



Benefits of the Interstate Technology & Regulatory Council

ITRC –Successful use of Passive Diffusion Samplers in New Jersey Facility!

December 2004

Passive Diffusion Bag Sampler Success! Cost Efficient Long term Monitoring of Chlorinated VOC Plume at a former Manufacturing Facility in Northern New Jersey

Background

Operations at the site, a former manufacturing facility located in northern New Jersey, ceased in 1994 after having begun in the late 1800s. In the mid 1980's, Chlorinated Volatile Organic Compounds (VOC) were found to have impacted the alluvial and shallow bedrock aquifers beneath a portion of the site and the surrounding area. As a result, a Comprehensive Groundwater Monitoring Program (CGMP) was initiated in 1995 with State regulatory oversight. Using dedicated bladder pumps and low-flow purge and sample techniques, a total of 33 groundwater-monitoring wells are monitored on a regular basis as part of the CGMP.

Data collected since the initiation of the program was used to assess constituent plume boundaries with regard to spatial extent and constituent concentration. Because previous depth-specific data about constituent concentrations was known, and because these data indicate that the spatial extent and flow associated with the plume were stable and predictable at the 33 sampling locations, ITRC guidance indicated that it may be possible to vertically characterize constituent concentrations at these locations using PDBs.

PDB Guidance!

Current ITRC guidance offers two approaches for vertical characterization. The first is to characterize a subset of wells in the sampling program by deploying PDBs along the entire screened interval during a single event, with each bag representing no more than 5-feet of screen. During subsequent events, the wells in that subset are varied until all wells identified as requiring characterization have been sampled in this fashion. The second approach is to place PDBs at different depths along the screen at all locations identified as requiring vertical characterization, with each bag representing no more than 5-feet of screen. The depth of PDB deployment varies during subsequent events, until the full length of screen has been characterized. Both methods achieve the same goal, which is vertical characterization of constituent concentrations across the screened interval.

Recent Success using PDBs!

In early 2004, the State regulatory agency approved the use of passive diffusion bags (PDB) for ongoing groundwater sampling and characterization activities, and the vertical characterization sampling methodology was implemented for the first time at the site in May 2004.

Following initial implementation of the PDB methodology, a site-specific cost comparison was generated using the ITRC PDB Cost Model (Version 1.0). An analysis of PDB deployment costs versus traditional low-flow sampling methodology indicates that a significant cost savings was achieved using PDBs rather than traditional low-flow methodology, particularly with regard to personnel labor hours and waste generation and disposal costs. The use of PDBs at the site for this program resulted in approximate cost savings of 21% (around \$15,000 per year) over traditional low flow methodology. Had the low flow sampling equipment not been owned (rather leased or rented, the cost of which was not included in evaluating the economics in the 21% savings scenario), the savings over the existing low flow sampling method would have been even higher (44% or approximately \$29,000 per year).

Whom can I contact to learn more about this example of ITRC success?

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What is ITRC?

ITRC is all about environmental cleanup—getting the right technology or strategy applied to the situation at hand. Many times that “right technology” is a new technique, approach, or device that leads to faster, better, more cost-effective cleanup strategies. Often finding and implementing the “right” technology or strategy require innovation on the part of the site manager and industry consultant. Approving the “right” technology may require state environmental offices to change their decision-making process. ITRC teams, documents, and training courses not only provide information but also foster interaction within the environmental community. ITRC is a catalyst, providing a network of experts and industry leaders to think creatively and explore better methods of site characterization and remediation, leading to more efficient decision-making with an increased level of confidence and trust.

How does ITRC measure success?

So what has ITRC accomplished? How do we measure success within the framework of environmental cleanup? Protection of human health and protection of the environment are two of ITRC’s critical goals. Our accomplishments and success can be measured by the following:

- Assistance to the community
- Acceleration of cleanup—Cutting approval time
- Decreasing the cost of cleanup—Slashing remediation costs
- Knowledge transfer to facilitate cleanup—Finding better solutions and transferring technologies
- Building expertise industry- and nationwide
- Paving the way for new technologies
- Long-term management of cleanup sites
- Institutional innovation—Breaking down regulatory barriers

ITRC captures the value of these accomplishments and exchanges in several ways. First, ITRC teams develop guidance documents to help regulatory staff, site managers, and technology vendors in the deployment of innovative technologies. Second, ITRC members form a network of technical resources, expertise, and support for implementing new ideas in their own organizations. Correspondingly, the measures of ITRC success include the extent to which guidance documents are used in deploying specific technologies at specific sites (product use), the degree to which ITRC helps create acceptance of innovative technologies as regular practice rather than as an extraordinary occurrence (institutional change), and the effectiveness of the synergy created in the environmental community as ITRC teams collectively address cleanup issues from various perspectives.

A complete list of guidance documents and training events is available at www.itrcweb.org.