



# ITRC TEAM PROJECT SUMMARY STATEMENT PRE-IMPLEMENTATION

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**ITRC Attenuation of Metals and Radionuclides Team**  
*Decision Framework for Applying Monitored Natural Attenuation Processes  
to Metals and Radionuclides in Groundwater*  
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## TECHNOLOGY/METHODOLOGY SUMMARY

### **State of the Technology/Methodology**

Until recently, there has been little regulatory guidance to support attenuation-based remedies for radionuclide and metals contamination. This lack has contributed to inconsistent application of those remedies and generally discouraged their consideration. The net result is that many sites face intractable closure problems.

Technical information on the dominant attenuation mechanisms was provided when the U.S. Environmental Protection Agency recently issued three volumes of technical guidance that specifically address monitored natural attenuation (MNA) of inorganic contaminants. Attenuation-based remedies for metals and long-lived radionuclides rely primarily on immobilization and toxicity reduction of contaminants. Except for a few radionuclides, the original contaminant remains in the subsurface so that documentation of the sustainability or permanence of stabilization and detoxification is crucial to assessing performance. This is a key difference between attenuation of inorganics versus that of organic compounds, which are destroyed by attenuation processes, and it has resulted in reluctance to accept attenuation-based remedies for metals and radionuclides.

Conclusion: The Attenuation Processes for Metals and Radionuclides (APMR) Team concluded that a decision framework was needed to provide a consistent basis for states, stakeholders, federal agencies, and site owners to evaluate and implement attenuation-based remedies. In December 2010, the APMR Team released a technical and regulatory guidance document entitled *A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater* (APMR-1).

### **The Future**

More and more sites with groundwater contaminated with metals or radionuclides will better understand which environmental aspects promote the effectiveness of MNA processes. Given the new guidelines and rationales in ITRC's technical and regulatory guidance document, regulators will be increasingly willing to accept MNA as a remediation option. As the acceptability of MNA for metals and radionuclide contamination grows, the body of knowledge will increase from new and varied case studies.

## **TEAM SUMMARY**

### **ITRC Team Process Attributes**

Formed in 2008, the APMR Team is composed of state regulators, public and tribal stakeholders, industry affiliate partners, members of academia, and federal representatives. The composition of the APMR Team was uniquely positioned to develop a framework to facilitate implementation of the new EPA guidance for MNA of metals and/or radionuclides. The decision framework provides logic for integrating EPA's four-tiered methodology into the remediation process.

### **Key Learning**

As part of the development of APMR-1, the Team conducted a web-based survey of state regulators to determine the existing state of knowledge and acceptance regarding MNA of metals and radionuclides as a remedy. Survey findings were considered while the team developed the scope and focus of the document. A subsequent questionnaire solicited information on how policies in various states allow application of MNA.

### **ITRC Team Next Steps**

Distribution of APMR-1 will be enhanced by presentations at conferences and symposia (six scheduled in 2011) and Internet-based training (IBT). Three IBT offerings based on the guidance document were scheduled for 2011; additional trainings will be considered for 2012. These efforts help ensure that the APMR-1 document will get into the hands of state and federal regulators, stakeholders, and contractors.