Savannah River Site Citizens Advisory Board

Recommendation 175
Monitored Natural Attenuation and Enhanced Passive Remediation

Background
A key concept in the DOE approach to addressing contaminated sites is careful and specific matching of technologies to target problems. Aggressive technologies are matched to source areas that pose a high risk grading down toward passive technologies that are matched to less concentrated and more dispersed contaminants. Natural attenuation occurs when the levels and/or mobility of contaminants are reduced through various naturally occurring chemical, physical, and biological processes. These processes include dilution, sorption, volatilization, chemical transformation, plant uptake, and biodegradation. Over time, natural attenuation can reduce the environmental impacts of contaminants, allow remediation goals to be met without human intervention, and significantly reduce the cost that would be incurred with aggressive technologies that may be no more effective over time.

Monitored Natural Attenuation (MNA) is the verification and assurance that there are no detrimental impacts to the environment or human health during the natural attenuation processes. A second step, called Enhanced Passive Remediation (EPR), identifies engineering interventions, if needed, to optimize the performance and to ensure that the attenuation process will operate for extended periods. To support implementation and use of MNA/EPR, an entirely new approach to long-term monitoring will be required.

Chlorinated solvents represent many of the largest and most challenging contaminated groundwater plumes at DOE sites across the country (including the Savannah River Site, the Oak Ridge Site and the Hanford Site). To facilitate implementation of MNA and EPR, the DOE Office of Environmental Management has sponsored an InteractiveWorking Group (IWG). The IWG is responsible for the successful completion of the development of the "next generation" MNA/EPR protocol for chlorinated solvents. As part of the IWG, Dr. Brian Looney from the Savannah River Technology Center chairs a Technical Working Group (TWG) that includes personnel from DOE, DOD, regulator agencies and the private sector and is tasked with specifying and documenting scientific approaches that will serve as the foundation of developing the next generation protocol for MNA and EPR of chlorinated solvents (Ref. 1).

Comment
The Savannah River Site Citizens Advisory Board (SRS CAB) supports the forward-thinking of DOE and SRTC to coordinate and promote investigation of such innovative processes nationwide, especially via the TWG spearheaded by SRTC. The SRS CAB believes and supports the use of such processes, especially where they can be most effective (i.e., in plumes containing reduced contamination levels that still require clean up). These natural processes can produce significant cost savings, which could be used to accelerate the removal of high-risk, more concentrated source areas.

Recommendation
The SRS CAB offers the following recommendations concerning the MNA/EPR efforts:

1. DOE-HQ and SRS should disseminate the current successes of MNA/EPR to stakeholders across the DOE complex to build a foundation of trust concerning the new approach and identify ongoing, possible or planned uses for SRS by March 22, 2004.
2. SRS should determine how aggressive technologies, such as in situ heating and in situ

chemical destruction methods, affect subsequent use of MNA/EPR in clean up of reduced contaminant concentrations in the same vadose zone and/or groundwater plume and begin to report the findings of the investigation by March 22, 2004.

3. The three agencies continue to work together to set clear boundaries for expanding the use of MNA/EPR at appropriate SRS contaminated sites and develop consensus on appropriate regulatory protocol for their use. Special emphasis should be placed on reaching accord regarding the longer times required for clean up via MNA/EPR and to educate stakeholders about this.
4. SRS provide periodic updates on the status of the work performed by the IWG in establishing and documenting new MNA/EPR paradigms.

References

1. Monitored Natural Attenuation and Enhanced Passive Remediation (MNA/EPR) for Chlorinated Solvents Technology Alternative Project, presentation to the Facility Disposition & Site Remediation Committee by Brain Looney, September 9, 2003 and presentation to the SRS Citizens Advisory Board by Bob Aylward, September 22, 2003.

Agency Responses

Department of Energy-SR
South Carolina Department of Health and Environmental Control (PDF)
Environmental Protection Agency (PDF)