

Presenter Bios – Spring 2020 U.S. EPA/AEHS Vapor Intrusion (VI) Workshop: Why (When, Where, and How) You Should Continuously Monitor Indoor Radon, Differential Temperature and Pressure During Chlorinated VI Assessments

Dr. Chase Holton, Geosyntec Consultants, Denver, CO (CHolton@Geosyntec.com)

Dr. Chase Holton is a senior environmental engineer with Geosyntec Consultants in Denver, Colorado. Dr. Holton has over 9 years of environmental research and consulting experience, with expertise in contaminant fate and transport, including assessment and mitigation of the vapor intrusion pathway. His past research for the Strategic Environmental Research and Development Program (SERDP) involved the long-term monitoring of groundwater, soil gas, indoor air, and numerous environmental factors at a well-known VI research house. Chase continues to work toward improving the understanding of the VI pathway, including recent work with U.S. EPA's VI Science Team to develop standard operating procedures for indicators and tracers and continued collaboration with Colorado School of Mines, University of Kentucky, and Arizona State University.

Keri Hallberg, PE, Jacobs, Charlotte, NC (Keri.Hallberg@jacobs.com)

Keri Hallberg is a Jacobs Senior Vapor Intrusion (VI) Technologist and Project Manager and has 20 years of experience in environmental assessment and remediation. She became involved with assessing VI 13 years ago conducting Base-wide VI assessments for Department of Defense facilities. Keri is responsible for providing technical leadership for VI assessments and mitigation, applying best practices, standard operating procedures, and quality assurance procedures. She is also a seasoned project manager and a co-author for the Navy Environmental Sustainability Development to Integration (NESDI) VI Decision Framework and Assessing Temporal Variability in Industrial Buildings projects. Keri has conducted platform presentations at multiple conferences since 2012. She earned a bachelor's degree in Chemical Engineering from Auburn University and is a licensed Professional Engineer in North Carolina and South Carolina.

Dr. Andrew Kondash, RTI International, Durham, NC (akondash@rti.org)

Dr. Andrew (AJ) Kondash is a research environmental scientist at RTI International. His background in geochemistry and groundwater hydrology coupled with his expertise in quantitative analysis and managing large datasets led him to work on understanding indicators, tracers, and surrogates for vapor intrusion. He has experience measuring concentrations of naturally occurring radioactive materials in soil and groundwater, with multiple publications examining the mitigation of radioactive materials associated with oil and natural gas development. AJ holds a Ph.D. in Earth and Ocean Science and a master's degree in Environmental Management from Duke University.

Dr. Mark Kram, Groundswell Technologies, Santa Barbara, CA

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Dr. Mark Kram is a hydrogeochemist and the Founder and CTO of Groundswell Technologies, Inc.; a group specializing in automated monitoring and modeling of environmental sensor networks. Dr. Kram earned his Ph.D. in Environmental Science and Management from the University of California at Santa Barbara (UCSB), an M.S. degree in Geology from San Diego State University, and his bachelor's degree in Chemistry from UCSB. He has over 35 years of experience developing innovative environmental assessment techniques, has taught related graduate courses at UCSB, and has authored articles, book chapters and national standards on the subject. Dr. Kram has been active in the areas of sensor

development and implementation, innovative GIS applications, DNAPL assessment and management, expedited high resolution site characterization, vapor intrusion dynamics, mass flux based remediation design and assessment, monitoring well design and water sustainability, and holds multiple patents for hydrogeologic and chemical characterization tools and methods. He has played an instrumental role in the acceptance and commercialization of numerous technology successes that include direct push monitoring wells, high-resolution NAPL and hydrogeologic characterization, automated Cloud based sensor mapping, and automated real-time vapor intrusion geospatial assessment and response. Dr. Kram is a recipient of the National Ground Water Association's Technology Award and the American Society of Testing and Materials' Editors Award.

Dr. Loren Lund, Jacobs, Shelley, Idaho (Loren.Lund@jacobs.com)

Loren Lund is Jacobs Vapor Intrusion (VI) and Human Health Risk Assessment Practice Leader. He received a Ph.D. in biochemistry from Utah State University in 1992 and a B.S. in Chemistry from Utah State University in 1988. Dr. Lund has over 30 years of experience in environmental risk analysis and VI assessments, with an emphasis on human health risk assessments and applied toxicology. He became involved with assessing VI 25 years ago as a regulatory toxicologist for the state of Texas. He is a principal technologist and currently serves as Jacob's VI and risk assessment practice leader. Dr. Lund has helped organize, presented at, or attended all of the USEPA VI workshops since 2004. He has authored over two dozen papers on VI or human health risk assessments, has been an organizing committee member, session chair, speaker, or course instructor at over two dozen specialty conferences on VI since 2004. He has presented over dozens of VI webinar training sessions. His extensive practical experience and depth of understanding about VI complexities, uncertainties, and stakeholder perspectives have expedited the investigative process, facilitated development of realistic exit and closure strategies, and enhanced stakeholder communications.

Chris Lutes, Jacobs, Raleigh, NC (Christopher.Lutes@jacobs.com)

Chris Lutes of Jacobs is a nationally recognized expert in vapor intrusion (VI). He has worked on commercial and military VI projects in more than 18 states and several countries. He served on an ANSI/AARST committee that wrote a mitigation standard for 1-4 family residences. He coauthored four EPA engineering issues on VI: mitigation, air cleaners, passive samplers and excavation applications. He has conducted EPA research studies on uses of radon as a tracer in VI, temporal variability, soil vapor extraction and passive sampling. Mr. Lutes has an M.S. in Environmental Science and Engineering from UNC-Chapel Hill and a B.S. in Chemistry from UVa.

Dr. Brian Schumacher, U.S. EPA Office of Research and Development, Las Vegas, NV (schumacher.brian@epa.gov)

Dr. Brian Schumacher directs the Ecosystems Processes Division within the Center for Environmental Measurement and Modeling of the United States Environmental Protection Agency's Office of Research and Development. Brian was hired by the U.S. EPA in 1991 to take the lead and address ways to improve the sampling and analysis of soils contaminated with volatile organic compounds (VOCs). This research has led to his natural progression into the arena of vapor intrusion (VI). Dr. Schumacher has conducted research in numerous areas related to VI including: soil gas sampling methodologies; spatial and temporal variability of VOCs; passive VI sampling; influence of an installed mitigation system on the fluctuation of VOC and radon concentrations; preferential pathways; and looking for simple, efficient, and rapid methods to determine the potential for VI into a home or building. His current research is focused on wrapping up a study on the effectiveness of a soil vapor extraction system in

reducing/preventing VI into neighboring buildings. Brian has also initiated a new study of VI into large buildings that will examine spatial and temporal variability in a cold climate and subslab sampling techniques. An initial investigation of per- and polyfluorinated alkyl substances (PFAS) and their potential for VI is also underway.

Dr. Henry Schuver, U.S. EPA Office of Resource Conservation and Recovery, Washington, DC
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Dr. Henry Schuver, DrPH, authored the USEPA RCRA corrective action Environmental Indicators (EI) for both Groundwater Migration and Human Exposures in 1999. The Human Exposures EI created the expectation that all Resource Conservation and recovery Act (RCRA) cleanups will include an assessment of the potential for Vapor Intrusion. Since then he has been leading efforts to make the assessment of Vapor Intrusion exposures more accurate and practical. He is also responsible for other emerging science issues, including per- and polyfluorinated alkyl substances (PFAS), in USEPA's RCRA Cleanup Program in Washington DC.

Dr. Bhooma Sundar, U.S. EPA Region 5, Chicago, IL (sundar.bhooma@epa.gov)

Dr. Bhooma Sundar is a toxicologist and project manager at the RCRA Corrective Action Program at Region 5 EPA Land, Chemicals and Redevelopment division. She has over twenty years of experience in the fields of toxicology, risk assessment and environmental science. A well-recognized vapor intrusion expert in Region 5, Dr. Sundar provides technical assistance to corrective action project managers on human health risk assessment, vapor intrusion assessment and site remediation. Dr. Sundar is a two-time recipient of EPA's national notable achievement award. Before joining EPA in 2003, Dr. Sundar worked in the field of cancer drug pharmacokinetics at Rush Medical Center, Chicago. Dr. Sundar has a Ph.D degree in Biochemistry from Madras University in India and M.PH degree in Environment and Occupational health sciences from University of Illinois at Chicago.

Robert Truesdale, RTI International, Durham, NC (rst@rti.org)

Robert Truesdale is a Senior Research Geologist with RTI International. Mr. Truesdale has supported U.S. EPA research on multimedia environmental pollution issues for over 40 years, with work ranging from sampling and analysis to modeling and risk assessment. One of the principal technical authors of EPA's *Soil Screening Guidance*, Mr. Truesdale has been involved in vapor intrusion (VI) research and regulatory development since 2000, including work for the Indiana Department of Environmental Management and EPA's ORCR, ORD, and OUST. He has managed and organized 11 consecutive VI technical workshops and three stakeholder forums for EPA ORCR and ORD. He received a B.A. in Geology from Duke University in 1975 and a M.S. in Geologic Sciences from the University of Maine in 1977, where he conducted research on diatoms as indicators of the impact of climate change on Antarctic paleoecology. He has worked at RTI since 1978.

John H. Zimmerman, U.S. EPA ORD Center for Environmental Measurement & Modeling, Durham NC (zimmerman.johnh@epa.gov)

John H. Zimmerman is a research physical scientist with the U.S. EPA (RTP, NC). He has worked on and lead research activities focused on development, evaluation, and verification of methodologies for collection, transportation, and analysis of VOCs in soils, water and air for over 30 years. The recent focus of his research has been on solvent vapor intrusion (SVI) issues related to large buildings and an investigation of per- and polyfluorinated alkyl substances (PFAS) and their potential to be compounds of concern for VI.