

Remediation Management of Complex Sites

John B. Price III (Washington State Department of Ecology, Richland, WA)
(john.price@ecy.wa.gov)

Carl Spreng (Colorado Department of Public Health and Environment, Denver, CO)
(carl.spreng@state.co.us)

Background/Objectives. The Interstate Technology & Regulatory Council (ITRC) authorized a team to prepare guidance on “Remediation Management of Complex Sites”. Despite nearly 40 years of remediation efforts in the United States and other industrialized countries, at some sites, complex site-specific conditions make it difficult to fully remediate environmental contamination using proven remediation approaches. A substantial portion of these remaining challenges is owned by the Department of Defense (DOD) and Department of Energy (DOE), two of the largest soil and groundwater cleanup programs in the world. A National Research Council (NRC) committee recently examined cleanup efforts nationwide and reported at least 126,000 sites across the country with residual contamination at levels inhibiting site closure and an estimated “cost to complete” of \$127 billion. Of these sites, roughly 10% are thought to be “complex”.

Approach/Activities. The ITRC team prepared a technical and regulatory guidance document describing a recommended process for remediation management at complex sites, termed “adaptive site management”. Following the ITRC consensus-building process, the team also described site challenges and how to integrate them into the conceptual site model, created a remediation potential assessment framework, described adaptive site management concepts for use when designing or revisiting a remedy, the value of setting interim objectives and performance metrics in addition to long-term site objectives, components of a long-term management plan, and decision criteria for adjusting, optimizing or reevaluating remedy performance.

Results/Lessons Learned. The guidance document can help regulators and project managers understand and apply adaptive site management principles and develop a long-term site closure strategy at complex sites. The guidance can also be useful to evaluate a site’s remediation potential to assess whether the site may benefit from an adaptive site management approach. The guidance offers tools and references for investigating complexities and improving the conceptual site model at complex sites as well as supporting specific aspects of remedy selection, implementation and long-term performance evaluation. Numerous case studies describe real-world applications of remediation and remediation management at complex sites. The guidance also describes techniques for effective stakeholder engagement at complex sites.