

# FINAL PROGRAM

## Vapor Intrusion, Remediation, and Site Closure

**Balancing Technical Defensibility, Risk, Sustainability, and Costs**

**December 7-8, 2016**

**DoubleTree by Hilton San Diego Mission Valley**

**7450 Hazard Center Drive**

**San Diego, CA, 92108**

The Air and Waste Management Association (A&WMA) is pleased to host our eighth specialty conference on the critical and evolving topic of Vapor Intrusion. Join us for a gathering of internationally-recognized scientists, engineers, regulators, and attorneys with experience in getting sites to closure and the critical sustainability and technical issues that need to be considered in doing so.



**AIR & WASTE MANAGEMENT**  
ASSOCIATION  
[www.awma.org](http://www.awma.org)

A&WMA is a nonprofit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for information exchange, professional development, networking opportunities, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society. For more information, please visit [www.awma.org](http://www.awma.org). A&WMA Federal Tax ID #: 25-6048614

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Clean Vapor, LLC is a design build vapor intrusion mitigation company with 30 years of experience with offices in New Jersey and North Carolina. We specialize in existing building and new construction mitigation. Our enhanced focus is on integration of energy efficient dynamic controls and remote monitoring technology. [www.cleanvapor.com](http://www.cleanvapor.com).



Land Science Technologies (LST)<sup>™</sup> is focused on the development and commercialization of advanced, environmentally-sound technologies for sustainable development. LST is dedicated to providing engineering, environmental and real estate industries with cost-effective, leading-edge solutions like vapor intrusion barrier systems for impacted sites such as Brownfields. LST is a division of Regenesys, Inc., a global leader in remediation technologies. Visit [www.landsciencetech.com](http://www.landsciencetech.com)



Pace Analytical is the industry's second largest environmental testing firm in the U.S., operating twenty-eight laboratories nationwide with a list of certifications that cover the nation. Pace prides itself in providing clients – both on a national and local level – with exceptional service, legally defensible data and convenient online data management.



The VAPOR PIN<sup>®</sup> is a sub-slab sampling device used for soil gas sampling, pressure testing, stray gas evaluations, source area characterization and mitigation progress monitoring. Advantages include No Leaks, No Grout, Reusable, less cost, installs in minutes, improves spatial resolution. \*NEW design connects with a variety of fittings.

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AAC, Inc. is a NELAC certified full service air quality laboratory that offers high quality responsive and cost effective analytical services using EPA, NIOSH, ASTM, CARB, and SCAQMD methods for various air projects including ambient air, source testing, indoor air, vapor intrusion, landfills, forest products and other air related fields.



ToxStrategies is a multidisciplinary scientific consulting firm that strives to develop innovative solutions to address the scientific, technical, and regulatory challenges confronting our clients. We have a reputation for applying sound science in all that we do and for tailoring our approach to meet the specific needs of our clients.

## GENERAL INFORMATION

### REGISTRATION

On-site registration will be available in the Southeast Foyer of the DoubleTree by Hilton San Diego Mission Valley.

#### Hours:

Tuesday, December 6: 3:00 pm - 5:00 pm

Wednesday, December 7: 7:30 am - 5:00 pm

Thursday, December 8: 7:30 am - 3:00 pm

You can also register online until December 5 at <http://siteclosure.awma.org>.

### REFUND POLICY

If written notice of cancellation is received on or before November 22, 2016 payment will be refunded, less a \$75 cancellation fee. This refund policy applies to all occurrences, including weather-related events and other natural disasters. In the unlikely occurrence of event cancellation, the Association is not liable for any expenses incurred by the registrant other than the full refund of registration fee(s) paid.

### CONTINUING EDUCATION CREDIT

Conference attendees may be eligible for continuing education credits. Those wishing to receive a certificate, please sign the attendance sheet at the registration desk. For more information, please contact Gloria Henning at [glhenning@awma.org](mailto:glhenning@awma.org); +1-412-904-6021.

### PRESENTERS' BREAKFAST

Presenters and Session Chairs will meet in the Gallery on the day of their session to review program details. Presenters should bring their presentations on a memory stick/USB and a brief bio to this meeting.

### CONFERENCE PROCEEDINGS

Abstracts and PowerPoint presentations will be included in the complete proceedings that will be available approximately two weeks after the conference. Attendees will be notified via e-mail when the proceedings is available.

### CONFERENCE COMMITTEE

#### Conference Chair:

Matthew Traister, OBG

#### Committee Members:

Robert Ettinger, Geosyntec Consultants

Loren Lund, CH2M

Richard Rago, Haley & Aldrich, Inc.

# FINAL PROGRAM

## REGISTRATION - Tuesday, December 6, 2016

**3:00 pm - 5:00 pm**

Conference Registration

Southeast Foyer

## TECHNICAL PROGRAM - Wednesday, December 7, 2016

**7:30 am - 5:00 pm**

Conference Registration

Southeast Foyer

**7:30 am - 8:30 am**

Presenters' Breakfast

Southeast Foyer

Meeting in the Gallery

**7:30 am - 8:30 am**

Continental Breakfast

Southeast Foyer

Seating available on deck

### KEYNOTE ADDRESS

Great Room I-III

**8:30 am - 8:45 am**

Welcome and Introductory Remarks

Matthew Traister, OBG

**8:45 am - 9:30 am**

**Environmental Restoration and Occupational Health Programs Collaborate to Manage TCE Short-Term Exposure in the DoD Workplace**

Deborah Morefield, Department of Defense (DoD) Office of the Assistant Secretary of Defense (Energy, Installations, & Environment), Environment, Safety, and Occupational Health Directorate (OASD(EI&E)/ESOH)

**9:30 am - 9:45 am**

Networking Break

Gallery

### Session 1:

#### REGULATORY POLICY INVOLVING VAPOR INTRUSION (VI)

Great Room I - III

**Chair:** Matthew Traister, OBG

**9:45 am - 10:15 am**

Control #45

**Determining a Safety Range of the Reference Concentration (RfC) for Trichlorethylene (TCE): A Useful Tool in Addressing the Uncertainty Associated with the Assessment of Non-cancer Health Effects at Vapor Intrusion Sites**

Ed Pfau, HULL, Dublin, Ohio; John Lowe, CH2M, Spokane, WA

**10:15 am - 10:45 am**

Control #18

**Evaluation of USEPA's New Policy for TCE Vapor Intrusion**

Nadine Weinberg, Elise LeBlanc; ERM, Boston, MA

**10:45 am - 12:15 pm**

**Panel Discussion: Short Term TCE Rapid Response**

- **Michael Anderson** – Senior Risk Assessor, Indiana Department of Environmental Management (IDEM)
- **Laurie Haws** – Managing Principal Scientist, ToxStrategies, Inc.
- **Deborah Morefield** – Program Manager, Department of Defense, Office of the Assistant Secretary of Defense
- **Ross Steenson** – Engineering Geologist, CA Regional Water Quality Control Board, SF Bay Region

**12:15 pm - 1:30 pm**

**Lunch Presentation**

Gallery

Sarah Sullivan, Partner, Stinson Leonard Street, Kansas City, MO

# TECHNICAL PROGRAM - Wednesday, December 7, 2016

## Session 2:

### LEGAL DEVELOPMENTS INVOLVING VI

Great Room I-III

**Chair:** Loren Lund, CH2M

**1:30 pm - 2:45 pm**

#### Panel Discussion (Legal Issues Surrounding VI)

- **Karen Davis** – Partner, Fox Rothschild LLP
- **Scott Deatherage** – Managing Member, S Deatherage Law PLLC
- **Laurence Kirsch** – Partner, Goodwin Procter LLP
- **Sarah Sullivan** – Partner, Stinson Leonard Street LLP

**2:45 pm – 3:00 pm**

Networking Break  
Gallery

## Session 3:

### SAMPLING AND ANALYSIS

Great Room I-III

**Chair:** Loren Lund, CH2M HILL

**3:00 pm - 3:30 pm**

Control #41

#### New Study of Background Indoor Air Levels of Volatile Organic Compounds (VOCs) and Air-Phase Petroleum Hydrocarbons (APH) in Office Buildings and Schools

*Richard J. Rago, Haley & Aldrich, Inc., Rocky Hill, CT; Andy Rezendes, Alpha Analytical, Mansfield, MA*

**3:30 pm– 4:00 pm**

Control #10

#### Soil Vapor Reproducibility: An Analytical and Sampling Perspective

*Suzie Nawikas, H&P Mobile Geochemistry, Inc., Carlsbad, CA*

**4:00 pm - 4:30 pm**

Control #29

#### Stepping it Up, Transient Vacuum Testing

*Jamie Bankston, Eric Blodgett, Don Richard, Brad Schwie, Katy Lindstrom; Barr, Bloomington, MN*

**4:30 pm - 5:00 pm**

Control #19

#### Use of Mass Loading Assessments to Characterize the Vapor Intrusion Potential and Background Source Contribution at a Former Dry Cleaning Facility

*William Wertz, Darius Mali, Helen Dawson, Todd McAlary, Geosyntec Consultants Inc., Guelph, Ontario Canada; Genna Olson, ATC Group Services LLC, Raleigh, NC; Delonda Alexander, N.C. Dept. of Environmental Quality, Raleigh, NC*

**5:00 pm - 6:30 pm**

#### Welcome Reception and Poster Session Gallery

(Technical Posters listed on page 8)

# FINAL PROGRAM

## TECHNICAL PROGRAM - Thursday, December 8, 2016

**7:30 am - 3:00 pm**  
Conference Registration  
Southeast Foyer

**7:30 am - 8:30 am**  
Presenters' Breakfast  
Southeast Foyer  
Meet in the Gallery

**7:30 am - 8:30 am**  
Continental Breakfast  
Southeast Foyer  
Seating on the deck

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### **Session 4:** **DATA EVALUATION AND MODELING FOR VI** Great Room I-III

**Chair:** Robert Ettinger, Geosyntec Consultants

#### **Tools You Can Use**

**8:30 am - 9:00 am**  
Control #3  
**Acceptance Criteria for Using VOC in Soils Data for VI Evaluations**  
*Bart Eklund, AECOM, Austin, TX*

**9:00 am - 9:30 am**  
Control #16  
**A Review of VI Preferential Pathway Cases Leading to an Evaluation Toolkit**  
*Jessica Kastanek, Maggie Radford, Quin Bingham, Andrew Madsen, Chase Holton and Christopher C. Lutes, CH2M Hill, Englewood, CO*

**9:30 am - 10:00 am**  
Control #22  
**Soil Vapor Extraction Pilot to Prevent Vapor Intrusion – Preliminary Results**  
*Robert Truesdale, RTI, RTP, NC; Chris Lutes, John Lowe, CH2M HILL, Raleigh, NC; Brian Schumacher, John H. Zimmerman, U.S. Environmental Protection Agency (EPA) National Exposure Research Laboratory, Las Vegas, NV; Rebecca Connell, U.S. EPA Region 9, San Francisco, CA; Bo Stewart, PRAXIS Environmental Technologies, Burlingame, CA; Jose De Loera, OTIE, Burbank, CA*

**10:00 am - 10:15 am**  
Networking Break  
Gallery

### **VI Concerns and TPH**

**10:15 am - 10:45 am**  
Control #43  
**PVI2D, A New 2-D Petroleum Vapor Intrusion Screening Tool**  
*Yijun Yao, Zhejiang University, Hangzhou, China; Iason Verginelli, University of Rome Tor Vergata, Rome, Italy; Eric M. Suuberg, Brown University, Providence, RI*

**10:45 am - 11:15 am**  
Control #26  
**Screening Distances for TPH**  
*Matthew Lahvis, Shell Global Solutions (US), Inc., Houston, TX*

**11:15 am - 11:45 am**  
Control #12  
**Vapor Intrusion at Former MGP Sites: Do the UST-Based Petroleum Vapor Intrusion Criteria Apply?**  
*Diana Y. Marquez, Burns & McDonnell Engineering Company, Inc., Kansas City, MO; Margaret H. Kelley, Burns & McDonnell Engineering Company, Inc., Downer's Grove, IL*

**11:45 am - 1:15 pm**  
**Lunch Presentation**  
Gallery  
**Navy/DoD concerns/technical comments on the EPA proposed revisions to add vapor intrusion to the Hazard Ranking System (HRS) rule**  
*Travis Borrillo, Naval Facilities Engineering Command (NAVFAC)*

# TECHNICAL PROGRAM - Thursday, December 8, 2016

## Session 5:

### CASE STUDIES AND MITIGATION

Great Room I-III

**Chair:** Richard Rago, Haley & Aldrich

### Tools and Techniques

#### 1:15 pm - 1:45 pm

Control #14

#### Site Closure Approach and Status for Three Vapor Intrusion Sites in Colorado and New York

*Eric Lovenduski, Geosyntec Consultants, Latham, NY; Anne Woodland, Geosyntec Consultants, Helena, MT; Jeff Kurtz, Geosyntec Consultants, Lafayette, CO*

#### 1:45 pm - 2:15 pm

Control #7

#### A Case Study of the Application of Building Prioritization Framework in Vapor Intrusion Investigations at Industrial Sites

*Maggie Radford, CH2M, Charlotte, NC; Loren Lund, CH2M, Shelly, ID; Keri Hallberg, CH2M, Charlotte, NC; Patricia Veneable, EXWC, Port Hueneme, CA*

#### 2:15 pm - 2:45 pm

Control #13

#### Application of Sequence Stratigraphic Analysis in Support of a Vapor Intrusion Evaluation at a Residential Housing Development

*Peter Scaramella, Chuck Payne, Murray Einarson, Haley & Aldrich, Inc., Oakland, CA*

#### 2:45 pm - 3:00 pm

Networking Break

Gallery

## Successful Mitigation Case Studies

#### 3:00 pm - 3:30 pm

Control #39

#### In Flux – A Case Study of a Vapor Intrusion Site Transitioning from Active to Passive Sub Slab Depressurization Systems (SSDS)

*Lisa J. Campe, Lisa M. McIntosh, Jiayang Chien, Woodard & Curran, Inc., Dedham, MA*

#### 3:30 pm - 4:00 pm

Control #44

#### An SSD System Installed and Operated Externally under an Existing Commercial Building

*Elie H. Haddad, Jennifer Boyer, Michael Zlotoff, Rich Farson Haley & Aldrich, San Diego, CA*

#### 4:00 pm

#### Closing Remarks/Adjourn

*Matthew Traister, OBG*

**THANK YOU FOR ATTENDING!**



# FINAL PROGRAM

## TECHNICAL POSTERS

### POSTER SESSION

Wednesday, December 7, 5:00 pm - 6:30 pm

Poster presenters will be available for questions and discussion during this time.

Posters will also be on display throughout the conference.

#### Control #17

##### The Cost and Liability of Evolving VI Technical Guidance

Megan K. Hamilton, Jeffrey W. Carnahan, Grace Randall, Kathleen K. Nazareth; EnviroForensics, Indianapolis, IN

#### Control #23

##### Challenges Associated with Addressing Vapor Intrusion at a Church

Seema Turner, Eddie Arslanian, Ramboll Environ, Los Angeles, CA; Elizabeth Miesner, Ramboll Environ, San Francisco, CA

#### Control #24

##### Short Term Screening for Worst Case Vapor Intrusion - the Indianapolis Experience

Robert Truesdale, RTI, RTP, NC; Chris Lutes, John Loew, CH2M HILL, Raleigh, NC; Brian Schumacher, John H. Zimmerman, U.S. Environmental Protection Agency (EPA) National Exposure Research Laboratory, Las Vegas, NV; Rebecca Connell, U.S. EPA Region 9, San Francisco, CA; Bo Stewart, PRAXIS Environmental Technologies, Burlingame, CA; Jose De Loera, OTIE, Burbank, CA

#### Control #25

##### Multiple Lines of Evidence to Differentiate Between an Indoor Source and Vapor Intrusion

Safaa Dergham, Carol Serlin, Ramboll Environ, Irvine, CA

#### Control #27

##### An Enhanced Green Remedial Method for Treating VOC Impacted Soil Gases & Groundwater Source Areas

Edward A. Council, Advanced Geologic Sciences, LLC, Xenia, Ohio; Christopher E. Council, Case Western Reserve University, Cleveland, OH

#### Control #31

##### Guaranteed Fixed Price Remediation Contracting – Path for Closure

David Fleming, TRS Group, Inc., Longview, WA

#### Control #32

##### Combining Technologies to Reach Site Closure

Emily Crownover, TRS Group, Inc., Longview, WA

#### Control #36

##### Advancements in Contaminant Vapor Mitigation Technologies

Dan Russo, Regenisis, Portland, OR

#### Control #40

##### Waiting to Inhale: Case Studies in Risk Perceptions and Communication at Vapor Intrusion Sites

L.J. Campe, L.M. McIntosh, Woodard & Curran, Inc., Dedham, MA

#### Control #42

##### Modeling Contaminant Vapor Communication Between the Subsurface and Indoor in Vapor Intrusion

Rui Shen, Fiona Yu, Eric M. Suuberg, Brown University, Providence, RI

### Americans with Disabilities Act

The Air & Waste Management Association supports the Americans with Disabilities Act (ADA). Those attendees requiring specific equipment or services should contact Cindy Fontanesi, Conference & Events Planner, at +1-412-904-6031 or cfontanesi@awma.org to make those needs known in advance. We will make every reasonable effort to accommodate them.