

**FEDERAL REMEDIATION TECHNOLOGIES ROUNDTABLE MEETING**  
**Arlington, Virginia**  
**November 20, 1997**

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**FEDERAL REMEDIATION TECHNOLOGIES ROUNDTABLE MEETING**  
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**INTRODUCTION/OPENING REMARKS**

Walt Kovalick, U.S. EPA/TIO, welcomed the attendees and opened the meeting of the Federal Remediation Technologies Roundtable by noting the publication of a monograph series on various remediation technologies by the American Academy of Environmental Engineers. The series was funded by U.S. EPA and DOE, hence copies of the series can be printed for those agencies without having to pay royalties. Dr. Kovalick introduced the theme for this meeting of the Roundtable: Dense Non-Aqueous Phase Liquids (DNAPLs). (At previous meetings, the member-agencies agreed to use the general meetings of the Roundtable to focus on special remediation issues through technical presentations in addition to dealing with Roundtable business. For this and the next Roundtable meeting, the member-agencies will take up the issue of DNAPLs: this meeting to focus on technologies for locating and abiotic techniques for treating DNAPL contamination; the next meeting to focus on bioremediation of DNAPLs.) Dr. Kovalick introduced the keynote speaker, Bill Wisenbaker, U.S. DOE/OER, substituting for James Owendoff.

Mr. Wisenbaker noted the challenges posed by DNAPLs to the remediation efforts of DOE and other agencies. Citing a recent study by the National Research Council, Mr. Wisenbaker listed some of the conditions (heterogeneity of soils, etc.) that render conventional technologies, such as pump-and-treat and soil vacuum extraction, ineffective in dealing with DNAPLs. Mr. Wisenbaker noted DOE's recent cooperative work on monitored natural attenuation projects, especially in dealing with leaking underground fuel tanks. DOE also is organizing a conference on natural attenuation scheduled for early 1998. The conference is being organized in cooperation with U.S. EPA's Federal Facilities Restoration and Reuse Office and public interest groups.

A complete list of participants is attached to this summary (see Attachment 1).

**ADVANCES IN CONTROL—PART 1: DNAPLS IN GROUNDWATER**

***Optimization of Pump and Treat Remediation***

Kathy Yager, U.S. EPA/TIO, gave an overview of a project undertaken by her office to examine ways to optimize pump and treat systems for ground water cleanup. Optimization in this context is a function of cost minimization and performance maximization. Ms. Yager identified the approaches to optimization to be examined during the study: a survey to the remediation community to determine what methods of optimization are used in the field, a literature search, and a demonstration project to evaluate the effectiveness of hydraulic optimization modeling at existing pump and treat sites. Ms. Yager noted that the Air Force has been engaged in long-term monitoring work, and EPA is working with the USGS on optimization modeling.

Ms. Yager said the next steps for demonstration project study are to form an advisory group and select demonstration sites. The advisory group is to be made up of stakeholders including regional representatives and consultants. Ms. Yager asked the attendees for nominations for the advisory group. The study also will require four separate demonstration sites, preferably DoD, DOE, RCRA, or state sites. Again, Ms. Yager asked for nominations. In response to a question from Stephen Warren, U.S. DOE/OER, Ms. Yager said the initial function of the advisory group will be to help with demonstration

site selection, which should require only one or two meetings. In response to another question, Ms. Yager said some of the site parameters for the study are known, including time frame (two years or more), flow needs, etc. Ms. Yager said the ideal demonstration site would not include a system pumping from fractured bedrock and would have a relatively small volume of NAPL. Little support would be expected from the demonstration site host aside from consultation and follow-up on recommendations. Scott Edwards, U.S. DoD stressed that the optimization study should focus on closing projects out by answering the question: “when do we turn off the pumps?”

***Policy Developments: EPA Policy Directive***

Dr. Kovalick distributed and reviewed a new interim final OSWER policy on monitored natural attenuation (MNA), which was issued on November 18, 1997. Dr. Kovalick noted that while this policy directive does not state any regulatory requirements, it does serve to present EPA’s position on the use of the approach. Dr. Kovalick reviewed some of the points made in the policy directive:

MNA is not a “walkaway” from a site, nor is it a default or presumptive remedy.

MNA is not the “no action” alternative considered in feasibility studies at Superfund sites, nor does it replace the “no action” alternative; MNA is analyzed and selected the same as other alternatives.

MNA is not just bioremediation; it is an *in situ* process that includes biodegradation among other process elements.

Dr. Kovalick added that monitored natural attenuation requires extensive site characterization data, performance monitoring, and contingency planning. For these reasons, MNA is not suited to every site and other remediation options may be less expensive and more effective than MNA.

Mr. Edwards commented that more and better site characterization data is needed in general at sites, and that there should not be a different standard for MNA regarding site characterization data. He added that process control is the most significant impediment to the implementation of *in situ* remedies like MNA.

**IDENTIFICATION/MONITORING OF DNAPLS**

***DOE—On-going Projects***

Carol Eddy-Dilek, U.S. DOE/Savannah River Technology Center, described a number of projects undertaken by DOE including work done at the former Savannah River Integrated Demonstration Site. Ms. Eddy-Dilek reviewed the characteristics of the contaminated ground water plume at the demonstration site, where a subsurface trough forms a migration path in a confining surface. The characterization work at Savannah River has been extensive and resulted in a subsurface model that guides the demonstrations. The DNAPL pools at Savannah River are on top of clay layers and are less than a few inches thick, making them very difficult to find and treat.

Programs within DOE supporting DNAPL characterization include the SubCon Focus Area (SCFA), the Characterization, Monitoring and Sensor Technology Program (CMST), the Federal Energy Technology Center (FETC) and Environmental Management Science Program (EMSP). The SCFA has been involved in development of AVO seismic reflection techniques for locating DNAPLs. The bulk

of applied, field oriented research in DNAPL characterization is being funded by CMST and SCFA to the Savannah River Technology Center at the Savannah River Site.

The technologies currently funded include:

spectral gamma logging in wells and with cone penetrometer—Naturally occurring radon gas is more soluble in DNAPL than in water, hence anomalous gamma signals in subsurface may indicate the presence of DNAPL.

alcohol microinjection/extraction—similarly, DNAPL is more soluble in alcohol than in water, hence anomalies in alcohol samples may indicate the presence of DNAPLs. The cone penetrometer will be used to inject and extract small volumes of alcohol solutions to provide depth discrete estimates of DNAPL concentrations

partitioning gas tracer—Certain gas tracers are relatively more soluble in DNAPL than groundwater. The relative travel time of a related suite of tracers between two piezometers can be used to evaluate the presence or absence of DNAPL.

laser induced fluorescence—DNAPL in the subsurface has been found to be fluorescent due to the presence of codiposed contaminants or dissolved organic carbon. laser induced fluorescence is being used in conjunction with a cone penetrometer truck to evaluate the presence or absence of DNAPL.

Rapid Hydrophobic Sampling (SEAMIST)- SEAMIST liners are being used to deploy hydrophobic membranes. The liners will be installed using CPT and then recovered and the membranes will be analyzed for solvent concentrations.

Field Evaluation of Raman Sensors for Direct Detection of DNAPL - Raman Sensors Developed by LLNL and EIC, Inc developed for use with the CPT are being evaluated at SRS by DOE's SCAPS evaluation program. The DOE's SCAPS truck is currently housed at SRS and is being used for evaluation and testing of new sensors developed for the CPT by DOE, other government agencies and private vendors.

Programs funded to industry by the Federal Energy Technology Center for direct detection of DNAPL include:

Internal Reflection Sensor for the Cone Penetrometer EIC Laboratories, Inc. The purpose of this program is to design, assemble, and test prototype Internal Reflection Sensor (IRS) for in-situ detection of NAPL.

Tomographic Site Characterization Using CPT, ERT, and GPR Applied Research Associates, Inc. The purpose of this program is to develop crosshole imaging characterization technology on integrating electrical resistivity and ground penetrating radar in CPT wells.

Basic Science programs funded by the Environmental Management Science Program (EMSP) include:

The Migration and Entrapment of DNAPL's in Physically and Chemically Heterogeneous Media (University of Michigan)

Partitioning Tracers for In Situ Detection and Quantification of DNAPLs in Groundwater Systems (University of Arizona)

In Situ Characterization DNAPLs using Partitioning Tracers (University of Texas)

Behavior of Dense Immiscible solvents in Fractured Clay-rich Soils (University of Tennessee)

Novel Analytical techniques based on Enhanced Electron Attachment Process (University of Tennessee)

Physics of DNAPL Migration and Remediation in the Presence of Heterogeneities (SNL)

Development of Radon-222 as a Natural Tracer for Monitoring the Remediation of NAPL Contamination in the Subsurface (Oregon State)

***Navy—Surfactant-Enhanced DNAPL Removal***

Laura Yeh, U.S. Navy/NFESC, reviewed a number of DNAPL projects undertaken by the Navy under the rubric of the Environmental Security Technology Certification Program (ESTCP). Ms. Yeh said the Navy has emphasized surfactant-enhanced aquifer remediation (SEAR) projects, where the Navy is providing development and commercialization assistance to adapt and refine existing surfactant techniques. As part of this effort, the Navy is involved in development of techniques for locating and characterizing DNAPL contamination.

Ms. Yeh reviewed the process by which the Navy selects sites for SEAR projects, which includes consideration of geophysical conditions and concentration levels as well as related issues such as preservation of soil samples and the feasibility of using direct push technology for obtaining samples. Ms. Yeh also discussed the use of partitioning interwell tracer tests to characterize subsurface contamination. Common problems associated with DNAPL characterization projects include the lack of proper sample preservation, missing or incomplete boring logs, and the failure to screen wells into the aquifer/aquitard interface. Ms. Yeh identified a number of sites evaluated by the Navy for DNAPL contamination, and described a dry cleaning facility remediation project at Camp Lejeune.

***Air Force—Monitoring and Sensor Technology***

Dennis Bernia, U.S. Air Force/Air Force Research Laboratory, described the work undertaken by his laboratory in the development of environmental sensor technologies. The focus of the Air Force's effort is promote the development of real-time, *in situ* characterization and monitoring sensor systems. Mr. Bernia identified and discussed the following projects:

horizontal drilling

pneumatic driven soil probe integration

direct push data mapping

sonic CPT probing

complex resistivity

Horizontal drilling involves using laser induced fluorescence (LIF) or Raman detectors to locate plumes and sources. Such systems can reach depths of 70', which will reach 75% of subsurface DNAPL contamination, and cover 400' horizontally. The pneumatic driven soil probe techniques use biological and chemical sensors (such as Geoprobe) and are relatively inexpensive. The objective of direct push mapping is to develop a real time data mapping capability to expedite site characterization by integrating cone penetrometer technology (CPT) with global positioning (GPS) and geographical information (GIS) systems. Tests results have demonstrated accuracy of within two centimeters for the CPT/GPS/GIS system. Sonic CPT probing, which reduces required push forces, is implemented at sites where hard soil prevents a normal CPT unit from penetrating the matrix. Sonic CPT has been demonstrated at the Massachusetts Military Reservation.

Mr. Bernia also noted that the Air Force is performing side-by-side demonstration tests of direct push technologies (DPT, such as CPT) versus monitoring wells to see if DNAPL samples obtained with DPT are comparable to well samples such that the Air Force can realize the cost savings (estimated at two-thirds) associated with DPT. The tests have turned up favorable results so far, with the only significant variation associated with toluene samples. The Air Force believes the *in situ* DPT sample for toluene may be more representative given the high volatility of toluene. Presently, the laboratory is seeking funding to complete the project and issue a report.

Mr. Bernia said initial demonstration testing of complex resistivity technologies, completed last summer, was promising. Further demonstration tests are planned.

### ***EPA—Field Experiences***

Kay Wischkaemper, U.S. EPA/Region 4, provided some EPA Regional perspective on identification and characterization of DNAPL sites. She noted that Region 4 has had significant success in characterizing DNAPL at two sites in Florida using a combination of hydrophobic dyes, cored samples, and UV sensors. Ms. Wischkaemper said Region 4 also feels it has a menu of containment technologies (barriers, vertical circulating wells, etc.) in hand for dealing with DNAPL at cleanup sites.

In response to a question from Dr. Kovalick, Ms. Wischkaemper reported that new methods have not been formally proposed. She noted that technology innovation tends to occur at sites with relatively more resources available, which invariably are federal facilities, (e.g., DOE's Paducah and Pinellas sites). Mr. Warren asked more directly whether there was a difference between private and federal PRPs with regard to their willingness to accept new technologies.

### ***USGS—Characterizing DNAPL in Fractured Rock***

David Morganwalp, U.S. Geological Survey, gave a presentation on the work the USGS has done in characterizing DNAPL in fractured rock using radar to create images to show the movement of contaminants over time. Mr. Morganwalp explained that various substances, including subsurface contaminants, can be identified by examining elements such as offsets, skip angles, and amplitude of radar reflections. Mr. Morganwalp said the approach is useful in detection and monitoring of changes as contaminants move through fractures in bedrock.

### ***ITRC—Deployment of Innovative Technology***

Rick Tomlinson, Interstate Technology and Regulatory Cooperation (ITRC), gave a progress report on ITRC's innovative technology deployment strategy. ITRC is a state-led national coalition working on creating tools and strategies to reduce interstate barriers to the deployment of innovative hazardous waste remediation technologies. The principal members of ITRC are the Western Governors' Association, the Southern States Energy Board, and agencies of 27 states.

Mr. Tomlinson said the ITRC focus has shifted from demonstrations to deployment. Toward that end, ITRC is developing protocols for acceptance of performance data by state regulators. These protocols are written as technology-specific guidance documents designed to ensure that regulators are getting

enough data of sufficient quality to support decision-making. A total of 22 guidance documents have been issued, divided into six technology areas and a seventh area on policy. The technology areas are:

- accelerated site characterization
- in situ bioremediation
- metals in soils
- permeable barrier walls
- plasma technologies
- thermal treatment

The policy area includes two guidance documents: one on performance-based contracting; the other on state voluntary cleanup/brownfield programs.

Mr. Tomlinson said the benefits of ITRC include the sharing of experiences regarding the evaluation and acceptance of innovative technologies and the development of a uniform approach to regulatory review, which is especially valuable in the present era of state government down-sizing. In response to questions, Mr. Tomlinson said he expects that the ITRC will be in existence at least long enough to implement the guidance documents and that the \$3 to 4 million of funding that ITRC receives comes primarily from DOE. There are other federal sources of ITRC funding, including DoD.

## **FIELD SCALE PROJECTS EMPLOYING NATURAL PROCESSES**

### ***DOE—Chlorinated Volatile Organic Compounds Initiative***

Michael Brown, U.S. DOE/EM-40, gave a presentation on DOE's initiative to use historical case analysis to improve the chlorinated volatile organic compound (CVOC) cleanup process. The initiative seeks to reduce characterization and cleanup costs and define the market for related technologies by taking the following steps:

- establish links to regulators (especially ITRC);
- gather and analyze data from CVOC sites;
- generate peer-reviewed, defensible findings and conclusions; and
- recommend a revised CVOC remediation strategy.

The working task force under the initiative includes representatives from state and federal agencies and laboratories, universities, and private industry. The peer review panel under the initiative is constituted similarly. Presently, the initiative is at the site identification data collection stage. A database is being populated, to be followed by data analysis.

### ***Air Force—Natural Attenuation of Chlorinated Solvents***

Patrick Haas, U.S. Air Force Center for Environmental Excellence (AFCEE), gave a presentation on the evaluation of natural attenuation at Eielson Air Force Base, a site contaminated with chlorinated solvent and petroleum hydrocarbons. Eielson AFB is in Alaska and includes a fire-fighting training area that is heavily contaminated with chlorinated solvents. Mr. Haas said natural attenuation was selected because the site has low ground water gradients and is very permeable, resulting in low pore

water velocities and an aquifer that can not be drawn down. These conditions ruled out pump-and-treat technologies.

Attenuation has been observed at the site. Mr. Haas said BTEX parent and breakdown products, such as cis- and trans-DCE and vinyl chloride, have been observed moving through the subsurface. Mr. Haas said the site data on total dissolved solids was estimated over time and area, and added that there seems to be a naturally occurring organism or organisms at the site that is continuing to reduce chlorine anaerobically at an accelerated rate. The Air Force gave up on identifying the organism(s) after initial investigations.

Mr. Haas stressed that site-specific conditions and other factors led to the selection of natural attenuation at Eielson. In addition to the factors listed above, the site is isolated, the plume is not especially large, and migration rates are low. Mr. Haas said these elements, plus some forward thinking by EPA Region 10 and the state of Alaska, “sold” the approach for the site, rather than the technical data and performance estimates they could generate.

#### ***Army—In-Situ Bioremediation in Usage Site Restoration***

Donna Kuroda, U.S. Army Corps of Engineers, said the Corps carries all environmental cleanup responsibilities for Army installations, including BRAC and FUDS sites, and, as far as the Army is concerned, natural attenuation is a presumptive remedy for contaminants such as explosives, solvents, fuels, and pesticides in ground water. Army policy dating from 1995 states that natural attenuation is to be considered before other technologies, and that reasons must be given if natural attenuation is not selected. Ms. Kuroda said *in situ* remedies offer the advantages of cost savings and volume reduction without exposing workers to contaminants. She identified only one downside: the difficulty in getting regulators to approve *in situ* remedies. Presently, the Army is centering its efforts on implementing *in situ* remedies on explosives contamination and at cold and/or remote locations, like Alaska. She stressed that natural attenuation is not a “No Action” option and requires a lot of monitoring.

Ms. Kuroda said, prior to 1995, the Army was able to implement only one natural attenuation remedy at a leaking underground fuel tank site in Pennsylvania, where the state insisted on the approach. Today, eleven Army sites are using or considering natural attenuation. Three sites are in Alaska, three in the mid-Atlantic region, three in the central U.S., and two in the west. Additional Air Force sites in the Azores are using the approach. She added that in Hawaii the Corps will not select natural attenuation as a remedy because potentially serious contamination problems may affect the island's main water source

Johnette Shockley, U.S. Army Corps of Engineers, said that the Corps has learned a lot from experiences in Alaska and Hawaii, where mobilization to remote areas create conditions and the lack of conveniences such as express delivery forced the Corps to plan, improvise and use innovative alternatives. For example, cone penetrometers can not be used in permafrost, and samples can not be shipped overnight to laboratories from remote locations. In situ approaches are also favored in Alaska because incinerated is not an accepted remedial alternative in the state.

#### ***EPA—Regulator Field Experiences***



Kay Wischkaemper relayed some her experiences as a regulator dealing with selection and implementation of monitored natural attenuation. She noted that the EPA Regions have included natural attenuation as a remedial alternative for several years. If a site scores above a certain level using the MNA protocol issued by AFCEE, then Region 4 will approve demonstration testing of the approach.

Ms. Wischkaemper said the need to push cleanup schedules led to the approach of dealing with sources separately at federal MNA sites. She noted that while state governments are responsible for operation and maintenance and long-term monitoring costs, the federal government has the legal obligation to deal with sources. She added that for chlorinated solvents contamination, her Region likes to see a carbon source, such as fuels, present as well to speed degradation.

Ms. Wischkaemper provided an example from a site over the Biscayne aquifer, which is a drinking water source for Miami, Florida. She listed the technical concerns and information needs she had as a regulator for the site with regard to the selection of natural attenuation to treat chlorinated contaminants:

- 1) **Methods**—Standard methods (including quality assurance) that will hold up in court must be established for assessing relevant measures such as ethane, ethene, hydrogen, and dissolved oxygen concentrations. Mr. Haas sought a clarification, since hydrogen and oxygen are not contaminants. Ms. Wischkaemper explained that every method is assailable, regardless of whether it deals with contaminants. She added that the EPA laboratory in Cincinnati has to approve of any method that is assumed. The method can come from ASTM or industry or wherever, but Cincinnati must sign off on it. That will be enough for the Region.
- 2) **Carbon sources**—Is there a source of carbon at the site and will the source provide enough “fuel” to get to the cleanup standard (usually the MCL)?
- 3) **Degradation rates**—Degradation rates or estimates are needed to support the decision to select natural attenuation. To fulfill that need, Region 4 has contracted to obtain a degradation rate toolbox to generate estimates.
- 4) **Source treatment**—How will sources be remediated at the site, and will that treatment interfere with the need to provide carbon “fuel” for attenuation of the plume?

### ***USGS Studies on the Natural Attenuation of Contaminants***

David Morganwalp described three studies on natural attenuation undertaken by the toxic substances hydrology program of USGS. The program seeks to provide earth science information that can be used in dealing with contaminants in water resources. Program components include field investigations, regional investigations, and methods development. The first study, in conjunction with the University of Michigan at Wurtsmith Air Force Base, seeks to understand how plumes degrade in a fire training area by examining bacterial “fingerprints.” The second study, managed by Frank Chappelle of USGS, centers on the development of protocols for determining the feasibility of natural attenuation using data from a number of sites. The third study, at Laurel Bay, South Carolina, is examining the natural attenuation of methyl tertiary butyl ether (MTBE), a gasoline additive that is more recalcitrant than

BTEX. MTBE is present in air as well as water, making it a non-point source as well as a point source contaminant of concern.

***Developments Under the Environmental Security Technology Certification Program (ESTCP) and Strategic Environmental Research and Development Program (SERDP)***

Jeff Marqusee, U.S. DoD, discussed developments under the Environmental Security Technology Certification Program (ESTCP) and the Strategic Environmental Research and Development Program (SERDP). Dr. Marqusee explained that SERDP coordinates DoD efforts and provides assistance during the research and development phase, while ESTCP is concerned similarly with demonstration and verification activities. Next year, DoD plans to merge the management of the two programs, while keeping the programs themselves separate.

With regard to characterization and monitoring of DNAPL, Dr. Marqusee said ESTCP is involved in field testing of three-dimensional seismic characterization technologies among others. He noted that ESTCP has seen a lot of technologies fail to meet pan vendor claims during blind testing. SERDP has two DNAPL detection projects underway. The first technology can detect DNAPL down to a 1" scale. The second involves geophysical techniques.

Dr. Marqusee also gave a more general update on ESTCP activities. New cleanup technology demonstration/verification projects include air sparging, cometabolic air sparging, and phytoremediation. On-going cleanup technology projects cover natural attenuation and phytoremediation of explosives in ground water, enhanced *in situ* anaerobic bioremediation of fuel, sediment characterization, pressure-driven passive bioventing, surfactant enhanced DNAPL removal, permeable reactive wall remediation of chlorinated hydrocarbon, *in situ* electrokinetics, and treatability tests for *in situ* anaerobic dechlorination. With regard to permeable reactive wall technologies, Dr. Marqusee noted that the technology has been accepted by regulators everywhere except the EPA Regions. He sought assistance from TIO in working with the Regions. Dr. Marqusee closed by noting that ESTCP projects continue to be solicited through calls within the services and broad agency announcements (BAAs).

**PERFORMANCE-BASED CONTRACTING**

***EM-40 (Office of Environmental Restoration) Performance-Based Contracting Opportunities***

Mary McCune, U.S. DOE/EM-40, gave an update on DOE's efforts to implement performance-based contracting (PBCs) for environmental restoration. She said DOE has analyzed its environmental restoration contracts by examining 678 opportunities for PBCs. The analysis found 190 (28%) good opportunities and 366 (54%) possible opportunities. DOE also found that nearly all of their contracts that involve *in situ* ground water cleanup are good candidates for PBC. Analysis results are available on the Internet at <http://www.em.doe.gov/define>.

Scott Edwards asked how DOE is faring moving from opportunities to implementation. Ms. McCune said DOE has a couple of contracts in place. Mr. Edwards said his question more generally was what DOE planned to do next. Mike Brown said a round of performance-based contracts are being negotiated. Procuring a remedy is part of these negotiations. Stephen Warren added that DOE has seen more progress when the PBC process is pushed by vendors rather than DOE headquarters.

***EPA Implementation Update***

John Riley, U.S. EPA/OERR, gave an update on PBC in the Superfund program. Mr. Riley reviewed EPA's negotiations with the Office of Management and Budget over the implementation of performance-based contracts. Mr. Riley said OERR will implement its PBC strategy through existing contracts before including performance-based measures in new remedial action contracts. He noted that FY 97 funding for new remedial action start-ups was tight, and the cleanup of only five new sites was started in FY 97.

Mr. Riley said EPA headquarters has asked the EPA Regions to nominate sites for the PBC pilot program. The sites need to be Fund-lead where "EPA prime contractors" are responsible for performance. At the Tar Creek site in Oklahoma an EPA/Corps workgroup did a job analysis for residential cleanups with a work breakdown and schedule, performance requirements for quality assurance, and a surveillance plan for inspection, as well as incentives and disincentives for contractor performance.

In FY 98, the EPA regional offices have been asked to provide additional candidate pilot sites where the principles of PBC can be demonstrated.

**ON-GOING ROUNDTABLE BUSINESS/PROJECTS**

***Interagency Cooperation on Site Characterization: Progress Report***

Dan Powell, U.S. EPA/TIO, gave a progress report on interagency cooperation to promote innovative expedited site characterization (ESC) technologies. An interagency ESC workgroup held a meeting on November 17, 1997. The workgroup includes representatives from EPA, DOE, the three DoD services, NASA, and USGS. The agenda for the meeting included identification of contacts and existing ESC projects, assessment of agency capabilities and interest in ESC, setting of priorities, and development of next steps. The workgroup identified three opportunities for cooperation:

- 1) Joint Training in areas such as ESC process and tools and related topics such as cost, distribution, and administrative mechanisms.
- 2) Inventory of Existing Efforts including a report on 204 ESC applications issued by EPA.
- 3) Case Study Development and Compilation, ideally 2-3 page summaries of ESC applications with common reporting elements.

Mr. Powell added that the Roundtable's site characterization subgroup may be revived as part of the ESC promotion effort. Patrick Haas asked how the workgroup defines innovation. Mr. Powell said the emphasis is on field techniques, which covers "new" uses of "old" techniques such as field test kits, for the range of applications (detection, screening, characterization, monitoring, etc.). Mr. Powell closed by noting that a presumptive characterization regime, which will prescribe rebuttable characterization methods similar to the presumptive remedies system, is on the horizon.

***Update on Cost and Performance Subgroup Activities***

John Kingscott, U.S. EPA/TIO, reported out on the previous day's meeting of the Cost and Performance subgroup. The goal of the meeting was to revive and revise the member-agencies cost and performance reporting effort and share their experiences in using the cost and performance reporting guidelines. The latest round of 17 cost and performance case studies were issued in July and consisted of reports from EPA, ACE, and DOE. The next round, expected this spring, should include about 80 case studies, with about half of those covering two technologies (incineration and pump-and-treat). As part of the revival effort, Mr. Kingscott said a revision of the cost and performance reporting guidelines has been drafted. He noted that one reason for the shortage of reports is that there is no down side when a cleanup project does not report cost and performance data.

Mr. Kingscott said the National Research Council (NRC) has issued a report on innovations in ground water and soil cleanup which cites the Roundtable's work. The report identifies needs and makes corresponding recommendations on a number of topics, including information dissemination (especially regarding work breakdown structures), standardized testing and verification of technologies to be reported in a standard format, and standard cost documentation and reporting.

Mr. Kingscott discussed the action items coming out of the meeting. An interagency cost estimating workgroup will revise the work breakdown structure. A management plan for issuing cost and performance data reports on the Roundtable Internet home page will be developed, to include baseline data needs and keywords. Finally, the cost and performance reporting guidelines revision will be completed in time for the next Roundtable meeting. Stephen Warren noted that the draft revised guidelines does not include life cycle costing, as it should. Mr. Kingscott said the difficulty in breaking out discounted operation and maintenance costs in the work breakdown structure is a significant problem. Mr. Warren added that this accounting problem is exacerbated when oversight costs pile up, for example, when EPA is overseeing the Corps of Engineers' management of a cleanup contractor. Also, the work breakdown structure has been criticized for failing to roll-up costs adequately. Johnette Shockely said these are significant issues for both the work breakdown structure and the Historical Cost Analysis System (HCAS).

In response to a question from Mr. Warren, Mr. Kingscott said the workgroup expects to add reporting on interim projects to the cost and performance reporting system, as well as reporting on containment and other non-treatment approaches.

### ***Progress on Roundtable Information Center***

Naomie Smith, U.S. EPA/TIO, distributed draft copies of *Site Remediation Technology InfoBase: A Guide to Federal Programs, Information Resources, and Publications on Contaminated Site Cleanup Technologies*, a new Roundtable publication that will replace three earlier Roundtable publications (the bibliography, guide to data bases, and guide to federal innovative technology programs and initiatives). Ms. Smith asked the member-agencies to review the draft and designate a contact to serve on a workgroup to guide final production of the InfoBase.

## **WRAP-UP**

### ***Wrap-Up/Evaluation/Next Meeting***

**Federal Remediation Technologies Roundtable Meeting, Arlington, Virginia, November 20, 1997**

Dan Powell reminded the member-agencies to sign for the TechDirect service via Clu-In if they wanted to receive e-mail updates on remediation technology developments. Walt Kovalick asked the attendees for their thoughts on the new focused Roundtable meeting format and whether the Roundtable should continue the approach. Stephen Warren said the presentations should highlight and provide more detail for a few significant projects, rather than skimming over a complete list of agency projects. Bob Furlong agreed, adding that he was concerned that he was not walking away with a lot of information aside from seeing that there are a lot of DNAPL projects. Mr. Warren said he sees the lack of communication among the member-agencies as the big problem: the agencies continue to repeat each others' work and relearn the same lessons. Johnette Shockley agreed, noting that the hits on the Roundtable home page, which was designed initially to facilitate communication among the member-agencies, are instead coming mostly from contractors, universities, and foreign countries. The message is that the member-agencies are not using the Roundtable as they should.

Jeff Marqusee said the Roundtable should serve two functions: 1) facilitation of information exchange, including products such as publications; and 2) initiation of joint projects where common interests exist. He said the new, briefing format does not lend itself to either of these functions. Instead, the projects briefed could be summarized and distributed on paper. The meeting should focus on where to go and what to do with the results of the project work. Dr. Marqusee suggested that, for the meeting, the Roundtable select two or three DNAPL treatment approaches (from the menu of all approaches) for focused discussion and evaluation, rather than hearing a little information about all the different approaches and projects. Off the top of his head, Dr. Marqusee listed bioremediation, treatment walls, abiotic approaches, and surfactant/co-solvent enhancement as possible subjects. The roundtable should select a couple of those for more detailed presentations. Mr. Warren added that the agenda should go beyond technology applications to discussions of deployment impediments and strategies for acceptance of new technologies. If a project has lessons to teach about getting a regulator to sign off on an innovative approach, those lessons should be heard. Future discussions and presentations should be solution-oriented. Patrick Haas cited a study issued by TIO as an example of the type of information that is needed by project managers. The study countered the long-held, common belief among project managers that state regulators would never accept ground water technologies such as surfactant enhancement that include injection of chemical agents. Up until that report was issued, RPMs would reject such technologies without consideration of their merits based on a mistaken belief that states would not accept them. Mr. Haas said the presentations should focus on the more difficult issues of technology acceptance and deployment, rather than demonstrations.

Dr. Kovalick said the next Roundtable meeting will take place the week of either April 27 or May 25, 1998. The meeting adjourned.

**LIST OF ATTACHMENTS**

- Attachment 1: Attendees
- Attachment 2: Introductory Remarks: General Meeting of the FRTR
- Attachment 3: Draft Interim Final OSWER Monitored Natural Attenuation Policy
- Attachment 4: DOE's Research Programs for Identification and Monitoring of DNAPLs
- Attachment 5: Surfactant-Enhanced Aquifer Remediation (SEAR) for DNAPL Removal (NFESC)
- Attachment 6: Monitoring and Sensor Technology (Tyndall AFB)
- Attachment 7: Interstate Technology & Regulatory Cooperation (ITRC) Fact Sheet
- Attachment 8: Evaluation of Natural Attenuation at a Chlorinated Solvent and Petroleum Hydrocarbon Contaminated Site, Eilson AFB, AK
- Attachment 9: Environmental Security Technology Certification Program (ESTCP) (DOD)
- Attachment 10: Performance-Based Contracting Opportunities (DOE)

## ATTACHMENT 1

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