

FINAL PROGRAM



Environmental and Public Health Effects, Analysis, Fate, and Remediation

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"AEHS WC2016"

Over 200 Presenters
11 Workshops
43 Exhibitors
Socials

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, *Crowell & 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	Geotech Computer Systems	PeroxyChem
Antea Group	Global Remediation Solutions	Pine
AquaBlok	H&P Mobile Geochemistry	ProHydro, Inc./Snap Sampler
Blaine Tech Services	Hepure Technologies	RadonAway
Cascade Drilling	Innovative Construction Solutions	Ramboll Environ
Centek Laboratories	In-Situ	Regenesis (Supporter)
Clean Vapor LLC	JRW Bioremediation	SGS Accutest
Confluence Environmental	Microbial Insights	SKC-West
Cox-Colvin & Associates	National Exploration Wells & Pumps	Solinst Canada Ltd.
DEXSIL Corporation	NextGen Fluid Innovations	Specialty Earth Sciences, LLC
Directed Technologies Drilling	OnMaterials	Wayne Perry
EOS Remediation	Pace Analytical (Sponsor)	Willowstick Technologies
FRx	PerkinElmer	XOS
GeoSearch		Yellow Jacket Drilling

Workshop 1 1:30pm – 5:30pm, *Sierra 5*

California’s Environmental Choices

MODERATORS:

Dr. Ravi Arulanantham, Geosyntec Consultants, Oakland, CA
 Dr. Yue Rong, CA RWQCB, Los Angeles, CA

SPEAKERS:

Kurt Berchtold, Executive Officer, Santa Ana RWQCB, Riverside, CA
 Andrew Brady, Alston & Bird, Los Angeles, CA
 James Levine, Montezuma Wetlands LLC, Emeryville, CA
 Richard Montevideo, Rutan & Tucker, LLP, Costa Mesa, CA
 Damon Nagami, Senior Attorney, Natural Resources Defense Council, Santa Monica, CA
 Eve Simmons, Environmental Advocate, Citizen’s Climate Lobby, San Diego, CA

Workshop 2 1:00pm – 5:00pm, *Pavilion*

Recent Developments in the Use of Temperature for Environmental Applications

G. Todd Ririe, Ph.D., BP Remediation & Engineering Technology, La Palma, CA
 Robert E. Sweeney, Ph.D., Petroleum & Environmental Geochemistry, Etna, CA
 Bryan Tallant, EnviroSolve Corp., Fullerton, CA

Workshop 3 1:00pm – 4:00pm, *Salon H*

Environmental Forensics - Utilization of Established and Evolving Techniques

Paul Philp, University of Oklahoma, Norman, OK

Workshop 4 1:00pm – 5:00pm, *Salon G*

In Situ Thermal Remediation Short Course

Grant Geckeler, GEO, Corona, CA
 Joe Pezzullo, P.E., CES, Spring Branch, TX

Workshop 5 1:00pm – 5:00pm, *Santa Fe 3*

Evaluations of Metals in Groundwater at VOC-Impacted Sites

Jonathan Myers, Ph.D., CB&I Federal Services, Albuquerque, NM
 Karen Thorbjornsen, P.G., CB&I Federal Services, Knoxville, TN

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.



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Workshop 6 8:30am – 12:00pm and 1:30pm – 5:00pm, *Pavilion*

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 Kapuscinski (OSRTI), 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 Chase 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.

Session 1: 9:00am – 12:00pm, *Sierra 5* **Petroleum Hydrocarbon Risk**

Session Chair: Amy Goldberg Day, Arcadis, San Rafael, CA

9:00 Eliminating Perceived Petroleum Hydrocarbon Risk by Integrating Chemical Fingerprint and Site Specific Data

Jun Lu, AECOM, Long Beach, CA

9:30 Petroleum-derived Chemicals in Groundwater – How Big is the Threat?

Uta Hellmann-Blumberg, Department of Toxic Substances Control, Sacramento, CA; Ross Steenson, San Francisco Bay Water Board, Oakland, CA; Roger Brewer, Hawaii Department of Health, Honolulu, HI

10:00 BREAK

10:30 Total Extractable Petroleum Hydrocarbon Detections: Are They Fuel or Asphalt?

Darren Croteau, Terraphase Engineering, Carlsbad, CA; Gary Foote, Terra Pacific Group, San Francisco, CA; Ben LePage, Anne Conner, and Fred Flint, PG&E, San Ramon, CA; Carol Yamane, WAU Associates, San Francisco, CA; James Bruya, Friedman & Bruya, Inc., Seattle, WA

11:00 Assessing Human Health Risk with TPH Fractions

Amy Goldberg Day, Arcadis, San Rafael, CA

11:30 TPH Risk Based Cleanup Levels for Petroleum Contaminated Sites

Roy Thun, Bridge Environmental, Santa Clarita, CA; Fred Vreeman, Alaska Department of Environmental Conservation, Fairbanks, AK

Session 2: 9:00am – 12:00pm, *Salon G* **Chlorinated Compounds**

Session Chair: Nick Amini, Santa Ana Regional Water Quality Control Board, Riverside, CA

9:00 New Thinking on the Environmental Impact of PCBs in Building Materials

John Martinelli and Michelle Rosales, Forensic Analytical Consulting Services, Citrus Heights, CA

9:30 The Impact of Short-Term PCE and TCE Exposure Guidelines on Intermittent and Chronic Exposures at Vapor Intrusion Sites

David Gillay, Barnes & Thornburg, LLP, Indianapolis, IN; Rod B. Thompson, Risk Options, LLC, Indianapolis, IN

10:00 BREAK

10:30 Kinetics of Thermal Chloramine Reactions in Treated Wastewaters STUDENT

Jamie Gleason, Stephen P. Mezyk, and Jennifer Castillo, California State University, Long Beach, CA; Kenneth Ishida, Orange County Water District, Fountain Valley, CA

11:00 Review and Recommendations for TCE Short-Term Action Levels in Indoor Air

Laura Trozzolo, TRC Solutions, Fort Collins, CO; Darby Litz, TRC Solutions, Ann Arbor, MI

11:30 Materials of Construction for Application of Activated Carbon to Address PCB Contamination in a Wetland and/or Sediment Setting

John Collins and John Hull, AquaBlok, Ltd., Toledo, OH

Session 3: 9:00am – 12:00pm, *Santa Fe 3* **Energy**

Session Chair: Meriah Arias-Thode, Naval SPAWAR Systems Center, Pacific, San Diego, CA

9:00 Decision Making Framework for Beneficial Use of Produced Water

Mala Pattanayek, Integral Consulting, San Francisco, CA; Bridgette DeShields, Integral Consulting, Petaluma, CA

9:30 Energy Conversion using Electrochemically Active Bacteria

Jerome Babauta and Haluk Beyenal, Washington State University, Pullman, WA

10:00 BREAK

10:30 New Photovoltaics System for Both Electrical and Thermal Energy Production

Randall Olsen, SPAWAR Systems Center, Pacific, San Diego, CA

11:00 Securing Critical Infrastructures

Jose Romero-Mariona, SPAWAR Systems Center, Pacific, San Diego, CA

11:30 TBA

Workshop 6, continued 1:30pm – 5:00pm, *Pavilion*

See Tuesday morning for full description of CVI, Methods, and Guidance

Session 1: 1:30pm – 5:00pm, *Sierra 5*

NSZD and NAPL Management

Session Chair: Rick Ahlers, Arcadis, Irvine, CA

1:30 Incorporating NSZD into the NAPL Management Strategy
Rick Ahlers, Arcadis, Irvine, CA

2:00 Yardsticks to Integrate Risk Assessment, Risk Management, and Groundwater Remediation

Deepa Gandhi, EKI, Burlingame, CA; Paul Hadley, Retired, Davis, CA; Ravi Arulanantham, Geosyntec Consultants, Oakland, CA

2:30 Modeling Petroleum Hydrocarbon Degradation, Part I: Gasoline Statistics and Pattern Assemblage

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

3:00 BREAK

3:30 Toolkits for Monitored Natural and Enhanced Attenuation of Petroleum Hydrocarbons

Ian Hers, Golder Associates, Richmond, BC, Canada

4:00 Natural Source Zone Depletion Rates from Subsurface Temperature Data: A Quantitative Analysis

Jonathon Smith, Arcadis, Novi, MI; Steven Gaito, Arcadis, Braintree, MA

4:30 The 2015 Refugio Oil Spill - A Local Agency's Perspective

Thomas Rejzek, Paul McCaw, Jason Johnston, and Steve Nailor, Santa Barbara County, Santa Maria, CA

Session 3: 1:30pm – 5:00pm, *Salon G*

Addressing Soil, Water, Energy, and Air Impacts of Drought and Water Shortage

Session Chair: David Pedersen, Las Virgenes Municipal Water District, Calabasas, CA

1:30 California WaterFix: Updating California's Aging Water Delivery System

Karla Nemeth, California Natural Resources Agency, Sacramento, CA

2:00 How Solar Energy Generation Can Address Changes in Energy Use Caused by the Drought

Kevin Ross, Terra Verde Renewable Partners, San Clemente, CA

2:30 Land Subsidence and Water Use in the Central Valley: Past, Present, and Future

Claudia Faunt, U.S. Geological Survey, San Diego, CA; Michelle Sneed, U.S. Geological Survey, Sacramento, CA

3:00 BREAK

3:30 Drought and Dust: Innovative Control Measures in Owens Valley

Belynda Reck, Reed Smith LLP, Los Angeles, CA

4:00 Tapping "New" Water: How Recycled Water Can Help Quench the State's Thirst

Wes Miliband, Stoel Rives LLP, Sacramento, CA

4:30 Study of Reclaimed Produced Water for Use in Agricultural Irrigation

Mark Jones, Mark Bowland, and Sandra Mulhearn, ERM, Sacramento, CA; Luis Navarro, ERM, Pasadena, CA

Session 2: 1:30pm – 5:00pm, *Santa Fe 3*

Constituents of Emerging Concern

Session Chair: Helen Yu, San Diego RWQCB, San Diego, CA

1:30 Saving Our Bees – Removing Neonicotinoids from Waters using Oxidizing Radicals **STUDENT**

Brittany Daws and Stephen P. Mezyk, California State University, Long Beach, CA; James Kiddle, Western Michigan University, Kalamazoo, MI

2:00 Kinetics and Mechanisms for Chlorine Atom Reactions with Antibiotics in Wastewaters **STUDENT**

Christopher Rice and Stephen P. Mezyk, California State University, Long Beach, CA

2:30 Sulfate Radical Remediation of Pharmaceutical Contaminant in Wastewater: Chemical-DOM Association Constant Measurements **STUDENT**

Trevor Reutershan and Stephen P. Mezyk, California State University, Long Beach, CA

3:00 BREAK

3:30 Perfluorocompound Treatment by Peroxide-Coated Nanobubble Ozone Emulsions

William Kerfoot, Kerfoot Technologies, Mashpee, MA

4:00 Sustainable Removal of Poly- and Perfluorinated Alkyl Substances (PFASs) from Groundwater using Synthetic Media

Bill Malyk, Amec Foster Wheeler, Cambridge, ON, Canada; Nathan Hagelin, Amec Foster Wheeler, Portland, ME; Steve Woodard, ECT, Portland, ME; Michael Nickelsen, ECT, Rochester, NY

4:30 Pharmaceuticals and Personal Care Products in San Diego Region Streams

Helen Yu, Carey Nagoda, Chad Loflen, and Deborah Woodward, San Diego Regional Water Quality Control Board, San Diego, CA; Lilian Busse, Umweltbundesamt, German Federal Environmental Agency, Dessau-Roßlau, Germany

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.

Posters may be viewed on their assigned day on Tuesday, March 22nd or Wednesday, March 23rd (see schedule below). Posters may be viewed independently throughout the day and authors will be available for individual discussion at their posters from 3:00pm – 6:00pm on their assigned day. Please refer to the schedule below. Refreshments and light hors d'oeuvres will be available during the poster sessions.

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 AbdelRahman, 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 AbdelRahman, National Authority for Remote Sensing and Space Sciences, Cairo, Egypt

Sea Level Rise in Developing Countries

Richard Asumadu 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 Dore, 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 Soil 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; Elisa 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 Burnings 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)

Gary Hodgden, Spruce Environmental Technologies, Inc., Olathe, KS; Shawn Price, Spruce Environmental Technologies, Inc., Ward Hill, MA

Evaluation of Chemical Cleaning Efficiencies During the Removal of the Biofouling Layer on Osmotically Driven Membrane Surfaces

Duksoo Jang and Seoktae Kang, KAIST, Daejeon, Republic of Korea; Am Jang, Sungkyunkwan University, Gyeonggi-do, Republic of Korea; Seokoh Ko, Kyung Hee University, Gyeonggi-do, Republic of Korea; Byung-Uk Bae, Daejeon University, Daejeon, Republic of Korea; Chae-Young Lee, University of Suwon, 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 Apreku, 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, Arcadis, Novi, MI; Steven Gaito, Arcadis, 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

WELCOME RECEPTION



Wine and Cheese Social
5:00 pm – 7:00 pm
Exhibit Hall, Salons A-F



(Free to all registered conference attendees)



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 DeVall, 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: 8:30am – 12:00pm, *Pavilion*

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

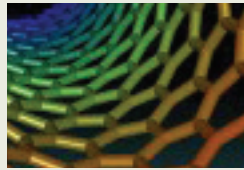
Blayne Hartman, Hartman Environmental Geoscience, Solana Beach, CA; Mark Kram, Groundswell Technologies, Santa Barbara, CA

SPECIAL SESSION

Session 3: 9:00am – 12:00pm, *Salon G*

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 Adeyeye, 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 2: 9:00am – 11:30am, *Sierra 5*

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 STUDENT

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 Gemperline, 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 4: 8:30am – 12:00pm, *Santa Fe 3*

Innovative Remedial Technologies

Session Chair: Ryan Wymore, CDM Smith, Denver, CO

8:30 Standard Heats of Permanganate and Persulfate Oxidation for Characterized Soils STUDENT

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 Telesz, PeroxyChem, Newport Beach, CA

11:30 In-Situ Microbial Activity Sensing using Microbial Fuels Cell Technology

Scott Burge, Burge Environmental, Tempe, AZ

LUNCHEON SPEAKER

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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 Eklund, AECOM, Austin, TX

2:00 Including Volatilization and Biodegradation in Surficial Soils Criteria

George DeVall, 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 Sihota, Chevron Energy Technology Company, Houston, TX; Gary Jacobson, Chevron Environmental Management Company, San Ramon, CA; Qiong (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 PVI-Screen

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, Mirann Tsumura, and Kate Scow, 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 Verviel, 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 Contaminant Related to Extensive Water Fowl Mortality using Microspectroscopy

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 Steenson and Cheryl Prowell, 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 RWQCB, Riverside, CA

2:00 Soil Sampling Utilizing Horizontal/Directional Drilling Methods

David Bardsley, 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

Quantification of the Urban Forest's Ability to Improve Environmental Quality of the City of Baton Rouge, LA

Kamran Abdollahi and Zhu Ning, Southern University, Baton Rouge, LA

Overview of Machado Lake Ecosystem Restoration Project: Dredge & Cap Approach to Restoration

John Collins and Katie Chantler, AquaBlok, Ltd., Toledo, OH

The Production and Management of Methane in Soil Gas during Remediation at Drycleaner Sites

Megan Hamilton and Keith Gaskill, EnviroForensics, Indianapolis, IN

Characterization of Nonequilibrium Leaching of Several Metallic Elements from Abandoned Mine Soils

Seunghun Hyun and Juhee Kim, Korea University, Seoul, Republic of Korea

Impact of Climate Change Mitigation and Adaptation Activities in Watersheds of Western Nepal

Ajay Karki, Department of Soil Conservation and Watershed Management, Kathmandu, Nepal

Enhancement of Biogas Production from Anaerobic Digestion of Food Wastewater by Integrated Thermal-alkali Pretreatment of Flotation Scum

Chae-Young Lee and Jae-Min Choi, University of Suwon, Hwaseong-si, Gyeonggi-do, Republic of Korea

Managing Uncertainty from Indoor Air Spatial and Temporal Variability in Vapor Intrusion (VI)-Impacted Structures

Loren Lund, CH2M HILL, Shelley, ID; Christopher Lutes, CH2M HILL, Raleigh, NC; John Lowe, CH2M HILL, Spokane, WA

A Comparison of Environmental Assessment Requirements of New Human Drugs in the US and the EU

Tamara Lunsman, Gradient, Seattle, WA; Tim Verslycke, Gradient, Cambridge, MA

Fast, Accurate, and Precise: EPA Method 325 (Fenceline Monitoring at Refineries for Benzene)

Lee Marotta, PerkinElmer, North Bergen, NJ; Julia Casagrande and Tom Kwoka, PerkinElmer, Shelton, CT

Assessing the Ecological Effects of Mining in West Africa: The Case of Nigeria

Edmund Merem, Joan Wesley, Mercy Shenge, Bennetta Robinson, Marshand Crisler, Peter Isokpehi, Siddig Fageir, and Gloria Hirse, Jackson State University, Jackson, MS

Spectroscopy Techniques for Soil Contamination Assessment in the Nile Delta

El Sayed Mohamed, Abdelrouf Masoud, and Afaf A. Abd El Razek, National Authority for Remote Sensing and Space Sciences (NARSS), Cairo, Egypt

Effects of Flooding and Elevated CO₂ Levels on Gas Exchange of Sawtooth Oak (*Quercus acutissima*) Saplings

Zhu Ning and Kamran Abdollahi, Southern University, Baton Rouge, LA

Risk-Based Solutions to Evolving Issues at Industrial Sites

Jenny Phillips and Laura Trozzolo, TRC Solutions, Fort Collins, CO

Workshop 10 7:00pm – 9:00pm, *Santa Fe 3*

Mass Flux and Mass Discharge: The ITRC Approach

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

Most decisions regarding contaminated groundwater sites are driven by contaminant concentrations. These decisions can be improved by also considering contaminant mass discharge and mass flux. Mass discharge and flux estimates quantify source or plume strength at a given time and location. Consideration of the strength of a source or solute plume (i.e., the contaminant mass moving in the groundwater per unit of time) improves evaluation of natural attenuation and assessment of risks posed by contamination to downgradient receptors, such as supply wells or surface water bodies. In 2011 the US Intrastate Technology and Regulatory Council (ITRC) issued a Technology Overview document that described the concepts, uses, and measurement methods for mass flux and mass discharge, as well as a review of case studies demonstrating the benefits of using these data for site management. This training will present key aspects and examples from this guidance document.

Innovations in Heat Enhanced Remediation

John Sankey, True Blue Technologies, Richmond, BC, Canada; Daniel Oberle, TRS Group, Inc., Longview, WA

Dissipation of Cypermethrin, Dichlorvos and Primiphos-Methyl under Ultrasonication in Aqueous Systems

Rufus Sha'Ato, Olukayode Felix Oketunde, and Nnadozie Nkemdirim Nkpa, University of Agriculture Makurdi, Makurdi, Nigeria

Quantity and Quality of Waste Water Generated in Restaurants in Makurdi, Nigeria and a Prototype In-House Treatment System

Rufus Sha'Ato, Clement Beetseh, Terrumun Amom Tor-Anyiin, and Paul Aunde Annune, University of Agriculture Makurdi, Makurdi, Nigeria

Managing High Iron Levels While Removing 1,4-Dioxane from Groundwater

Marilyn Sinnett, ECT, San Diego, CA; Steve Woodard, ECT, Portland, ME; Michael Nickelsen, ECT, Rochester, NY; Daniel Samorano, Raytheon Company, Tucson, AZ

Groundwater Remediation: Combining Solar Technology with Sustained and Controlled Release Reactants to Create Low-Cost, Low-Maintenance, and Green Reactive Interceptor Zones

Lindsay Swearingen, Specialty Earth Sciences, LLC, Huntington Beach, CA

Enhancement of Adsorption of DDT and PCB in Contaminated Soil using Multi-walled Carbon Nanotubes

Mohd Raihan Taha and Shariat Mobasser, National University of Malaysia, Bandar Baru Bangi, Selangor, Malaysia

Physicochemical Treatment of Cyanobacteria by Hydrodynamic Cavitation

Catherine Thomas, Afrachanna Butler, Victor Medina, and Christopher Griggs, US Army Corps of Engineers (ERDC), Vicksburg, MS

Designing a Permeable Reactive Barrier for Groundwater Remediation using Water Treatment Residuals



Christopher Walkons, Rupali Datta, Rodney Chimner, and Alex Mayer, Michigan Technological University, Houghton, MI; Dibyendu Sarkar, Stevens Institute of Technology, Hoboken, NJ

Characterisation of Environmental Methamphetamine Exposure through Hair Analysis

Jackie Wright, Environmental Risk Sciences Pty Ltd., Carlingford, Australia

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 genomic 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 Schnorr, 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 3: 8:30am – 12:00pm, *Santa Fe 3*

Bioremediation

Session Chair: Brian Hitchens, Geosyntec Consultants, San Diego, CA

8:30 Use of Bioremediation Natural Attenuation Processes for Cleanup of a TCE Groundwater Plume

Gary Cronk, JAG Consulting Group, Inc., Santa Ana, CA

9:00 Degradation Pathways and Mechanisms for Metal Assisted In-Situ Anaerobic Bioremediation: A Performance Review for Completed Projects

John Freim, OnMaterials, Escondido, CA

9:30 Advance Remediation - Field Installation of Iron Bioreactors to Degrade Explosives in Surface Waters

Heather Knotek-Smith, David Smith, and Bryton Hixson, US Army Corps of Engineers, Vicksburg, MS

10:00 BREAK

10:30 A Technology Platform to Harness Speed and Certainty in Groundwater Remediation

Dan Nunez, Regensis, La Mirada, CA; Jeremy Birnstingl, Regensis, Somerset, United Kingdom

11:00 "Is that a Low, Medium or High Concentration?" How the Microbial Database and Percentile Rankings of qPCR Results Improve Evaluation of Remediation Strategies at Sites

Casey Brown, Dora Ogles, Brett Baldwin, and Anita Biernacki, Microbial Insights, Inc., Knoxville, TN

11:30 Polishing Multiple California Sites to Achieve Low Threat Closure

Jack Sheldon, Antea Group, West Des Moines, IA

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

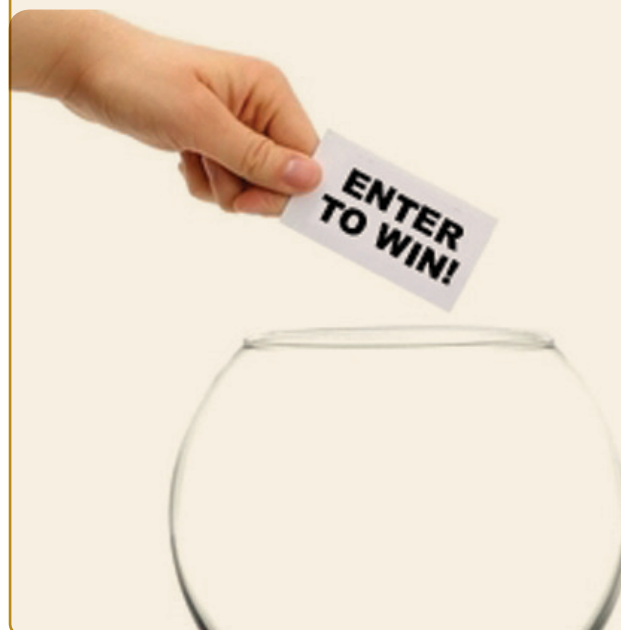
DRAWING

Enter to win a free registration to one of our next two conferences!

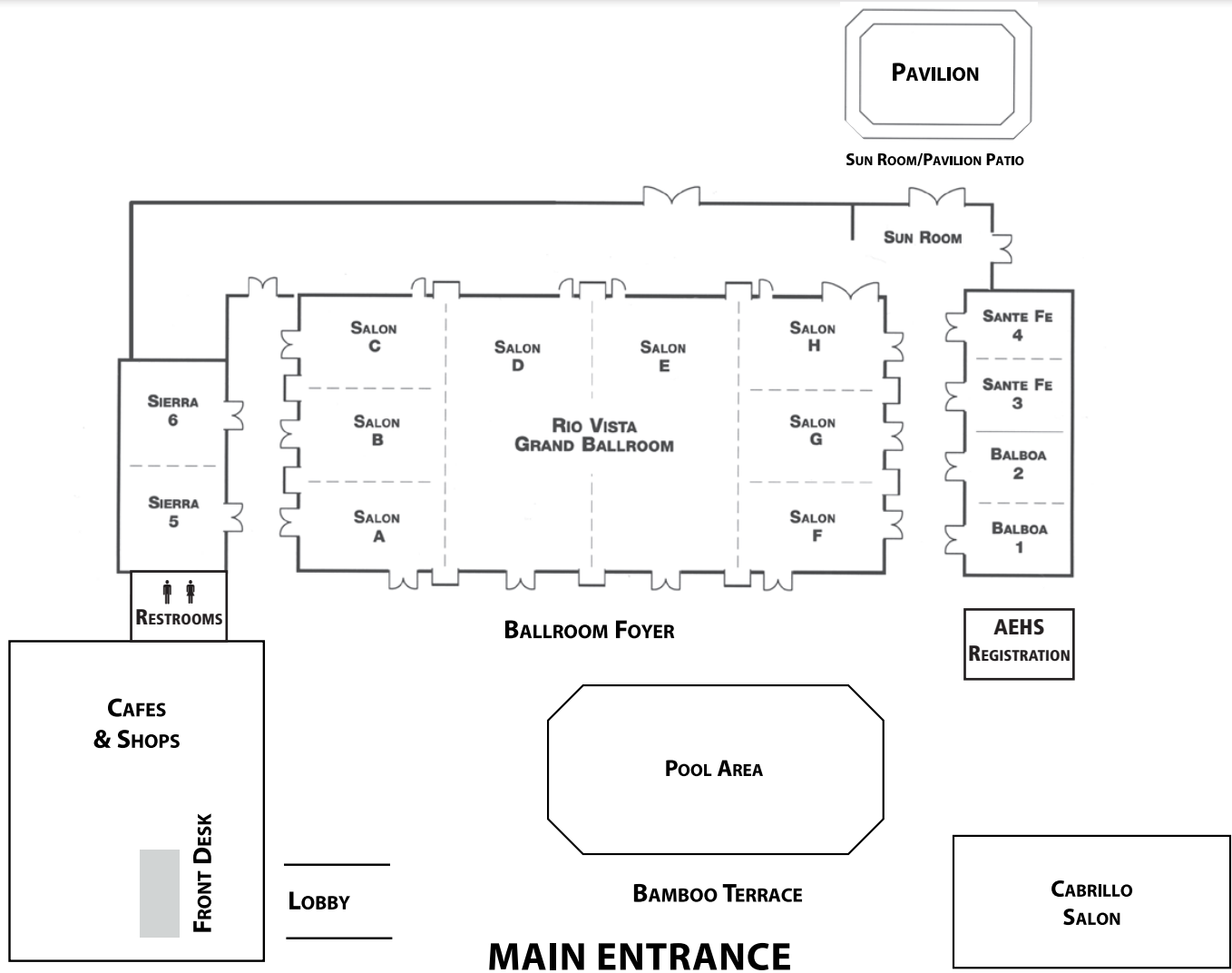
Entry and drawing will take place during each of the three Thursday morning sessions.

WINNERS IN EVERY SESSION!

Must be present to win. Second place winners will receive free 2016 AEHS Foundation Membership – members receive reduced registration to future conferences! Drawings will take place at the conclusion of each session.



CONFERENCE MAP



SCIENTIFIC ADVISORY BOARD 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.

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Nick Amini, Santa Ana Regional Water Quality Control Board

Meriah Arias-Thode, Naval SPAWAR Systems Center, Pacific

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Allen Blodgett, AECOM

Mark Bowland, ERM

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Roger Lahr, Pacific Trans

Chuck Lambert, Intrinsic

Karen Lyons, Shell Oil Products US

Bruce Macler, US EPA

Kevin Mayer, Crowell & Moring LLP

Stephen Mezyk, California State University at Long Beach

Elizabeth Miesner, Ramboll Environ

Ben Mork, Regenesis

David Pedersen, Las Virgenes Municipal Water District

Ioana Petrisor, Great Ecology

Paul Philp, University of Oklahoma

Paul Rakowski, AGVIO, LLC

Todd Ririe, BP America

Yue Rong, CA RWQCB

Matthew Small, U.S. EPA

Heather Smith, U.S. Army Corps of Engineers

Lynn Spence, Spence Environmental Engineering

Barbara Sugiyama, NAVFAC Engineering & Expeditionary Warfare Center

Richard Vogl, Waterstone Environmental, Inc.

Stephen Wall, Cal Dept of Public Health

Wade Weisman, Alliance Solutions Group

Robert Wilkenfeld, Chevron Environmental Mngmt. Co.

Sam Williams, Geosyntec Consultants

Ryan Wymore, CDM Smith

Helen Yu, San Diego Regional Water Quality Control Board

Dawn Zemo, Zemo & Associates, LLC