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Federal Remediation Technologies Roundtable:

Creating Tools for the Hazardous Waste Cleanup Community

The Federal Remediation Technologies Roundtable leads the federal government's efforts to promote interagency cooperation to advance the use of innovative technologies for the remediation of hazardous waste sites and transfer the benefits of these cooperative efforts to the site remediation community. Since its inception more than ten years ago, collaborative efforts among the Roundtable member-agencies have led to technology development and demonstration partnerships with private developers and a more consistent and unified federal approach to technology evaluation and acceptance by regulators. The Roundtable also has produced a wide variety of technology transfer tools and other information resources, and identified and targeted national technology development priorities and problems that require special attention (*e.g.*, groundwater contamination, expedited site characterization) for coordinated national action.

The Roundtable "agenda" is driven by the highest priority needs of the hazardous waste cleanup community. The Roundtable always strives to stay one step ahead of the changes in priorities, and address tomorrow's problems today. By convening open, semi-annual meetings, the Roundtable offers a unique networking opportunity for the site remediation technology community. The meetings bring together top federal cleanup program managers and other remediation community representatives to:

- share information and learn about technology-related efforts of mutual interest,
- discuss future directions of the national site remediation programs and their impact on the technology market,
- interact with similar state and private industry technology development programs, and
- form partnerships to pursue subjects of mutual interest.

A priority technical or policy issue is selected for each general meeting of the Roundtable for in-depth briefing and discussion. Recent technical and policy topics include long-term monitoring systems optimization, perchlorate treatment technologies and policy, monitored natural attenuation of chlorinated solvents, and performance measures for federal technology assistance programs. *Minutes of past general meetings and agendas for upcoming meetings are available on the Roundtable web site at www.frtr.org.*

This brochure is a guide to Roundtable activities and products for technology developers, remediation site project managers, regulators, engineering consultants, academics, and others interested or involved in the development and use of hazardous waste characterization and remediation technologies. *Each section gives web site information.*

Roundtable Tools for Selecting Site Characterization and Remediation Technologies

Characterization Technologies Screening Matrix

Currently, billions of dollars are being spent on characterizing contamination at hazardous waste sites. Most of these funds are spent drilling wells, collecting samples, and analyzing samples, usually at laboratories, an approach that can be costly and time-consuming. New technologies offer faster and less costly characterization of sites. However, barriers to the use of new technologies include a lack of both investment capital and acceptance by regulators stemming from a lack of credible performance data and a failure to establish proper data quality objectives for the techniques.

The Field Sampling and Analysis Technologies Matrix is a screening tool that provides users with an introduction to innovative, commercially available technologies for on-site monitoring and measurement and helps identify technologies and methods that optimize sampling locations and minimize well installation. The *Matrix* and the analytical field instruments listed in it are tools for obtaining timely and reliable data to guide sampling investigations and minimize costs. The companion Reference Guide provides a description of each technology and additional background information. *The matrix is available on-line at www.frtr.gov/pubs.html.*

Remediation Technologies Screening Matrix

The Remediation Technologies Screening Matrix provides a tool for evaluating and selecting time- and cost-effective innovative site remediation technologies. These technologies face the same set of barriers to selection and implementation as characterization technologies. *The Remediation Technologies Screening Matrix* is an online, interactive screening tool that helps users identify efficient, cost-effective innovative technologies and methods for remediating particular sites. A search process allows users to present queries based on contamination problems as well as specific technology issues, depending on their need. *The matrix is available on-line at www.frtr.gov/pubs.html.*

Cost and Performance Case Studies

The Roundtable's Cost and Performance Data Workgroup has produced guidelines for reporting cost and performance data for innovative remediation technologies. The member-agencies used the guidelines to produce case studies reporting data from almost 300 full-scale remediation efforts and large-scale demonstration projects. The case-study reports serve as a primary reference source and contain project information on site background and setting, waste source, contaminants and media treated, technology design and operation, performance, cost, regulatory requirements, points of contact, and lessons learned. Case studies are 5 to 40 pages in length and provide varying levels of detail, reflecting the differences in the availability of data and information. A short abstract for each report summarizes information in each case study. *The case studies are available online at www.frtr.gov/pubs.html.*

Roundtable Initiatives for Improving Existing System Operations

Pump and Treat Optimization

The Roundtable has taken a leading role in a multi-agency effort to optimize long-term monitoring and performance of pump-and-treat systems for groundwater remediation. These conven-

tional and very common remediation systems have high operation, maintenance, and monitoring costs caused by their relative inefficiency. Inefficient systems can impact the effectiveness, timing, and cost of remedial solutions.

As part of the effort to promote the effectiveness of pump and treat, the Roundtable sponsored a 4-day conference, *Subsurface Remediation: Improving Long-Term Monitoring and Remedial Systems Performance*, to assess long-term monitoring processes and practices and the optimization of subsurface remedial performance. These processes and practices are especially critical to *in situ* remedial methods, natural attenuation strategies, and other relatively lengthy remedial alternatives. The objectives of the conference were to highlight successes and issues related to improving the performance of subsurface remediation technologies, showcase practical approaches to cost-effective monitoring of remedial performance, and identify research gaps and needs from current practice. *Proceedings of the conference are available at: www.frtr.gov/optimization/optimize.html.*

DNAPL Action Plan

The Roundtable has developed the Federal DNAPL Technologies Initiative Program (FeDTIP) to accelerate the development and use of innovative technologies for remediating dense non-aqueous phase liquids (DNAPLs) in groundwater, which are present at many member agency sites. Because DNAPLs are difficult to reach and their movement is difficult to characterize, DNAPL contamination poses a number of complex engineering challenges.

The focus of the new initiative is on DNAPL sites where conventional technologies (particularly pump-and-treat systems) take too long to meet national priorities. The goal of the action plan is to develop a model for cooperative, coordinated technology development that reduces the development time for *in situ* treatment technologies. *The FeDTIP Action Plan* targets five technology classes—*in situ* thermal, surfactant cosolvent flushing, chemical oxidation, bioaugmentation, and DNAPC characterization and modeling techniques. The plan proposes collaborative efforts among federal agencies in technology demonstrations and deployments, identification and resolution of key science and technology issues, development of technical practices and design guidance manuals, and development of an effective technology transfer process.

Tri-Agency Permeable Reactive Barrier Initiative

Three Roundtable member-agencies—the Department of Defense, Department of Energy, and Environmental Protection Agency—are cooperating under the *Tri-Agency Permeable Reactive Barrier Initiative* to evaluate the field performance of several permeable reactive barrier (PRB) technologies under a variety of site conditions for treating groundwater. PRBs offer cost advantages for treating a variety of dissolved contaminants, including some chlorinated solvents, heavy metals, and radionuclides commonly found at a number of sites.

The two main challenges facing the PRB technology are evaluating longevity of the system and verifying its hydraulic performance. The objectives of the Initiative are to leverage the technical and financial resources of the three agencies to examine the field performance of various PRB systems, conduct field investigations to address any information gaps, and issue a joint guidance document on long-term field implementation and monitoring of the technology. In 2001, the three agencies will publish a combined report that summarizes the results and conclusions of the Initiative and makes recommendations for PRB implementation and long-term monitoring. Each agency also will prepare a final report detailing the methodology and results of the investigations at their respective sites. *More information is available at: www.frtr.gov/prb/.*

Roundtable Tools for Accessing Federal Markets

Site Remediation Technology Infobase

The Roundtable recently revised its publication, *Site Remediation Technology InfoBase: A Guide to Federal Programs, Information Resources, and Publications on Contaminated Site Cleanup Technologies* (EPA 542-B-00-005), a tool for technology developers and users to identify information resources and contacts for participation in the various technology development assistance programs sponsored by the Roundtable member-agencies. *The Infobase is available at www.frtr.gov/pubs.html.*

Ordering Information

For a complete list of FRTR publications, visit the FRTR web site at www.frtr.gov/pubs.html. Most publications are available free for download from the website. A limited number of hard copies are available free-of-charge from the U.S. EPA/National Service Center for Environmental Publications (NSCEP), at the following address:

NSCEP
P.O. Box 42419
Cincinnati, OH 45242
Telephone: (800) 490-9198 or (513) 489-8190
Facsimile: (513) 489-8695

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