



Training Gives Navy SMART Remediation Tools

Through its Environmental Restoration Program, the U.S. Navy is working hard to clean up contaminants in the environment from accidental spills and past waste disposal operations. The Interstate Technology and Regulatory Council (ITRC) is helping the Navy provide innovative solutions for the often complex environmental remediation process.

In the spring of 2012, two ITRC team members presented at the Navy's Remediation Innovative Technology Seminar (RITS), an annual Navy seminar series that showcases the latest technology, methodology, and guidance in the field of environmental remediation.

Heather Rectanus, an employee of Battelle Memorial Institute, one of ITRC's industry affiliates, and Nancy Ruiz from Naval Facilities Engineering Command (NAVFAC), visited six locations across the United States to share their knowledge of a new and improved integrated site cleanup strategy promoted by ITRC. Overall, 220 Navy Remedial Project Managers (RPMs) and contractors were trained through the RITS.

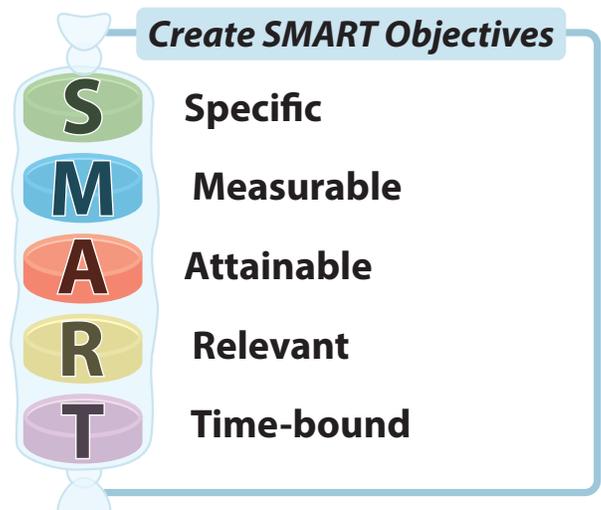
Increasing Knowledge

Training is an essential part of adopting new technologies and approaches. The Navy RITS presented an opportunity to share ITRC's recent technical and regulatory guidance document, [*Integrated DNAPL Site Strategy \(IDSS\)*](#), with Navy RPMs.

"For many, it was the first time they were introduced to the topic," said Rectanus. The RITS presentation,

based on the ITRC guidance, focused on the state of the practice for addressing sites contaminated with chlorinated solvents and a new holistic paradigm for approaching environmental remediation.

The ITRC guidance and an associated Internet-based training course highlight five important features of a restoration management approach: (1) improve the conceptual site model, (2) develop SMART remedial objectives, (3) integrate multiple treatment technologies, (4) monitor progress, and (5) reevaluate the remedy. Passing out Smarties® candies, Rectanus and Ruiz emphasized the use of SMART remedial objectives - **Specific, Measurable, Attainable, Relevant, and Time-bound**. While the guidance focuses on chlorinated solvents, the same fundamental process can be applied to other types of contaminated sites.



Saving Money

Because the ITRC guidance and training materials were already developed (and Rectanus and Ruiz participated in this process), their preparation time for the RITS was cut by one-third. Information was pulled from the ITRC Internet-based training course they helped develop and merged with applicable Navy guidance. Bringing this training to Navy locations saved an estimated \$250,000 in averted costs, since hundreds of Navy personnel did not have to travel. Additionally, the benefits of the RITS are multiplied when Navy RPMs use what they learned to develop more efficient and effective integrated site cleanup strategies.

One of the goals of the RITS, adds Rectanus, is "making sure attendees understand how to apply the training when they get back to their desks." A majority of attendees stated that the course was highly applicable to their work. The course was "so informative and helpful to apply [to] all projects!", said one attendee in Washington, DC.

ITRC's Integrated DNAPL Site Strategy (IDSS) guidance and training course help develop a consistent approach, broaden technical knowledge, and improve regulatory decisions that reduce costs and maximize remediation efforts.

Remediating DNAPLs - A Persistent Contaminant

Some of the most difficult problems at Navy environmental restoration sites involve the cleanup of Dense Non-Aqueous Phase Liquids (DNAPLs), a type of contamination that does not dissolve in water. DNAPLs were commonly used in a variety of industries as early as the 1930s. Even small quantities are toxic, and due to their stable nature and low solubility, they persist in the environment. It often takes decades to restore contaminated sites and involves prolonged treatment and several different remediation technologies. Remediation at DNAPL-contaminated sites can be a complicated process, which makes an integrated cleanup strategy beneficial.

According to ITRC's IDSS guidance, making progress at DNAPL contaminated sites, "requires a thorough understanding of the site, clear descriptions of achievable objectives, and the use of more than one remedial technology."

Harmonizing Approaches

The IDSS guidance was developed by a diverse group of experts, including those from the Navy, state regulatory agencies, U.S. Environmental Protection Agency, and private industry. Because the guidance is vetted by environmental regulators, the Navy has a better idea of what to expect when submitting work plans to regulatory agencies and feels comfortable bringing concepts from the ITRC guidance to their many stakeholders. This is the "crowning glory of it all" explains Rectanus – one guidance can be used by everyone.

IDSS is not the first ITRC resource to be featured during a RITS. Other seminars have featured [Use and Measurement of Mass Flux and Mass Discharge](#) to enhance groundwater plume management, assessing [Vapor Intrusion Pathways](#), and [The Use of Direct Push Well Technology for Long-term Environmental Monitoring in Groundwater Investigations](#).

To learn more about ITRC's many guidance documents and training courses, which are offered for free, please visit the ITRC website at www.itrcweb.org.



Image by Bob Webster, Pryor, OK.

Integrated DNAPL Site Strategy (IDSS) in Action:

Kings Bay Navy Submarine Base was one of 13 case studies presented in ITRC's IDSS guidance. To achieve success and meet restoration goals, the Navy coupled technologies, a key concept from the IDSS guidance. This approach allowed for termination of the groundwater extraction and treatment system, eliminating a significant expansion of the system and at least 30 years of continuing operation and maintenance.

