release Experiments on Methane Fate in the Vadose Zone – Numerical Model Simulations using MIN3P-DUSTY  
Parisa Jourabchi and Ian Hers, Golder Associates, Vancouver, BC, Canada; Nicholas de Sieyes and Douglas Mackay, University of California, Davis, CA; Ulrich Mayer, University of British Columbia, Department of Earth, Ocean and Atmospheric Sciences, Vancouver, BC, Canada

Session 3: 1:30pm – 5:00pm, Salon G  
**Environmental Forensics**  
**Session Chair:** Ioana Petrisor, Great Ecology, San Diego, CA

1:30 The Importance of Forensics in Site Resolution and Allocation from a Legal and Insurance Company Nexus  
Tim Agajanian, Ropers Majeski Kohn & Bentley PC, Los Angeles, CA

2:00 Use of Stable Isotopes to Differentiate Various Sources of Perchlorate at the Stringfellow Superfund Site  
Michael Foster, Kleinfelder, San Diego, CA

2:30 Lessons in Applying Forensic Techniques to Sediment Sites Throughout the US  
Adam Love and Lydia Dorrance, Roux Associates, Inc., Oakland, CA

3:00 BREAK

3:30 Principal Component Analysis of Metals in Soil and Dust to Distinguish Background and Anthropogenic Sources in an Urban Area  
Ann Verwiel, ToxStrategies, Inc., Richmond, CA; Deborah Proctor, ToxStrategies, Inc., Mission Viejo, CA; Andrew Tachovsky, ToxStrategies, Inc., Austin, TX

4:00 Identification of Non-Petroleum San Francisco Bay Contaminates Related to Extensive Water Fowl Mortality using Microscopy  
Stephen Wall, Jeff Wagner, Sutapa Ghosal, and Zhong-Min Wang, California Department of Public Health, Richmond, CA

4:30 Site Investigation for Emerging Contaminant  
1,4-Dioxane with CSIA Tool  
Yi Wang, Pace CSIA Center of Excellence, Pittsburgh, PA

Session 2: 1:30pm – 4:30pm, Sierra 5  
**Beyond Screening Levels: Tools to Refine Risk Evaluations**  
**Session Chair:** Bridgette DeShields, Integral Consulting, Petaluma, CA

1:30 Use of Conceptual Site Models and Data Quality Objective to Inform Screening Level Risk Assessments  
Bridgette DeShields, Integral Consulting, Petaluma, CA; Mala Pattanayek, Integral Consulting, San Francisco, CA

2:00 Human Health or Ecological Risk? Decision-making for Petroleum Hydrocarbon Contamination in Surface Waters  
Usha Vedagiri and Heather Loso, AECOM, Oakland, CA

2:30 Decision-making at Contaminated Sites: Issues and Options in Human Health Risk Assessment  
Claudio Sorrentino, Department of Toxic Substances Control, Sacramento, CA; Diana Marquez, Burns & McDonnell Engineering Company, Inc., Kansas City, MO; Vivek Mathrani, Department of Toxic Substances Control, Cal/EPA, Berkeley, CA; Emily Strake, Langan Engineering and Environmental Services, Inc., Warrington, PA; Clay Messer, Alabama Department of Environmental Management, Montgomery, AL; John McVey, South Dakota Department of Environment and Natural Resources, Pierre, SD; Barrie Selcoe, CH2M, Houston, TX

3:00 BREAK

3:30 Hybrid Approach to Groundwater Screening Levels for Vapor Intrusion Investigations  
Ross Steenerson and Cheryl Provell, San Francisco Bay Water Board, Oakland, CA; Roger Brewer, Hawaii Department of Health, Honolulu, HI; Uta Hellmann-Blumberg, Department of Toxic Substances Control, Cal/EPA, Sacramento, CA

4:00 Implications and Consequences of Screening Levels  
Gwendoline Caviness, GSI Environmental, Oakland, CA; Lila Beckley, GSI Environmental, Austin, TX

Session 4: 1:30pm – 5:00pm, Santa Fe 3  
**Site Assessment/Field Sampling**  
**Session Chair:** Richard Vogl, Waterstone Environmental, Inc., Anaheim, CA

1:30 Hot Soil and Groundwater Sampling for Obtaining Site Closure – A Regulatory Perspective  
Nick Amini, Santa Ana RVQOB, Riverside, CA

2:00 Soil Sampling Utilizing Horizontal/Directional Drilling Methods  
David Bardeley, Directed Technologies Drilling, Bellefonte, PA

2:30 Why Purge Tests Are Necessary and What Effects Equilibration Times, Temperature, Humidity, and Barometric Pressure Have on Soil Gas Results  
Steve Jones, Emmanuella Pulleva, and Windy Mach, Jones Environmental, Inc., Santa Fe Springs, CA

3:00 BREAK

3:30 PCBs in Building Materials: An Environmental Professional Approach  
John O'Donnell, DCAMM, Boston, MA

4:00 Can Soil Gas Purge Volume Be Standardized to Lithologic Type?  
Catherine Quinn, Quinn Environmental Strategies, Inc., Irvine, CA; Steve Jones, Jones Environmental, Inc., Santa Fe Springs, CA; Peter Mock, Peter Mock Groundwater Consulting, Inc., Paradise Valley, AZ

4:30 Defective Product Liability and Drinking Water: Public Agency Lawsuits Against Manufacturers of Chemicals  
Victor Sher, Vic Sher Law, San Francisco, CA

---

**EVENING SOCIAL**

Wine and Cheese Social  
5:00 pm – 7:00 pm,  
Exhibit Hall, Salons A-F  
*(Free to all registered conference attendees)*
The following posters will be presented on Wednesday only, Sunroom & Foyers.

**Workshop 11**
7:00pm – 9:00pm, Salon G

**Practical Use of Environmental Diagnostics (EMDs) for Remediation and Forensics**
Aaron D. Peacock, PhD, Senior Scientist/General Manager, Pace Analytical Energy Services, Pittsburgh, PA

Environmental molecular diagnostics, or EMDs, describes a collection of specialty techniques that are used in the analysis of environmental forensics and cleanup. There are two broad categories of EMDs. The first is compound-specific isotope analysis (CSIA), which measures the stable isotopic composition (usually carbon, hydrogen or chlorine) in environmental contamination. As contaminants degrade, the ratio of stable isotopes in the contaminant can change. CSIA can be used to understand the extent of contaminant degradation and the mechanisms by which degradation is occurring. CSIA can also be used in a forensic capacity to discover if there are multiple sources of a contaminant to the environment (e.g. for groundwater contamination or vapor intrusion sourcing).

The second category of EMDs is biology-based. Molecular-biology EMDs include genomics and other techniques and are used to determine the contaminant-degrading capabilities of the microbes that are present at contaminated sites. Other molecular-biology based EMDs can be used to determine if the microbes are currently actively degrading contaminants. The use of EMDs can provide relevant and actionable data for some of the most difficult sites.

This is a read, see, and do short course, for genomics and CSIA. Each of the two main EMD presentations (genomics and CSIA) will include the following five learning objectives.

- **When and how the particular EMDs are deployed.**
- **What are the limitations of the EMDs.**
- **How to interpret EMD laboratory reports.**
- **How to analyze EMD data.**
- **How to integrate EMD results into final reports.**

Attendees will learn the basics of these techniques and how they apply to different remediation or forensic situations.
Session 1: 8:30am – 12:00pm, Pavilion

Vapor Intrusion
Session Chair: Elizabeth Miesner, Ramboll Environ, San Francisco, CA

8:30 A Tale of Two Schools: Lessons Learned When Assessing & Managing the VI Pathway
David Gillay, Barnes & Thornburg, LLP, Indianapolis, IN; Lenny Siegel, Center for Public Environmental Oversight, Mountain View, CA

9:00 The Cost and Liability of Evolving Technical Guidance
Megan Hamilton, Jeffrey Carnahan, Kathleen Nazareth, and Grace Randall, EnviroForensics, Indianapolis, IN

9:30 A Vacuum Field’s Sunset: An Anecdotal Summary of Mitigation System Shut Down in New York
Eric Lovenduski, Geosyntec Consultants, Saratoga Springs, NY; Everton Henriques, EH Hall, Cobleskill, NY

10:00 BREAK

10:30 Case Studies of CSIA Helping Resolve Vapor Intrusion Contributions to Indoor Air Contamination
Patrick McLoughlin, Aaron Peacock, and Robert Pirkle, Pace Analytical Energy Services, Pittsburgh, PA

11:00 Accounting for Building and Weather Variabilities in Vapor Intrusion Risk Assessments
Francis Ramacciotti, Stephen Song, and Barry Schnoor, Ramboll Environ, Princeton, NJ

11:30 Vapor Intrusion Assessment using HVAC Shutdown Testing and Mass Flux Concepts: Large Building Examples
David Shea, Bradley Green, Jennifer Sanborn, and Sam Warner, Sanborn, Head & Associates, Concord, NH

Session 2: 9:00am – 12:00pm, Salon G

Greener Cleanups
Session Chair: Deborah Goldblum, EPA Region 3, Philadelphia, PA

9:00 Greener Cleanup: Remediation with a Smaller Environmental Footprint
Carlos Pachon, EPA Office of Superfund Remediation and Technology Innovation, Arlington, VA; Deborah Goldblum, EPA Region 3, Philadelphia, PA

9:30 The Industry Standard for Greener Cleanups
Deborah Goldblum, EPA Region 3, Philadelphia, PA

10:00 BREAK

10:30 Quantitative Analysis in Greener Cleanups
Karen Scheuermann, US Environmental Protection Agency, San Francisco, CA

11:00 Greener Cleanups at Ports
Glenn Burks, Group Delta Consultants, Irvine, CA

11:30 Green Remediation: Application of ASTM’s Greener Cleanup Guide during Alternatives Analysis
Derek Wintle, CDM Smith, Denver, CO; Michael Miller, CDM Smith, Boston, MA; Melissa Harclerode, CDM Smith, Edison, NJ
The AEHS Foundation attributes the success of this conference, in large part, to a very dedicated and hard working 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.