



Quarterly Update

March 1999

ITRC completes its transition to ERIS

In 1998, ITRC began the process of transitioning to a host organization with national membership. The result is a new affiliation between ITRC and the Environmental Research Institute of the States (ERIS). ERIS is a 501(c) 3 nonprofit educational subsidiary of the Environmental Council of the States, an organization of state environmental agencies. Affiliation with ERIS is a major milestone for ITRC, lending a national perspective to the four-year-old organization and helping ITRC expand state participation. The Western Governors' Association and the Southern States Energy Board will remain involved with ITRC and support regional outreach efforts.

New people at the helm

ITRC recently experienced some management changes. Rick Tomlinson, who formerly served ITRC as the circuit rider from WGA, is now ITRC's new project manager, having taken over from Nancy Worst, who completed her one-year appointment as ITRC's first project manager. Before joining WGA, Rick served as Chief of the California Office of Environmental Technology. ITRC also welcomes Roger Kennett of the New Mexico Environment Department as its new cochair of the Leadership Team (formerly known as the Management Team). Roger, who was active in ITRC's predecessor organization—the Federal Advisory Committee to Develop Onsite Innovative Technologies, or the DOIT Committee—is interested in enhancing outreach to state regulators. Roger replaces Jim Allen, who's giving increased attention to his duties at California EPA but plans to continue his association with ITRC from a product team level. Brian Sogorka (NJ) is continuing his role as the other cochair. ITRC thanks Jim and Nancy for their dedication, expertise, and perseverance in furthering the organization's cause.

The Leadership Team is also pleased to welcome the participation of Carolyn Kiely, Hazardous Waste Action Coalition (HWAC), representing the industrial perspective. Including the two cochairs, the Leadership Team for 1999 includes the following members:

Linda Benevides (MA), Policy Advisory Board Liaison
Anne Callison, Public Stakeholder
Jim Harrington (NY), Verification Team Colead

Aimee Houghton, Public Stakeholder
Michael Jacobson, Industry Representative
Carolyn Kiely, Industry Representative
Mary Yelken (NE), State Engagement Team Lead
Nancy Uziemblo (WA), Verification Team Colead

TEAM UPDATES

Work teams gear up for 1999

ITRC work teams met in February to decide on their scope of activities for 1999.

❖ Denitrification

In 1999, a team of interested ITRC states will develop overview guidance defining the potential application of enhanced in situ biological denitrification in the natural environment. This document will provide readers with an awareness of the ubiquity of nitrate-contaminated ground water, sources of contamination, regulatory views, as well as traditional technologies for remediation. This document will be a valuable tool to regulators from agricultural states, such as New Mexico, Nebraska, Kansas, Minnesota, Idaho, Illinois, Iowa, and Wisconsin and to consultants proposing remediation alternatives at contaminated sites. The Denitrification Team, led by Bart Faris (NJ), plans to meet in Albuquerque on April 9.

❖ Dense Nonaqueous Phase Liquids (DNAPLs)

The DNAPLs Team plans to foster a better understanding of the applicability, cost, and limitations of technologies for characterizing and remediating dense nonaqueous phase liquids. If the team discovers through its research that a technology overview doesn't currently exist on DNAPLs, it will produce one that will include descriptions of current technologies and parameters for their use, cost and performance data, case studies, and related regulatory issues. The production of the overview will help the team assess the current state of DNAPL technologies. The leader of the DNAPLs Team has not yet been determined.

❖ In Situ Chemical Oxidation

This new team for 1999 has been combined with the DNAPLs Team. The team's initial effort will be limited to a peer review of current research that is under way through DoD's Environmental Security Technology Certification Program (ESTCP). The leader of the In Situ Chemical Oxidation Team is Tom Stafford (LA).

❖ Permeable Barrier Walls (PBW)

Due to the unprecedented success of the In Situ Bioremediation Team's training courses on natural attenuation, the PBW Team decided to present in 1999 its own series of 1-1/2-day training courses. The permeable reactive barriers course was developed in cooperation with EPA and the industrial members of the Remediation Technologies Development Forum (RTDF) and is designed to assist professionals in the regulatory community in overseeing the design, implementation, and monitoring of ground-water remedies that involve the deployment of permeable reactive barriers. The course will also benefit industry professionals and environmental consultants through the technical information that will be presented as well as through interaction with regulators and other professional colleagues. In 1999, the course will be offered in Boston (June 22–23), Seattle (August 10–11), Philadelphia (September 21–22), and Dallas (November 16–17). The course will also be presented in 2000.

This year, the PBW Team will also review three documents that the Naval Facilities Engineering Service Center will be publishing. The documents will include a sampling analysis plan, a progress report with monitoring data, and a collection of performance and longevity data. The Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) are funding the production of the documents, and the Department of Defense is allocating \$15,000 to \$20,000 to the PBW Team for the review of the documents. Matthew Turner (NJ) leads the PBW Team.

❖ Phytoremediation

Because the Metals in Soils Team will turn its attention in 1999 to the study of the application of phytoremediation for remediating organic contamination, the team has renamed itself the Phytoremediation Team. The Phytoremediation Team plans to pursue three activities during 1999.

1. Create a decision-tree-type document that will assist state regulators, vendors, industry, and the public in determining if phytoremediation is an appropriate technology for a contaminated site.
2. Prepare a questionnaire designed to solicit relevant technical and regulatory information about phytoremediation from responsible parties and regulators at approximately 20 sites where the technology has remediated or is remediating organic contamination. The team will use contacts listed in EPA's *Introduction to Phytoremediation*. Results from the questionnaire will lead to the third activity.

3. Prepare a draft document (which incorporates the decision tree) on the regulatory and technical issues involved in carrying out phytoremediation projects.

Bob Mueller (NJ) and Dib Goswami (WA) are the team's coleaders.

❖ Radionuclides

The Radionuclides Team seeks to facilitate the cleanup of soil and water contaminated with radionuclides by fostering dialogue among states, stakeholders, and federal agencies. Through its work products, this team will increase awareness of issues and procedures, encourage regulatory cooperation, and share technological successes. An e-mail list server has already been set up and is successfully being used to facilitate communication among team members. The team also plans to produce:

- ▼ a quarterly newsletter for posting on the ITRC Web site. The newsletter will report the team's progress and share site-specific issues and technologies, site activities and status, and technology demonstrations.
- ▼ a list of technologies for remediating radionuclides. The listing, which will be annotated and include implementation examples, will serve as a supplement to EPA's *Technology Screening Guide for Radionuclides*.
- ▼ an annotated bibliography of publications and a glossary of terms relevant to site characterization, fate and transport of radionuclides, innovative technologies, and institutional controls.

Tom Schneider (OH) and Carl Spreng (CO) are the leaders of the Radionuclides Team.

❖ State Engagement

State Engagement, a major initiative for ITRC in 1998, is in the process of solidifying state commitment to the consideration, evaluation, and use of innovative environmental technologies. This process is a proactive approach in states to enhance environmental protection by creating a framework that helps states accept technology performance information from other states and implement solutions to regulatory barriers. The State Engagement Team's 1998 accomplishments included:

- ▼ formally establishing state points of contacts (POCs) in states where ITRC is active,
- ▼ publishing a *State Engagement Playbook* for POCs, which provides concise information about team member roles and detailed fact sheets on each ITRC work product,

- ▼ conducting regional training meetings to provide state POCs opportunities to more clearly understand their roles and discuss strategies and schedules to achieve team objectives, and
- ▼ documenting 84 examples (as of January 1999) of benefits produced through ITRC products and services, including 32 cases in which ITRC guidance documents were used at sites, producing benefits in time and money.

The State Engagement Team continues in 1999 with a theme of "Building ITRC Successes," a process that builds upon previous State Engagement activities and focuses on providing additional tools, resources, and training for state and federal regulators, environmental consultants, industry, and public and tribal stakeholders. Mary Yelken (NE) leads the State Engagement Team with assistance from Ted Joy, circuit rider from SSEB, and a new circuit rider from WGA, who will be hired to replace Rick Tomlinson, who has assumed ITRC project manager duties.

❖ Unexploded Ordnance (UXO)

This is a new team for 1999. The UXO Team has identified 14 states that may wish to participate in documenting case studies of UXO sites needing risk management. The team plans to meet in conjunction with the UXO Forum, which will be held in Atlanta, May 25-28. Jim Austreng (CA) is the team lead.

❖ Verification

In 1999, the Verification Team will continue to document responses and obtain additional agreement letters to support their 1998 work product, *Multi-state Evaluation of Elements Important to the Verification of Remediation Technologies*. The team plans to issue a revised report with the information they continue to receive.

Multi-state Evaluation of Elements Important to the Verification of Remediation Technologies summarizes the results of a comprehensive study the team conducted to further define and understand the type of data states need from verification programs' technology evaluations. The team created a matrix containing 113 discreet categories of data provided by 11 verification programs. The team then asked states and stakeholders to identify and label each type of data as either essential, nice-to-have, or unnecessary. These rankings indicated the value to states of particular types of data. A total of 16 states, 11 verification programs, and four stakeholder organizations contributed to the study. By understanding states' needs for various types of verification data and providing this information to verification programs, the Verification Team is encouraging verification programs to produce output that

can be used by states in making better and faster remediation technology decisions.

The next Verification Program Summit is in April 1999 during the International Environmental Technology Expo '99, sponsored by ITRC and the New Jersey Department of Environmental Protection (NJDEP). Nancy Uziemblo (NJ) and Jim Harrington (NY) lead the Verification Team.

Teams completed in 1998

Several teams active in 1998 are closing out their activities and wrapping up their final products.

❖ In Situ Bioremediation (ISB)

During 1998, the ISB Team completed a regulatory and guidance document, *Technical and Regulatory Requirements for Enhanced In Situ Bioremediation of Chlorinated Solvents in Groundwater*. This document focuses on anaerobic and aerobic parameters along with various regulatory issues, related to enhanced in situ bioremediation technologies. In addition, several case studies were conducted to emphasize the broad interpretation of related regulatory issues, as well as various efforts directed toward gaining input from EPA on these issues. Paul Hadley (CA) was the leader of the ISB Team in 1998.

The ISB Team, in coordination with the Remediation Technologies Development Forum (RTDF), also developed and held training workshops for regulators and non-regulators on the topic of natural attenuation. These workshops, designed to help participants identify whether natural degradation processes are occurring at a site, proved successful as a method of outreach to regulators. The work team attained its goal of training 800 regulators within as many states as possible.

❖ Low Temperature Thermal Desorption (LTTD)

The LTTD Team began its work in 1996, recently completed all of its tasks, and has been dissolved. The purpose of the group was to develop documents that specify minimum technical (not regulatory) requirements to provide predictability for vendors and serve as a resource for states to use in developing requirements. During 1998, the group produced its third document in a series entitled *Technical Requirements for On-site Thermal Desorption of Solid Media and Low Level Mixed Waste Contaminated with Mercury and/or Hazardous Chlorinated Organics*. This document has been distributed for ITRC state concurrence. Jim Harrington (NY) was the 1998 LTTD Team leader.

❖ Plasma

The Plasma Technology Team's regulatory overview was originally scheduled for publication in 1997, but it has been delayed by a court case in California. The court case

has been completed, and the document—*Regulatory Overview of Plasma Technologies*—is now being updated. Terry Escarda (CA) was the 1998 leader of the Plasma Technology Team.

UPCOMING EVENT

Expo '99 offers opportunity for ITRC to gain international visibility

New Jersey's Department of Environmental Protection is playing host to the International Environmental Technology Expo '99. ITRC is among the cosponsors for the event, which will be held April 20–21 at the Convention Center in Atlantic City. The conference has been designed as an information exchange where participants can showcase new technologies or discuss technology needs. Conference planners expect attendees to include state and federal government officials from the technical, policy, and program level; environmental technology developers, vendors, and

users; representatives of the financial and insurance industries; environmental consultants; and academia.

Expo '99 offers ITRC an opportunity to gain visibility and get its products and services noticed by the right people in the environmental industry. In addition to the Expo '99 sessions and workshops, ITRC will be holding a Team Leader's meeting on the afternoon of April 20 and a joint POC and Team Leader meeting on the afternoon of April 21. On April 22, ITRC will hold a Joint Leadership Team and Team Leaders meeting. All ITRC meetings will be open for Expo attendees to observe so they can learn more about ITRC.

INTERNATIONAL ENVIRONMENTAL TECHNOLOGY



EXPO'99

April 20-21, 1999

Atlantic City
Convention Center

Atlantic City, New Jersey

Although ITRC is only able to cover the travel and registration expenses of Team Leaders, POCS, and the Leadership Team, others involved with ITRC are welcome and encouraged to attend at their own expense. ITRC's technical teams are planning individual meetings to take place during 1999.

For information about Expo '99 and registration materials, go to the conference Web site at <http://www.state.nj.us/dep/expo99>.

NEWS

1998 products appearing on the ITRC Web site soon

In 1998, ITRC work teams produced the following documents, which will soon be available on ITRC's web site at <http://www.sso.org/ecos/itrc>.

- ❖ *Natural Attenuation of Chlorinated Solvents in Groundwater—Principles and Practices*
- ❖ *Technical and Regulatory Requirements for Enhanced In Situ Bioremediation of Chlorinated Solvents in Groundwater*
- ❖ *Course Evaluation Summary for the ITRC/RTDF Training Course on Natural Attenuation of Chlorinated Solvents in Groundwater*
- ❖ *Metals in Soils 1998 Technology Status Report*
- ❖ *Regulatory Guidance for Reactive Permeable Barriers Designed to Remediate Metals and Radionuclides in Groundwater*
- ❖ *Regulatory Overview of Plasma Technologies—Updated*
- ❖ *Multi-state Evaluation of Elements Important to the Verification of Remediation Technologies*

ITRC IN ACTION

ITRC guidance documents are fostering state acceptance of permeable reactive barriers

by Matt Turner, New Jersey Department of Environmental Protection

Permeable reactive barriers are an effective, cost-effective method for the passive remediation of dissolved ground water contamination. This technology is gaining acceptance in the regulated community and is currently deployed as full- or pilot-scale applications in over 15 states. The technology involves the placement of a reactive media into the subsurface, where it will intercept the flow path of a ground water contaminant plume. Ground water is allowed to passively flow through the reactive media. As the contaminant comes into contact with the reactive media, it is degraded, precipitated, or sorbed. The design, monitoring, and understanding of the reactions within the system are critical to a successful application. Knowledge of site-specific conditions, including a complete site characterization and identification of a suitable reactive media, is necessary for deployment.

Permeable reactive barriers offer several advantages over conventional technologies such as a pump and treat system. For instance, reactive barriers are a passive in situ remedy with minimal operation and maintenance costs and no energy requirements. While this technology has been deployed full scale at a number of sites in the United States, it is still the subject of research and technology verification projects. One area currently under investigation is the long-term stability of the barriers. Because this technology has only been employed for several years, the life cycle of a reactive barrier can only be predicted through modeling.

What is ITRC's involvement?

ITRC formed the Permeable Reactive Barriers Team two years ago when the technology became a priority among ITRC states and federal partners. During the first year, the team developed a regulatory guidance document entitled *Regulatory Guidance for Permeable Barrier Walls Designed to Remediate Chlorinated Solvents* in addition to reviewing the U.S. Air Force document entitled *Design Guidance for Application of Permeable Barriers to Remediate Dissolved Chlorinated Solvents*. Both documents have now been finalized and distributed for ITRC consensus. This year, the team is developing a regulatory document entitled *Regulatory Guidance for Permeable Reactive Barriers Designed to Remediate Inorganic and Radionuclide Contaminants*, which will be finalized in early 1999. The team plans to develop a 1.5-day training course with the U.S. Environmental Protection Agency and the Remediation Technology Development Forum. Courses

are scheduled in the cities of EPA's regional offices beginning in June 1999.

How are ITRC guidance documents helping?

Through December 1998, ITRC has identified four examples of ITRC permeable barrier walls (PBW) guidance documents being used at specific sites to accelerate the review, approval, and installation of PBW technology. These examples identify and quantify significant savings in time and money, as well as cite increased confidence in the quality of the remediation results. These benefits are being reported not only by state regulators, but also by consultants and problem holders involved in site cleanup activities. The table on page 6 summarizes key information about each of these examples.

The first three examples in the table were published by ITRC in May 1998 in a booklet entitled *ITRC-States: Making an Impact*. The last example is new and will be published by ITRC next spring in an update to the May 1998 booklet. The cleanup participants involved at this new example at the Allen Bradley site in New Jersey have offered especially favorable comments about the value of ITRC guidance documents. For example, Steve Tappert, an environmental consultant from Vectre Corporation, said, "The initial meeting with the New Jersey Department of Environmental Protection in May [1998] was my first introduction to ITRC documents. The whole process—design through installation—took less than four months. That level of accelerated review is based upon a common pool of knowledge provided in the ITRC documents." Rockwell Automation, the site problem holder, and state regulators working on this project voiced similar appreciation for the way in which ITRC helped to make the process work better and faster while leading to results everyone could point to with satisfaction and pride.

Getting more information

ITRC guidance documents are available and can be downloaded directly from the ITRC Web page at <http://www.sso.org/ecos/itrc>. For further information on the ITRC Permeable Barrier Walls Team, contact Matthew Turner, team leader, at (609) 984-1742 or Brian Ellis of Coleman Research Corporation at (208) 375-9896. For information on the team's 1999 permeable reactive barriers training courses, see Team Updates.

Examples of time and money saved using ITRC's PBW documents

Site Name	Site Location	State Use	Impact of ITRC Document Use	PBW Savings (NPV) Versus Alternative	Time to Approve
Salem Gas Plant	Salem, MA	1st	Reduced overall state staff review time 250 hours (50%)	Not available	About 24 months
Caldwell Trucking	Fairfield, NJ	1st	Reduced design review time 10%	\$10,000,000	About 15 months
Mound Plume	Rocky Flats, CO	3rd	Reduced design review time 10%	\$2,700,000	10 months
Allen Bradley	Fairfield, NJ	2nd	Avoided 1 year delay	\$614,000	3 months

CONTACTS

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To provide comments, suggestions, or input for ITRC's Quarterly Update, please contact Elaine Specht, Waste Policy Institute, (540) 557-6071, elaine_specht@wpi.org