

Vapor Intrusion 2010

**Chicago, Illinois, USA
29-30 September 2010**

Volume 1 of 2

ISBN: 978-1-61782-170-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2010) by the Air and Waste Management Association
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the Air and Waste Management Association
at the address below.

Air and Waste Management Association
One Gateway Center, 3rd Floor
420 Fort Duzuesne Blvd.
Pittsburgh, Pennsylvania 15222-1435

Phone: 800 270 3444
Fax: 412 232 3450

www.awma.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

WEDNESDAY, SEPTEMBER 29, 2010

SESSION 1: THE MANY SIDES OF VAPOR INTRUSION

Chair: Gina Plantz

Overview and Status of USEPA: Review of the 2002 Draft Guidance	1
<i>Henry Schuver</i>	
Vapor Encroachment Screening Under the Newly-Revised ASTM Standard E 2600 Standard	56
<i>Anthony Buonicore</i>	
Proposed Regulatory Framework for Evaluating the Methane Hazard Due to Vapor Intrusion	94
<i>Bart Eklund</i>	
Risk Communication and Risk Management at Vapor Intrusion Sites - Ignore at Your Own Risk	126
<i>Ellen Ivens</i>	

SESSION 2: BASIC SCIENCE

Chair: Robert Ettinger

Hydrocarbon and Oxygen Transport in the Vicinity of a Building Overlying a NAPL Source Zone	155
<i>Hong Luo, Paul Dahlen, Paul Johnson</i>	
The Influence of Transient Processes on Vapor Intrusion Processes	186
<i>Y. Yao, K.G. Pennell, E.M. Suuberg</i>	

SESSION 3: HYDROCARBON STUDIES

Chair: Robert Ettinger

Vapor Intrusion from Subsurface to Indoor Air: Biodegradable Petroleum Vapors versus Recalcitrant Chemicals	211
<i>George DeVaul</i>	
Transport of Petroleum Hydrocarbon Vapor Components in the Subsurface: A Laboratory Soil Column Study	226
<i>Elsy Escobar, Paul Dahlen, Paul Johnson</i>	
Effects of Alternate Petroleum Hydrocarbon Sources in the Vadose Zone on the Vapor Intrusion Pathway Beneath a Residential Community	260
<i>Paul Michalski, Shannon Thompson, Charlie DeWolf, Paul Nicholson, Todd McAlary</i>	
Evaluation of Natural Attenuation Mechanisms Associated with Petroleum Hydrocarbon Release Sites as Measured in Soil Vapour	291
<i>Philip Schulz, Casey O'Farrell</i>	

SESSION 4: PANEL DISCUSSION ON REGULATORY ISSUES – DEVELOPMENT OF VI SCREENING LEVELS

Chair: Bart Eklund

Regulatory Issues – Understanding VI Screening Levels	325
<i>Audrey Rush, Robbie Ettinger, Henry Schuver, Atul Salhotra</i>	

SESSION 5: DATA EVALUATION

Chair: Bart Eklund

Evaluation of USEPA's Empirical Attenuation Factor Database	359
<i>Steve Song, Chris Stubbs, Fancis Ramacciotti, Barry Schnorr, Michael Bock</i>	
Vadose Zone Profiling to Better Understand Vadose Zone Processes Related to Vapor Intrusion	381
<i>Daniel Carr, Allan Horneman, Laurent Levy</i>	
Use of CSIA to Distinguish Between Vapor Intrusion and Indoor Sources of VOCs	410
<i>Thomas McHugh, Kyle Gorder, Stephanie Fiorenza, Richard Philp, Tomasz Kuder, Joe Odencrantz, Harry O'Neill</i>	

EPRI Soil Vapor Intrusion Field Research Program – Evaluation of Soil Vapor Attenuation above Residual MGP Impacts at a Site in Wisconsin	444
<i>Ian Hers, Jim Lingle, Frank Dombrowski, Ed Murphy, Todd Rees Parisa Jourabchi, K. Ulrich Mayer</i>	
Characterizing TCE Exposure Distribution for Occupants of Houses with basements	491
<i>Wanyu Chan, Greg Brorby, Brian Murphy</i>	

THURSDAY, SEPTEMBER 30, 2010

SESSION 6: ENGINEERING CONTROLS

Chair: Todd McAlary

Soil Vapor Migration Through Subsurface Utilities	522
<i>Mark Distler, Paul Mazierski</i>	

VOLUME 2

High Vacuum, High Airflow Blower Testing and Design for Soil Vapor Intrusion Mitigation in Commercial Buildings	552
<i>Thomas Hatton, Bill Brodhead</i>	
HVAC Influence on Vapor Intrusion in Commercial and Industrial Buildings	597
<i>David Shea, Claire Lund, Bradley Green</i>	
New Data on Attenuation Coefficients for Crawl Spaces and Deep Soil Gas from the Lowry AFB Site, Denver, Colorado	609
<i>Jeffrey Kurtz, Elizabeth Wolfe</i>	

SESSION 7: SAMPLING & ANALYSIS

Chair: Gina Plantz

Quantitative Passive Diffusion-Adsorptive Sampling Techniques for Vapor Intrusion Assessment	657
<i>Todd McAlary, Hester Groenevelt, Tadeusz Górecki, Suresh Seethapathy, Paolo Sacco, Derrick Crump, Brian Schumacher, Michael Taday, Heidi Hayes, Paul Johnson</i>	
Long-term Integrated Samples for Indoor Air and Subslab Soil Gas at VI Sites	716
<i>Chris Lutes, Robert Uppencamp, Heidi Hayes, Ronald Mosley, Dale Greenwell</i>	
Investigating Vapor Intrusion at a Superfund Site - Lessons Learned	759
<i>Elie Haddad, Evrydiki Fekka, Susan Skoe</i>	
Evaluating Vapor Intrusion Risk Using Comparative Dynamic and Passive Flux Chambers at a TCE Impacted Site in Sydney, Australia	792
<i>Adrian Heggie, Bill Stavropoulos</i>	
Innovative Methods for Vapor Intrusion Investigation, Risk Assessment, and Mitigation Monitoring	826
<i>Robert Scrafford, Ken Guttman</i>	
Interval Indoor Air Measurements from a Dry Cleaner, a Residence, and at Vapor Intrusion Sites	N/A
<i>Gina Plantz</i>	

SESSION 8: FOCUS ON DOD ISSUES

Chair: Loren Lund

Use of Radon to Determine Attenuation Between Subslab and Indoor Air for Vapor Intrusion Evaluation at Military Housing Units at Fort Wainwright, Alaska	853
<i>Joseph King, Dennis Shelton, Jeremy Blei</i>	
The Navy Vapor Intrusion Decision Process Tool	892
<i>Donna Caldwell, Mike Novak, Corey Schwabenlander, Loren Lund</i>	
Detailed Indoor Air Characterization and Interior Source Identification by Portable GC/MS	921
<i>Eric Dettenmaier, Kyle Gorder</i>	
Implementation of a Strategic Approach for Complex VI Assessment at a Large Military Facility	964
<i>David Himmelheber, Emily H. Majcher, Paul Nicholson, Aron Krasnopoler, Todd McAlary, Robert Ettinger, Jennifer Harris, John Wrobel</i>	

A Base-Wide Vapor Intrusion Evaluation at Marine Corps Base Camp Lejeune: Utilizing the DoD Phased Approach to Prioritize Building Investigations	1020
<i>Jennifer Simms, Loren Lund , Keri Hallberg, Robert Lowder, Bryan Beck</i>	

SESSION 9: LEGAL PANEL – UPDATES ON VI

Chair: Matthew Traister

A Panel Discussion on Various Matters of Law and Their Impact on VI Investigations	N/A
<i>Chris Roe, Larry Schnapf, Greg Bibler</i>	

SESSION 10: PRACTICAL SOLUTIONS/CASE STUDIES

Chair: Matthew Traister

Sustainable Vapor Intrusion Controls - Designing an Effective Passive System	1053
<i>James Ash, Mark Ensign, William Simons</i>	

POSTERS SESSION

Design and Performance of an Aerated Floor System for Vapor Intrusion Mitigation Projects	1061
<i>Bill Morris, David Folkers</i>	
Evaluation of the GORETM Module for Quantitative Passive Soil Gas and Air Sampling in Vapor Intrusion Investigations	1065
<i>James Whetzel Jr., Jay Hodny, Harry Anderson II</i>	
Vapor Intrusion Site Characterization Using Multiple Lines of Evidence	1066
<i>Charlene Liu, Chloe Metz, Nai-chia Luke, Demetrios Klerides, Isabel Rodrigues</i>	
Conceptual Model Scenarios for the Vapor Intrusion Pathway	1067
<i>Lilian Abreu</i>	
Assessing and Mitigating Vapor Intrusion for an Insurance Claim at a NJ Dry Cleaners Site	1068
<i>Sandra Gaurin</i>	
Optimal Design of Subslab Depressurization Systems for VOC Vapor Intrusion Mitigation	1069
<i>Chris Lutes, Ric Studebaker, Nadine Weinberg</i>	
Radon Tracer as a Multipurpose Tool to Enhance Vapor Intrusion Assessment and Mitigation	1070
<i>Chris Lutes, Carl Singer, Robert Uppencamp, Ronald Mosley, Dale Greenwell</i>	
Urban Infrastructure and the Challenges Posed for Assessing and Mitigating Vapor Intrusion Adjacent to a Former Dry Cleaner: A Case Study	1071
<i>Todd Creamer, Larson Larson, Todd McAlary</i>	
Tube Sampling Versus Canister Sampling - The Pros and Cons of Each Approach	1072
<i>Dan Cooper, Nicola Watson</i>	
Correlation and Applications of Indoor Air Mitigation System Influent from the CDOT MTL Site, Denver, Colorado	1079
<i>Jeffrey Kurtz, Jim Cowart</i>	
Optimizing Analytical Parameters for Soil Vapor Samples Using Automated Thermal Desorption/Gas Chromatography/Mass Spectrometry (ATD/GC/MS)	1080
<i>Lee Marotta, Miles Snow, Stephen Varisco</i>	
A Different Way of Looking at SVI	1081
<i>Brian Murphy, Waynu Chan</i>	
High Purge Volume Tests for Managing Variability in Sub-Slab Soil Gas	1082
<i>Paul Nicholson, David Bertrand, Todd McAlary, Gordon Thrupp</i>	
Indoor Air Sampling of VOCs: Long-Term Passive Diffusion Devices Challenge Study with Comparison to Active Methods	1083
<i>Harry O'Neill, Steven Thornley</i>	
Incorporating Surrogate Compounds and Biodegradation Factors into Vapor Intrusion Modeling	1084
<i>Joseph Roman, Patrick King</i>	
Use of the BioVapor Spreadsheet Tool to Evaluate Petroleum Vapor Intrusion at Two Sites	1085
<i>Thomas McHugh, George DeVauil</i>	
Determining and Applying Diffusion Coefficients for High-Performance Gas Vapor Barriers	1086
<i>Jim Olsta</i>	
Vapor Intrusion Guidance – How Four States Compare	1087
<i>Gregory Bibler, Goodwin Procter, Ileen Gladstone, James Ash</i>	
Author Index	