

Site Remediation and Closure

Environmental consulting has changed dramatically over the past decade, with emphasis shifting from site discovery and assessment to the remediation and ultimate closure of contaminated sites. This shift has brought about several new remediation technologies, innovative funding alternatives, and risk-based corrective action. Today's challenge is to synthesize site data, exposure risks, and remediation technologies to develop a cost-effective closure strategy that matches the objectives of the property owner. Development of a successful closure strategy should answer the following questions:

Has the site been adequately characterized to allow remediation of the source area?

Generally, it is more effective to aggressively address the source of contamination, even if the full extent of the contamination is not known. There are two main benefits to this approach - contaminant migration is reduced or eliminated, and the comprehensive assessment is more likely to be closure-oriented. Frequently, natural attenuation will be sufficient to remediate residual contamination subsequent to source remediation.

What are the potential contaminant exposure pathways? How do these affect long-term liability and property value?

Published regulatory standards are frequently conservative, and do not take into account the actual and foreseeable uses for the property. Many states allow development of site-specific standards which allow the consultant to customize the exposure pathways to match the intended property use. Perhaps limited excavation in combination with a property deed restriction is sufficient to meet regulatory and property objectives. Long-term monitoring may also be appropriate if there are no offsite/third party liability concerns and the property is to be held for several years. These issues should be addressed early in the project subsequent to eliminating any imminent hazards.

What are the most effective remediation technologies?

Technology selection is based upon several factors, including site geology, contaminant type, property objectives and timelines, and cost. When the environmental industry was in its infancy, "pump and treat" was the standard for site remediation. Today, "pump and treat" is considered the most costly alternative and is generally used only for liquid phase hydrocarbon (LPH) recovery, or containment of a fast-moving plume.

Environmental Compliance Services, Inc. (ECS) is currently using the following technologies to remediate several sites in New England and Florida:

- > Soil vapor extraction
- > Air sparging
- > Pure oxygen injection
- > Surfactant-enhanced soil flushing
- > High vacuum, multi-phase extraction
- > Butane injection for bio-stimulation
- > In-situ chemical oxidation
- > Subsurface fracturing for enhanced reagent delivery
- > Steam injection for enhanced recovery of LPH and volatiles
- > Enhanced anaerobic biodegradation using hydrogen release compounds (HRC®)

How is remediation of a contaminated property funded?

There are several ways to pay for site remediation - ECS accepts cash, checks and credit cards. However, there are many alternatives which can lighten the cash-flow burden. These include state funded reimbursement programs for leaking underground storage tanks, private insurance, and tax incentives through state and federally funded "Brownfields" programs.

For more information, please call (800) 789-3530 or visit our website at www.ecsconsult.com.

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