INTERSTATE TECHNOLOGY & REGULATORY COOPERATION WORK GROUP

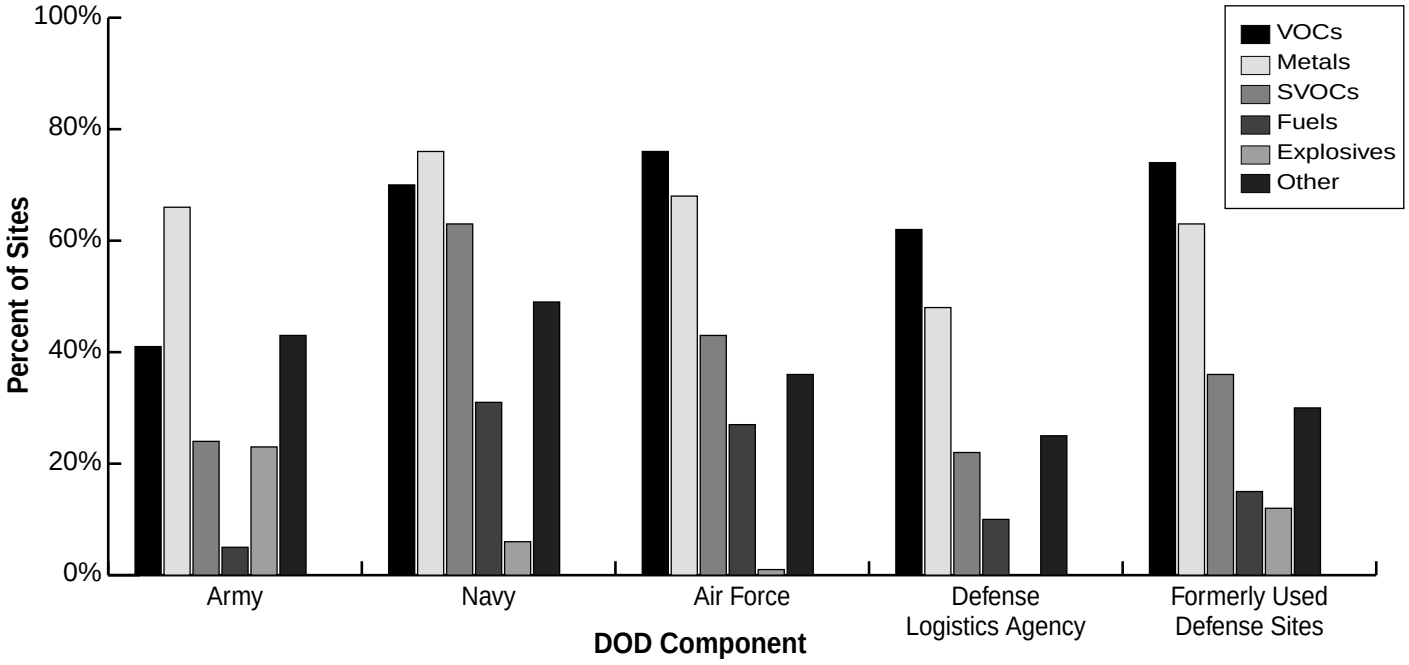
Quarterly Update

June 1999

ITRC is easing DOD's regulatory burden

The Department of Defense, along with other segments of the U.S. environmental remediation market, is facing a huge cleanup challenge. USEPA, in its *Clean Up the Nation's Waste Sites: Markets and Technology Trends, 1996 Edition*, estimates that DOD's portion of the approximately $187 billion remediation market is $29 billion (life-cycle costs in 1996 dollars), a 15 percent market share. In the graph below, the distribution of DOD's contaminant types across the various military components is displayed. ITRC's guidance documents and ITRC-sponsored training are addressing the technical and regulatory issues that surround the successful deployment of innovative technologies for remediating these contaminants.

Frequency of Major Contaminant Groups by Component at DOD Sites Needing Cleanup



Notes: Based on 3,212 sites needing cleanup at 480 installations for which data were available as of September 30, 1994. More that one contaminant group can appear at a site.

Source: DOD, Office of the Deputy Under Secretary of Defense (Environmental Security), Restoration Management Information System, November 1995.

Reprinted from USEPA's *Clean Up the Nation's Waste Sites: Markets and Technology Trends, 1996 Edition*, Office of Solid Waste and Emergency Response (EPA 542-R-96-005, PB 96-178041, April 1997), Exhibit 6-7, page 6-9.

Additionally, ITRC is hosting a new team this year focused on unexploded ordinance (UXO). From the following examples, it can be seen that ITRC and DOD collaborations have potential to save DOD time and money while streamlining the deployment of innovative environmental technologies.

Colorado—Natural attenuation training, offered through a collaboration of ITRC and the industrial members of the Remediation Technologies Development Forum (RTDF), is helping Colorado regulators consider the use of natural attenuation at over 17 facilities, including military sites where solvents, metals, radionuclides, explosives, or petroleum compounds are to be remediated.

Florida—A multiagency collaboration, among the Florida Department of Environmental Protection (an ITRC charter member), DOD, USEPA, and the University of Florida, conducted a pilot study in 1998 at a Jacksonville dry cleaner site. ITRC guidance documents and related support contributed to a synergistic approach that demonstrates how regulatory flexibility, intergovernmental cooperation, and

academic research interaction can lead to better environmental protection. To expedite the characterization of DNAPLs, primarily tetrachloroethylene (TCE), and to demonstrate the effectiveness of SCAPS/LIF technology, DOD diverted a rapid screening truck to the site to deploy a direct-push, laser-induced fluorescence probe. The knowledge gained from the innovative characterization method allowed the team to construct the pilot study of an in situ cosolvent flushing technology without compromising public health or the environment. The study, designed to capture all injected alcohol, resulted in a 90 percent or greater mass removal of DNAPL from the source area at this site. The site is being monitored to determine the effects of natural attenuation on residual contamination.

Kansas—Participation in ITRC's In Situ Bioremediation Team, use of the ISB guidance document, and natural attenuation training helped Tom Waller, a Kansas Department of Health and Environment project manager, recognize a classic biodegradation pattern within a chlorinated solvent plume at an active Army base in Kansas. By taking the lead in identifying the natural attenuation process, Tom accelerated the identification of remedial alternatives for the site, saving the Army significant expense. Tom's ITRC experiences were also key in natural attenuation being considered as a remedy for a chlorinated solvent plume at a Formerly Used Defense site. Tom helped refine the conceptual model for degradation pathways at the site by providing references from the natural attenuation course manual.

New Jersey—Two technologies that were studied by the ITRC Metals in Soils Team are being used in New Jersey at the Ft. Dix Army Base. ITRC soil washing and phytoremediation documents were useful in obtaining state approval for the RangeSafe system, which combines phytoremediation with soil washing, to clean lead-contaminated soil from small-arms firing ranges in an environmentally acceptable and cost-effective way. Phytotech, Inc. and Bescorp, two companies that participated with the ITRC Metals in Soil Team for the past two years, are partnering in the demonstration of the RangeSafe system.

Pennsylvania—The state's and DOD's participation in ITRC has led to an historic agreement for cleaning up more than 1,000 inactive military installations in Pennsylvania. On July 4, 1998, the Pennsylvania Department of Environmental Protection (PADEP), DOD and the military service branches, and the Defense Logistics Agency signed an historic multi-site cleanup agreement, which was a direct outgrowth of interactions among team members on the ITRC Policy Team. As a result of the agreement, a comprehensive effort to assess and eliminate potential environmental and public health risks at military sites in Pennsylvania has begun 10 years earlier than originally planned by the armed services. Some of the earliest discussions about the feasibility of this concept began between ITRC representatives from DOD and PADEP during an Albuquerque, New Mexico full ITRC meeting in January 1997. Both organizations were then participating on the ITRC Policy Team, which was examining issues associated with state voluntary cleanup programs and brownfields. This study provided a useful context within which to explore application of voluntary cleanup concepts at the state and federal levels. By working together as part of ITRC, they established a basis for the parties to pursue the concept on their own during the ensuing 18 months, which led to public announcement of the agreement on July 17, 1998.

ITRC's efforts to facilitate cleanups at DOD sites are in jeopardy

The UXO Team and other ITRC efforts to facilitate the cleanup of DOD sites are in jeopardy as a result of wavering DOD funding. While Sherri W. Goodman, deputy under secretary of defense, continues to express strong support for ITRC, others have been slow to participate. On April 6, 1999, Ms. Goodman issued a memorandum to the service branches stating "my office plans to continue supporting the ITRC, and I invite you to assist me by cofunding this investment." To date, the Department of the Navy has responded indicating that it has "seen positive benefits from similar activities designed to reduce interstate barriers…." We are hopeful that the departments of the Army and the Air Force will support ITRC; however, unless this support is expressed soon, ITRC may be forced to delay DOD-related efforts until funding is made available.

TEAM UPDATES

- Enhanced In Situ Biodenitrification (EISBD)
  The EISBD Team has almost completed a technical overview document for this developing technology, which promises to deliver a quicker, more cost-effective solution for dealing with nitrate-contaminated groundwater. EISBD may have applicability to a wide range of contamination—from overfertilization to concentrated animal feeding operations, explosives manufacture, wastewater treatment sites, DOD and DOE facilities, and UXO facilities. The EISBD Team plans to increase team membership and develop case studies and a regulatory guidance document in the next couple of years. These documents will be valuable tools to help regulators understand this emerging technology, its applications, and regulatory issues. Bart Faris (NM) leads the EISBD Team, (505) 841-9466, bart_faris@nmenv.state.nm.us.

❖ Dense Nonaqueous Phase Liquids (DNAPLs)

Baird Swanson (NM) has been appointed as the leader for the newly reconstituted DNAPLs Team, which now includes various members of the defunct In Situ Chemical Oxidation Team, which disbanded in late February. Baird has refined the scope of work and set an aggressive agenda so the team will be able to produce a technology overview of DNAPL characterization and remediation technologies by year's end. In addition to developing a technology overview, the team is working with EPA's Superfund Innovative Technology Evaluation, or SITE, Program in reviewing test plans for a side-by-side demonstration and comparison of three DNAPL technologies at the Cape Canaveral Air Station in Florida. The Interagency DNAPL Consortium (IDC), consisting of DOE, DOD, USEPA, and NASA, is sponsoring these demonstrations. The team also plans to review test plans for new DNAPL demonstrations, as well as participate in remediation efforts at the OK Tool Site in New Hampshire. Baird can be reached at (505) 841-9458, baird_swanson@nmenv.state.nm.us.

❖ Permeable Barrier Walls (PBW)

The Permeable Barrier Wall Team is currently partnering with USEPA and the Remediation Technologies Development Forum (RTDF) to provide training entitled "In Situ Permeable Reactive Barriers: Application and Deployment." The 1-1/2-day training course is designed to assist professionals in the regulatory community in overseeing the design, implementation, and monitoring of groundwater remedies that involve the deployment of permeable reactive barriers. Industry professionals and environmental consultants will benefit from the updated technical information presented, as well as the interaction with regulators and other professional colleagues. Each course will include 150 students made up of state and federal regulators, government representatives, and private-sector individuals.

The development of the training course is nearing completion after two successful trial courses that were held in Trenton, New Jersey on March 30–31 and Denver, Colorado on April 27–28. The course schedule for 1999 follows.

Boston, MA	June 22–23
Seattle, WA	August 10–11
Philadelphia, PA	September 21–22
Dallas, TX	November 16–17

The PBW Team is coordinating state attendance at the courses and has money available for travel reimbursement. ITRC state points of contact (POCs) or designees will be asked to coordinate regulatory enrollment from their states. More information on the course can be found at the training course Web site, http://www.trainex.org/prb or by calling Matthew Turner, PBW Team lead, (609) 984-1742, mturner@dep.state.nj.us or Brian Ellis of Coleman Federal at (208) 375-9896.

❖ Phytoremediation

The Phytoremediation Team has been putting together a decision tree for its regulatory and technical guidance document. The decision tree will be presented in a flow chart format with a series of yes-no questions, designed to help environmental professionals determine whether or not phytoremediation is appropriate for a given site. This decision tree will be for three media: soil, groundwater, and sediments. Cincinnati has been tentatively chosen as the site for the team meeting/workshop in September and will include speakers from the phytoremediation field, a site visit to a phytoremediation site, and a review of a draft of the team's technical and regulatory guidance document. Dib Goswami (WA) and Bob Mueller (NJ) lead the Phytoremediation Team. Dib can be reached at (509) 736-3015, dgos461@ecy.wa.gov; Bob can be reached at (609) 984-3910, bmueller@dep.state.nj.us.

❖ Radionuclides

At a three-day meeting in New Mexico in May, the Radionuclides Team observed technologies for containment, volume reduction, and stabilization of radioactively contaminated soil and debris. Most members of the Radionuclide Team attended this meeting, including a tribal representative. Sandia's Environmental Restoration Technologies Department hosted the meeting.

On May 10, the team toured the Alternative Landfill Cover Demonstration at Sandia National Laboratories in Albuquerque. Here, four alternative covers have been constructed side by side with conventional RCRA Subtitle D and RCRA Subtitle C covers and are being evaluated on the bases of construction costs and performance and water balance data. The site's Chemical Waste Landfill Remediation Project was also visited. On May 11, the team traveled to Los Alamos National Laboratory near Santa Fe where Thermo NUtech's Segmented Gate System is being demonstrated as part of DOE's Accelerated Site Technology Deployment. This system has achieved significant volume reduction of soils with heterogeneous radionuclide contamination. The team also observed the cold test site for in situ vitrification at a low-level waste landfill in Los Alamos. The technology will be used for stabilizing contaminated soils in the near future.

On the last day, the team heard presentations about EPA's Environmental Technology Verification Program, DOE's Innovative Treatment Remediation Demonstration

Program, and activities of the Environmental Restoration Technologies Department. Much of the rest of the meeting focused on partnering with these programs and providing state perspectives and comments on technologies described in the Technology Management System at DOE's Office of Science and Technology Web site at http://ost.em.doe.gov/tms. The attendees also reviewed and refined the list of potential team products, assigned short-term tasks among team members, and discussed the agenda for future meetings. Tom Schneider (OH) and Carl Spreng (CO) lead the Radionuclides Team. Tom can be reached at (937) 285-6466, tom.schneider@epa.state.oh.us; Carl can be reached at (303) 692-3358, carl.spreng@state.co.us.

❖ State Engagement

This year's State Engagement Team will focus on "Building ITRC Successes" by providing the appropriate tools and resources to our customers. The State Engagement Team is scheduling outreach and training activities in upcoming months based on several ITRC technical and regulatory guidance documents:

- In Situ Bioremediation - *Natural Attenuation of Chlorinated Solvents in Groundwater—Principles and Practices*
- In Situ Bioremediation - *Technical and Regulatory Requirements for Enhanced In Situ Bioremediation of Chlorinated Solvents in Groundwater*
- Permeable Barrier Walls - *Regulatory Guidance for Permeable Barriers Designed to Remediate Chlorinated Solvents and Regulatory Guidance for Reactive Permeable Barriers Designed to Remediate Metals and Radionuclides in Groundwater*
- Thermal Desorption - *Technical Requirements for On-Site Low Temperature Thermal Desorption of Non-Hazardous Soils with Petroleum / Coal Tar / Gas Plant Wastes and Chlorinated Organics and Mixed Waste and/or Mercury*

This ITRC product training is provided as a tool for regulators, consultants, and stakeholders to enhance their understanding and use of ITRC products and services and to strengthen the ITRC concurrence process within state environmental agencies. The training will be hosted by USEPA's Technology Innovation Office and conducted via Internet conferencing. To find out more about this ITRC product training, contact your ITRC point of contact (POC) or any team leaders. Information will also be posted on the ITRC Web site.

The State Engagement Team is also continuing to track and document ITRC successes. As ITRC products and services are used to promote the use of innovative technologies, we want to document the benefits being realized (e.g., time and money savings and/or institutional changes). If you have an ITRC success story to share with us, please contact Ted Joy, ITRC circuit rider from the Southern States Energy Board, (770) 242-7712, joy@sseb.org.

The ITRC Web site is now hosted by Global Environment and Technology Foundation (GETF) and can be accessed through our current address (http://www.sso.org/ecos/itrc). The Web site is being updated with the latest ITRC products and associated information and will be current by the end of June. If you have questions or need assistance in using the Web site, please contact Ted Joy (see contact information above).

The State Engagement Team is also holding conference calls with POCs and team leaders to improve the link between ITRC product development and ITRC product implementation. These calls will also address clearly researched regulatory issues impacting the deployment of innovative environmental technologies. For example, regulatory barriers impeding the use of in situ remediation technologies will be discussed. Mary Yelken (NE) is the State Engagement Team coordinator; she can be reached at (402) 471-2181, deq033@mail.deq.state.ne.us.

❖ Unexploded Ordnance (UXO)

The UXO Team held a summit meeting on May 27, 1999 in Atlanta, Georgia, in conjunction with the UXO Forum, which focused on barriers to deployment of advanced technologies. In preparation for the team's report, due October 31, team members discussed case studies and UXO issues. Jim Austreng (CA) is the UXO lead; he can be reached at (916) 255-3702, jaustren@dtsc.ca.gov.

❖ Verification

The Verification Team has published *Multi-State Evaluation of Elements Important to the Verification of Remediation Technologies*. Nearly 100 copies of the report have been distributed to states, verification programs, and other interested parties. The report will also be uploaded to the ITRC Web site. Verification programs are modifying their programs to incorporate data elements ranked as important by states. And states are continuing to tabulate and report their needs so verification programs can deliver relevant information to states. Vendors are pleased to have this information to help them design their technology demonstrations to be more applicable and useful to potential users.

Kentucky has been added to the list of states that have formally agreed that its responses in the matrix are a rep-

resentation of the state's information needs from a verification program. As documented in the report, Louisiana, Tennessee, and Illinois have also provided formal agreement on their responses to the matrix. The other 12 states participating have added valuable information to the report by offering state regulators' review of needs from a verification program.

Information from the Verification Team's efforts is being distributed to the public. The team sponsored a panel with representatives from nine verification programs at the Expo '99 in April. Program representatives discussed interactions with the states and improvements to the verification process to better assist users. In addition, Verification Team Leader Nancy Uziemblo (WA) was an invited speaker at the 10th Annual Applied Research, Development and Deployment Cleanup Technology Colloquium in May. These opportunities are allowing the ITRC report information to be shared with wider audiences, thereby encouraging state and verification program interactions and evolving into memorandums of agreement (such as the agreement between EPA and DOD's Environmental Security Technology Certification Program, or ESTCP). In addition, this information is also useful to nonremediation programs, such as the Massachusetts STEP stormwater protocol development and technology demonstration.

Further teamwork will include updates of the report on the ITRC Web site, continuing public outreach on the report information, and additional meetings with states and verification programs. These efforts are expected to improve information, enhance knowledge of the technologies being verified, and efficiently promote technology deployments at state and federal sites. Contact Nancy Uziemblo (WA), Verification Team lead, at (509) 736-3014, nuzi461@ecy.wa.gov.

ITRC goes global at Expo '99

The International Environmental Technology Expo '99 in Atlantic City attracted more than 600 participants from over 25 states, Canada, and Germany, who took advantage of this unique forum to demonstrate or learn about the latest technologies for solving or preventing environmental problems. This first-ever event was cosponsored by the New Jersey Department of Environmental Protection, USEPA, the New Jersey Corporation for Advanced Technology, and ITRC.

Expo '99 featured two days of workshops, covering cutting-edge technologies to monitor and improve air and water quality, dredging, data management, international trade, technology verification/certification, and brownfields site remediation. Many of these areas were priority interest areas for ITRC that were unable to be funded in FY '99. The expo provided an opportunity for ITRC members to become aware of the latest developments in these interest areas.

Additionally, ITRC sponsored 10 sessions designed to complement various work products, including in situ remediation technologies for the saturated zone, remediation technologies for the vadose zone, UXO, radionuclides, DNAPLs, and manufactured gas plant (MGP) wastes. Each of these sessions was comoderated by an ITRC member and a private-sector representative and provided an opportunity to focus on success stories and connections to relevant ITRC documents. ITRC session comoderators were Paul Hadley of California (saturated zone sessions), Jim Harrington of New York (vadose zone sessions), Matt Turner of New Jersey (DNAPLs, MGP), Tom Schneider of Ohio (UXO, radionuclides), and Nancy Uziemblo of Washington (technology verification/certification).

The expo also provided an opportunity to introduce and distribute the latest ITRC guidance document, *Technical and Regulatory Requirements for Enhanced In Situ Bioremediation of Chlorinated Solvents in Groundwater.*

In addition to the workshops, Expo '99 featured an exhibition hall with over 85 exhibitors representing technology users, vendors, consultants, government agencies, and universities. Governor Christine Whitman officially opened the exhibit hall, and her remarks were followed by presentations by Commissioner Shinn from New Jersey, Secretary Durand from Massachusetts, and Secretary Seif from Pennsylvania. All these environmental agency leaders spoke of ITRC and the value of participating in multistate organizations.

Through the ITRC booth, Expo '99 attendees were able to become familiar with ITRC products and speak with ITRC staff and state representatives involved in ITRC work teams. Exposure to these segments of the environmental community has been a goal of the ITRC for some time, and Expo '99 provided this forum.

ITRC enjoys high visibility at DOE conference

As a sponsor of the 10th Annual Applied Research, Development and Deployment Cleanup Technology Colloquium, ITRC made its presence known at this meeting held May 11–14 in Scottsdale, Arizona. Beginning with a welcome from Roger Kennett, ITRC's new codirector, and continuing with presentations by Bob Mueller (Phytoremediation Team), Paul Hadley (In Situ

Bioremediation Team), Michael Jacobson (Leadership Team), and Nancy Uziemblo (Verification and Leadership teams), ITRC speakers reinforced the conference theme of helping DOE's Office of Science and Technology in "Building a Cohesive, Integrated National Program to Develop and Deploy Innovative Cleanup Technologies."

Roger shared pertinent information about ITRC with the attendees and emphasized the positive benefits ITRC is having on improving the regulatory environment for innovative environmental technologies. Bob described the work the Phytoremediation Team will undertake in the current year as well as future plans to participate with Phytotech in the demonstration of the RangeSafe system, combining phytoremediation with soil washing, and with the Remediation Technologies Development Forum (RTDF) to develop a phytoremediation training course. Paul shared some impressive numbers that point to the success of "Natural Attenuation of Chlorinated Solvents in Groundwater," a course ITRC developed in collaboration with RTDF: 929 regulators and 719 nonregulators attended the course during its 12 offerings in the past two years.

Michael moderated the session on verification and kicked off the topic with a presentation that provided background on 23 verification programs. Nancy explained the process the Verification Team used in producing its 1998 work product, *Multi-State Evaluation of Elements Important to the Verification of Remediation Technologies*, which reports on the value to states of 113 data elements provided by 11 technology verification programs. Paul spoke again, as a stand-in for Jim Allen, about the California Environmental Protection Agency's environmental technology certification and verification programs. Rick Tomlinson, ITRC project manager, was a moderator for several sessions. The conference proved to be an excellent stage for showcasing the positive changes the ITRC is bringing about on the regulatory front through its tools and training.

UPCOMING EVENTS

Regional deployment workshop to be held in Northwest

The next in a series of state-led regional technology deployment workshops—**Using Contract Reform and Regulatory Flexibility to Expedite DOE Cleanups: A Northwest Regional Workshop**—is scheduled for Richland, Washington July 20–21. The workshops, located in areas near DOE sites, bring together technology users and developers, environmental regulators, consulting engineers, and citizens to discuss and develop incentives for deployment of innovative technologies at the local DOE site. Working in small groups and then reconvening to share ideas, participants discover incentives for affecting the contracting, regulatory, financial, technical, and institutional aspects of deployment.

The lead organizations for the workshops are the Southern States Energy Board and the Western Governors' Association. ITRC is a cosponsor, along with EPA, the Hazardous Waste Action Coalition, DOE host states and sites, and DOE's Office of Science and Technology. For more information, contact Michael Jacobson of the Pacific Rim Enterprise Center. Michael is a member of the ITRC Leadership Team and can be reached at (206) 224-9934, mjacobson@pacific-rim.org.

Wrapping up the ITRC natural attenuation courses

At a briefing in Washington, DC, Paul Hadley (CA) will wrap up for federal managers a series of natural attenuation courses that ITRC recently concluded with the help of the Remediation Technologies Development Forum. The course was successful in reaching over 900 regulators and 500 consultants and in distributing over 2,000 copies of an ITRC guidance document on natural attenuation of chlorinated solvents in groundwater. The training course and guidance document provided state-of-the-art information on natural attenuation, its appropriate use, and limitations in remediating sites contaminated with chlorinated solvents. If properly applied, natural attenuation can be used as a complete remedy at approximately 15 percent of the nation's chlorinated solvent–contaminated sites and result in cost savings of as much as $7.8 billion in overall remediation costs. Paul will present the briefing Tuesday, June 29 from 8:45 a.m. until 2:00 p.m. at the DOE Forrestal Building (the main DOE building on the Mall), 1000 Independence Avenue, Washington, DC. A working lunch is planned.

CONTACTS

For questions or comments regarding ITRC, please contact Rick Tomlinson, ITRC project manager, Environmental Council of States, (202) 624-3660.

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.