

High-Resolution Site Characterization Methods and Applications for Evaluating LNAPL and Dissolved-Phase Plume Stability and Exposure Risk

West Johnson (west.johnson@columbiatechnologies.com) and Brent Graves (Columbia Technologies, Rockville, MD, USA)

Background/Objectives. Recent improvements in the collection and analysis of site characterization data at petroleum release sites have teamed multiple scientific disciplines to evaluate LNAPL bodies and dissolved-phase plume degradation for both new and stalled/historic petroleum releases. The purpose of this talk is to highlight the role of HRSC tools and methods for evaluating LNAPL and dissolved-phase plume stability and exposure risk, within the expanding science of plume stability and exposure characterization.

Approach/Activities. The presentation will outline evolving, multi-discipline techniques for characterizing LNAPL-bodies and dissolved-phase groundwater plumes, with an emphasis on the application of HRSC tools, application, and data interpretation. Source material will include references to previously published/presented concepts and data sets, with a primary focus on the role of HRSC methods and applications within the expanding field of oil and gas plume stability and exposure risk. Case studies and references to existing LNAPL guidance documents (i.e. ITRC, ASTM, API, etc.) will be incorporated to develop the role of HRSC in the evolving science of LNAPL plume stability and assessment of exposure risk.

Results/Lessons Learned. Incorporating HRSC data to evaluate source-area toxicity, plume-stability and exposure risk for oil and gas (petroleum) releases, reduces life-cycle costs to petroleum release closure while continuing to safeguard human health and the environment.