

## Risk-Based Approach to Site Management and Remediation

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### Summary

Historical operating practices at some oil and gas facilities have resulted in large-scale impacts to soil and groundwater quality. Remediating these impacts to generic guidelines would in itself result in a large-scale environmental footprint and is often cost-prohibitive. It may be possible to develop less conservative remediation guidelines that are equally protective of human and ecological receptors by conducting a site-specific risk assessment (SSRA). However, risk-based approaches to site management and remediation, requires a much higher degree of site characterization and evaluation compared to remediating to generic guidelines.

This presentation will focus on the application of SSRAs at upstream oil and gas sites with an emphasis on a quantitative approach to evaluating risk to receptors due to salinity or dissolved petroleum hydrocarbon contaminants of concern. The SSRA workflow follows a methodology based on hazard identification, exposure assessment, and risk characterization, all to support informed decision making. This methodology is executed through the development of a detailed conceptual site model (CSM), calibrated numerical model, and predictive simulations to evaluate baseline case and remediation options. A case study of an SSRA at a former oil battery site is also presented.