

MEMORANDUM

Updated: January 26, 2024

Beacon Environmental Publication and Presentation Summary

ASTM D7758-17, *Standard Practice for Passive Soil Gas Sampling in the Vadose Zone for Source Identification, Spatial Variability Assessment, Monitoring, and Vapor Intrusion Evaluations*. ASTM International, West Conshohocken, PA, 2011, DOI: 10.1520/D7758-11. Harry O'Neill was selected as the lead author to write the first ASTM standard on passive soil gas sampling.

1. O'Neill, H. 2021. *Advanced Quantitative Soil Gas Methods – Making the Invisible Visible*. REMEDy 2021 for Contaminated Sites. Warsaw, Poland. September 29
2. O'Neill, H., 2021. *Advancements in Quantitative Passive Sampling Methods for Vapor Intrusion and Site Investigations*. Midwestern States Environmental Consultants Association (MSECA) Virtual Meeting on Soil Gas. May 13
3. Landmeyer, J. et al. (2020) *Phytoremediation of slightly brackish, polycyclic aromatic hydrocarbon-contaminated groundwater from 250 ft below land surface: A pilot-scale study using salt-tolerant, endophyte-enhanced hybrid poplar trees at a Superfund site in the Central Valley of California*. The Journal of REMEDIATION, Wiley Periodicals, Inc., April–November 2019.
4. O'Neill, H. Thornley, S. (2019). *Why the U.S. EPA is Promoting the Collection of Time-Integrated, Passive Indoor Air Samples for Vapor Intrusion Risk Assessments*. RemTech Europe. Ferrara, Italy. September 20.
5. O'Neill, H., Thornley, S. (2019). *An Effective Sampling Strategy Using Passive Soil Gas Samples to Accurately Characterize a Site for Chlorinated Contamination*. RemTech Europe. Ferrara, Italy. September 18.
6. Wagner, Alfrido, O'Neill, H. (2019). *A Local Case Study: The Use of Passive Soil Gas Surveys as a High Resolution Characterization Tool to Close Data Gaps Towards an Effective Remediation Strategy*. NICOLE Latin America – International Workshop on Soil Remediation. Buenos Aires, Argentina. August 01-02.
7. O'Neill, H., (2019). *Measuring Indoor Air Concentrations For Multi-Week Periods to Provide a More Accurate VI Risk Assessment*. 9th Annual AIPG Michigan Section Technical Workshop - Hazardous Substances in Groundwater, Soil & Vapors: The New Turning Point. June 11-12

8. Schneider, R., O'Neill, H., (2019). *Best Practices for the Collection Passive Soil Gas Samples to Characterize Sites and Assess Vapor Intrusion Pathways*. 9th Annual AIPG Michigan Section Technical Workshop - Hazardous Substances in Groundwater, Soil & Vapors: The New Turning Point. June 11-12
9. O'Neill, H. (2019). *Why the US EPA is Promoting the Collection of Time Integrated, Passive Indoor Air Samples for Vapor Intrusion Risk Assessments*. Presented at AquaConSoil 2019, Antwerp, Belgium, May 20-24.
10. O'Neill, H., Thornley, S., (2019) *Measuring Indoor Air Concentrations For Multi-Week Periods to Provide a More Accurate and Definitive VI Risk Assessment*. Presented at the Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Baltimore, MD April 15-18, Battelle Memorial Institute.
11. O'Neill, H. (2018) *Think Analyzing Soil Samples Will Accurately Characterize a Site for Chlorinated Contaminant Source Areas?... Think Again*. Presented at Israel National Conference on Soil and Water Environmental Pollution, Tel Aviv, Israel, October 9.
12. O'Neill, H. (2018) *Site Characterization and Vapor Intrusion Monitoring with Time-Integrated Passive Samplers*. Tri-City Workshop. June 19-25. Porto Alegre, Curitiba, São Paulo, Brasil.
13. Jacobs, O'Neill, Schneider (2018) *Unintentional Discharges of Industrial Compounds to Sanitary or Stormwater Drainage Systems in Urban Settings*. Presented at AEHS 2018, San Diego, CA, March 21.
14. O'Neill, H. (2018) *How to Measure Long Duration, Time-Weighted Average Concentrations in Air to Provide a More Accurate Risk Assessment*. Presented at Southeastern States Vapor Intrusion Symposium (SESVIS), Atlanta, GA, February 8.
15. O'Neill, H. (2018) *Advanced Passive Sorbent Samplers: Collecting Time-Integrated Samples as part of an Effective Site Characterization or Vapor Intrusion Investigation Strategy*. Presented at North Carolina DEQ Inactive Hazardous Sites Branch Training, January 31.
16. O'Neill, H. (2017) *Time-Integrated, Passive Indoor Air Sampling for a Better Vapor Intrusion Risk Assessment*. Presented at AEG Carolina Chapter Vapor Intrusion: The Conference II, October 5.
17. O'Neill, H. (2017) *Passive Soil Gas and Air Sampling: Time Integrated Sampling Using Sorbent Samplers*. Presented at ReLASC NICOLE Brasil Vapor Intrusion Workshop. June 2. Lima, Peru.
18. O'Neill, H. (2017) *Time-Integrated, Passive Indoor Air Sampling for a Better VI Risk Assessment*. Presented at TN Environmental Show of the South. May 18. Chattanooga, TN.
19. O'Neill, H. (2016) *Sorbent Sampling and Analyses for VOCs in Soil Gas and Air*. Guest Lecturer at Beijing Municipal Ministry of Environmental Protection and Environmental Protection. October 19 and 20. Beijing, China.

20. O'Neill, H. (2016) *Collection of High Quality Data For High Resolution Site Assessments*. AESAS Workshop. September 27. São Paulo, Brasil.
21. O'Neill, H., Kessel, L. (2016) *High Resolution Site Characterization Approach: Rapid Sample Collection with High Quality Analyses Targeting VOCs/SVOCs*. Presented at 2016 Environmental Forum in Los Angeles: International Environmental Conference & Symposium, August 12-18, Southern California Chinese American Environmental Protection Association (SCCAEPA).
22. O'Neill, H., Thornley, S., Bates, M. (2016) *Results from a High-Quality, Long-Duration Study of Passive Samplers for Indoor Air Monitoring - Determining Accurate Uptake Rates*. Presented at the Battelle Tenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, California, May 22-26, Battelle Memorial Institute.
23. O'Neill, H., Thornley, S., Schneider, R. (2016) *Think Analyzing Soil Samples will Accurately Characterize a Site for Chlorinated Contaminant Source Areas?... Think Again*. Presented at the Battelle Tenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, California, May 22-26, Battelle Memorial Institute.
24. McHugh, T., O'Neill, H., Newell, C., Molofsky, L. (2016) *A Long Duration Time-Integrated Sampler for Groundwater Monitoring*. Presented at the Battelle Tenth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, California, May 22-26, Battelle Memorial Institute.
25. Brewer, R., Nagashima, J., Rigby, M., Schmidt, M., and O'Neill, H. (2014) *Estimation of Generic Subslab Attenuation Factors for Vapor Intrusion Investigations*. Groundwater Monitoring & Remediation, December 15, 2014, DOI: 10.1111/gwmmr.12086.
26. O'Neill, H., Yoshikawa, P. (2014) *High Resolution Site Characterization Approach: Rapid Sample Collection with High Quality Analyses Targeting VOCs/SVOCs*. Presented at the IX International Seminar for Remediation and Redevelopment of Contaminated Sites - EKOS Brasil, São Paulo, Brazil. October 1.
27. O'Neill, H., Vasquez, M., Kessel, L. (2014) *High-Resolution Screening-Level Assessments for Source Identification and Plume Delineation within Volcanic Tuffs in San Jose, Costa Rica*. Presented at the Battelle Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 18-22, Battelle Memorial Institute.
28. Brewer, R., Nagashima, J., Rigby, M., Schmidt, M., and O'Neill, H. (2014) *Dungeons, Dragons, Pica Houses, and the Need for Alternative Vapor Intrusion Screening Tools*. Proceedings of the Battelle Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 18-22, Battelle Memorial Institute.
29. Mandelbaum, R., Zvikelsky, O., Meron, H., and O'Neill, H. (2014) *Effective High-Resolution Site Characterization Approach to Pinpoint Source Areas by Use of Advanced Passive Soil Gas Samplers*. Presented at the Battelle Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 18- 22, Battelle Memorial Institute.

30. Kessel, L., Woods, D., Wollen, A. and O'Neill, H. (2014) *Filling in the Data Gaps: Passive Soil Gas Technique Revealed PAH Sources with High-Resolution and Focused Remediation*. Presented at the Battelle Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 18-22, Battelle Memorial Institute.
31. O'Neill, H. (2014) *Advanced Passive Soil Gas and Passive Indoor Air Sampling Techniques—Case Studies*. 43rd Annual Environmental Show of the South, April 30.
32. O'Neill, H. 2013. *Advanced Passive Soil Gas Sampling – Collection of High Resolution, High Quality Data to Effectively Guide Sampling and Remediation Strategies*. Tennessee DEC Division of Remediation Staff Development and Training Seminar, October 16.
33. O'Neill, H., Wollen, A., Kessel, L. (2013) *Advanced Passive Soil Gas Sampling – Collection of High Resolution Site Characterization Data to Accurately Identify Source Areas and Effectively Guide Remediation Strategies*. CleanUp 2013 – 5th International Contaminated Site Remediation Conference, Melbourne, Australia. September 18.
34. Woods, D., Kessel, L., O'Neill, H. (2013) *Advanced Site Characterisation with Passive Soil Gas*. Presented at CleanUp 2013 – 5th International Contaminated Site Remediation Conference, Melbourne, Australia. September 18.
35. Meron, H., Gafni, N., Holland, E., Mandelbaum, R. (2013) *Delineation of a Jet Fuel Separated Phase Contamination in a Deep Aquifer using Passive Soil Gas (PSG) Sampling (Beacon)*. Presented at 12th International UFZ-Deltares Conference on Groundwater-Soil-Systems and Water Resource Management (AquaConSoil), Barcelona, Spain. April 17.
36. O'Neill, H., Pressley, M. (2013) *Advanced Passive Soil Gas Sampling – Collection of High Resolution Data to Effectively Guide Remediation Strategies*. Presented at Clemson Hydrogeology Symposium, Clemson, SC. April 4.
37. Johnston, J., MacDonald Gibson, J. (2013) *Spatiotemporal Variability of Tetrachloroethylene in Residential Indoor Air Due to Vapor Intrusion: A Longitudinal, Community-Based Study*. Journal of Exposure Science and Environmental Epidemiology, 2013 Apr 3. doi: 10.1038/jes.2013.13. April 3. Beacon performed analyses of the study samples using passive sorbent tubes to collect time-integrated measurements.
38. O'Neill, H. (2012) *High Resolution Site Characterization and Indoor Air Sampling Techniques for VOCs/SVOCs*. Presented at U.S. EPA National Association of Remedial Project Managers (NARPM) Training Program, Henderson, NV. November 30.
39. O'Neill, H., Thornley, S. (2012) *High Resolution Site Characterization for VOCs: A Cost-Effective Approach to Identify Source Areas and Delineate Contaminant Plumes*. Presented at VIII International Seminar on Remediation and Redevelopment of Contaminated Sites, Sao Paulo, Brazil. October 22.

40. Vasquez, M., Kessel, L., O'Neill, H. (2012) *Aplicación del Método del Muestreo Pasivo de Gases Para Determinación de Contaminantes Volátiles en el Subsuelo, Casos en Costa Rica*. Presented at XI Congreso Latinoamericano de Hidrogeología, Cartagena, Colombia. August 20-24.
41. Redmond, J., Robinson, J., O'Neill, H. (2012) *Cost-Effective Site Characterization and Site Remediation Strategies: A Community-Supported Model of What Works with Even a Limited Budget*. Presented at Battelle Eighth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 21-24, Battelle Memorial Institute.
42. O'Neill, H. (2012) Passive Soil Gas Sampling: *A Cost Effective Approach to Identify Source Areas and Vapor Intrusion Pathways, Delineate Contaminant Plumes, and Optimize Remediation Systems*. Presented at U.S. EPA Technical Support Project (TSP) Federal Facility Forum Meeting, Oklahoma City, OK. May 3.
43. O'Neill, H., Thornley, S., Wollen, A., Kessel, L. (2012) *Effective Site Characterization for VOCs: A Novel and Cost-Effective Approach to Identify Source Areas and Delineate Solvent Plumes*. Presented at the EcoForum 2012, Sydney, Australia, March 7.
44. Vasquez, M., Kessel, L., O'Neill, H. (2011) *Application of Passive Soil Gas Sampling to Determine the Presence of Petroleum Hydrocarbons in Gas Station Subsurface: Two Cases in the Central Valley of Costa Rica*. Presented at International Congress on Subsurface Environment (CIMAS), Sao Paulo, Brazil, October 4.
45. O'Neill, H., Thornley, S., Wollen, A., Kessel, L., (2011) *The Importance of Applying Strict QA/QC Procedures in the Field and in the Lab to Produce Passive Soil Gas Data that Will Simultaneously Identify Hot Spots and Delineate Trace Concentrations in Groundwater*. Presented at CleanUp 2011, Adelaide, Australia, September 12.
46. O'Neill, H., and Thornley, S., (2011) *Low-Profile Site Characterization of a Large Urban Renewal Area by use of a High-Resolution Passive Soil Gas Technology*. Presented at Brownfields 2011, Philadelphia, PA, April 3-5.
47. Springer, D., Eberharter, J., Dow, B., O'Neill, H., Nathe, C., (2011) *Phased Sequential Soil Gas Investigations to Delineate a Soil VOC Source of Underlying Groundwater Contamination*. Presented at the 21st Annual International Conference on Soil, Water, Energy, and Air and AEHS Foundation Meeting, San Diego, CA, March 15-17.
48. O'Neill, H., Thornley, S., Kessel, L., Wollen, A., (2011) *High-Resolution Passive Soil Gas System to Identify Source Areas and Define Groundwater Plume*. Presented at the EcoForum 2011, Sydney, Australia, March 9-11.
49. O'Neill, H., and Thornley, S., (2010) *Indoor Air Sampling of VOCs: Long-Term Passive Diffusion Devices Challenge Study with Comparison to Active Methods*. Air and Waste Management Association Vapor Intrusion 2010 Specialty Conference, Chicago, IL, September 29-30.

50. McHugh, T., Gorder, K., Fiorenza, S., Philp, R., Kuder, T., Odenchantz, J., and O`Neill, H., (2010) *Use of Compound-Specific Isotope Analysis to Distinguish Between Vapor Intrusion and Indoor Sources of VOCs.* Proceedings of the Air and Waste Management Association Vapor Intrusion 2010 Specialty Conference, Chicago, IL, September 29-30.
51. O`Neill, H. and Odenchantz, J., (2010) *Wide-Area, Nonintrusive Characterization Technique at Munitions Disposal Site.* Proceedings of the Battelle Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 24-27, Battelle Memorial Institute.
52. Odenchantz, J. and O`Neill, H. (2010) *Sustainable, Low-Profile Investigation Technique Finds Numerous Contaminant Sources: Bronx Borough, New York City Example.* Proceedings of the Battelle Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 24-27, Battelle Memorial Institute, with 9-page paper in Proceedings.
53. O`Neill, H., Odenchantz, J., W. Bratton and K. Moser. (2010) *Innovative, Non-Intrusive Passive Soil Gas Collection Device Maps Large Carbon Tetrachloride Plume at the DOE Hanford Site, Washington.* Proceedings of the 36th Annual Waste Management Conference, WM2010, presented by WM Symposia, Session 72. Phoenix Convention Center, March 7-11.
54. Odenchantz, J., Thornley, S. and O`Neill, H. (2009) *An Evaluation of the Performance of Multiple Passive Diffusion Devices for Indoor Air Sampling of VOCs.* The Journal of REMEDIATION, Wiley Periodicals, Vol. 19, No. 4, Inc., pp. 63-72.
55. Odenchantz, J., and O`Neill, H. (2009) *New Technique for Passive Soil Gas Surveys: Advanced Analytical Procedures and Mass to Concentration Tie-In Approach.* EPA Region 6, 19th Annual Quality Assurance Conference, Dallas, Texas, Oct. 19- 23.
56. Odenchantz, J., and O`Neill, H. (2009) *Passive Soil Gas Survey Mass to Concentration Tie-In Procedure: Improved Technique For A New Realm Of Interpretive Power.* Proceedings, Annual Water Symposium (Joint Arizona Hydrological Society & American Institute of Hydrology), Scottsdale, Aug. 30-Sept. 2.
57. 54. Odenchantz, J., and O`Neill, H. (2009) *Passive to Active Tie-In for Soil Gas Surveys: Improved Technique for Source-Area, Spatial Variability, Remediation Monitoring, and Vapor-Intrusion Assessment.* The Journal of REMEDIATION, Wiley Periodicals, Inc., Vol. 19, No. 2, Spring Issue, pp. 71-83.
58. Odenchantz, J., O`Neill, H., and Johnson, P.C. (2009) *Mass to Concentration Tie-In for Passive Soil Gas Surveys: Improved Technique for Source Area, Spatial Variability and Vapor Intrusion Assessment.* Proceedings of the Air and Waste Management Association Vapor Intrusion 2009 Specialty Conference, San Diego, CA, January 27-30.
59. Odenchantz, J, Thornley, S., and O`Neill, H. (2009) *An Evaluation of Indoor Air Sampling Procedures: Short Duration vs. Long Duration Sampling.* The U.S.E.P.A. National Forum on Vapor Intrusion, January 12-13, Philadelphia, PA.

60. Byrnes, M with H. O`Neill and J. Odencrantz, Contributors. (2009) *Field Sampling Methods for Remedial Investigations*. CRC Press, New York, 344 pages.
61. Clarke, J., Goodwin, D., O`Neill, H. and Odencrantz, J. (2008) *Application of Passive Soil Gas Technology to Determine the Source and Extent of a PCE Groundwater Plume in an Urban Environment*. The Journal of REMEDIATION, Wiley Periodicals, Inc., Vol. 18, No. 4, pp. 55-62.
62. Odencrantz, J., Steinmacher, S., O`Neill, H., Case, J., and Johnson, P.C. (2008) *Residential Vapor Intrusion Evaluation: Long Duration Passive Sampling v. Short Duration Active Sampling*. The Journal of REMEDIATION, Wiley Periodicals, Inc., Vol. 18, No. 4, pp. 49-54.
63. 60. Odencrantz, J., Johnson, P.C., and O`Neill, H. (2008) *Mass to Concentration Tie-In for Passive Soil Gas Surveys: Improved Technique for Source Area, Spatial Variability and Vapor Intrusion Assessment*. Presented at Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation Conference, November 3-4 with 9-page paper in Proceedings.
64. Odencrantz, J., Steinmacher, S., O`Neill, H., Case, J. and Johnson, P.C. (2008) *Residential Vapor Intrusion to Indoor Air Comparative Study: Canisters vs. Sorbent Tubes vs. Passive Diffusion Samplers*. Presented at the 24th Annual International Conference on Soils, Sediments and Water, at the University of Massachusetts at Amherst, October 20- 23 with 6-page paper in Proceedings.
65. O`Neill, H. and Odencrantz, J. (2008) *Use of Advanced Passive Soil Gas Technology for Site Conceptualization and Closure Strategies*. Presented at the 24th Annual International Conference on Soils, Sediments and Water, at the University of Massachusetts at Amherst, October 20-23 with 10-page paper in Proceedings.
66. Odencrantz, J., Steinmacher, S., O`Neill, H., Case, J. and Johnson, P.C. (2008) *EPA Method TO-15, EPA Method TO-17 and British MDHS 80 Comparisons: DoD Regional Groundwater Plume and Residential Vapor Intrusion Measurements*. The 24th Annual National Environmental Monitoring Conference, August 11-15, Washington, D.C with 7-page paper in Proceedings.
67. Odencrantz, J., Steinmacher, S., O`Neill, H., Case, J. and Johnson, P.C. (2008) *Residential Vapor Intrusion to Indoor Air Comparative Study: Canisters vs. Sorbent Tubes vs. Passive Diffusion Samplers*. Proceedings of the Air and Waste Management Association Annual Meeting, Portland, OR, June 23-26.
68. Odencrantz, J., O`Neill, H. and Kirkland, J. (2008) *Canisters v. Sorbent Tubes: Vapor Intrusion Test Method Comparison*. Proceedings of the Battelle Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 19-22, Paper A-013, Battelle Memorial Institute, 7 pp.
69. Odencrantz, J. and O`Neill, H. (2008) *Groundwater Plume, Source and Risk Identification Using Passive Soil Gas*. Proceedings of the Battelle Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds—2008, Monterey, CA, May 19-22, Paper F-014, Battelle Memorial Institute, 5 pp.

70. Clarke, J., Goodwin, D., O'Neill, H. and Odenchantz, J. (2008) *Preliminary Investigation of a Perchloroethylene (PCE) Plume Using a Passive Soil Gas Survey*. Proceedings of the Battelle Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 19-22, Paper Q-022, Battelle Memorial Institute, 5 pp.

71. Clarke, J., O'Neill, H. and Odenchantz, J. (2008) *Assessment of Vapor Intrusion to Indoor Air, South Mesa State Superfund Site, Gilbert, Arizona*. Proceedings of the Battelle Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 19-22, Paper Q-023, Battelle Memorial Institute, 7 pp.