The Federal Remediation Technologies Roundtable (FRTR) has announced the release of 56 new case study reports describing the cost and performance of remediation at hazardous waste sites. These 56 new reports cover timely subjects such as those shown in the highlight box.

Other areas of emphasis in previous updates have included in situ remediation, including bioremediation of chlorinated solvents and dense non-aqueous phase liquid (DNAPL) treatment (2000); groundwater pump and treat, incineration, and permeable reactive barriers (1998); and thermal desorption, soil vapor extraction, and land treatment (1995). A total of 274 remediation case study reports are now available. In addition, the FRTR is making available 39 case study reports on site characterization technologies.

The remediation case studies describe actual applications of technologies at full-scale or nearly full-scale. The case studies document real experiences and lessons learned in selecting and implementing technologies to treat a wide range of soil and groundwater contamination at a variety of sites. This information is used by project managers, technology providers, consulting engineers, and other interested parties in identifying smarter solutions for and making better engineering judgements about site remediation.

The FRTR case study reports include almost 30 types of technologies for treating soil and groundwater contamination, with 127 reports addressing soil cleanup and 118 reports concerning groundwater. Soil case studies cover eight in situ technologies, including soil vapor extraction, in situ thermal, and bioventing, and 10 ex situ technologies, including thermal desorption, incineration, and slurry-phase bioremediation. Groundwater studies cover nine in situ technologies, including bioremediation, air sparging, and chemical oxidation, and two ex situ technologies — pump and treat and drinking water treatment.

The FRTR case study reports cover a variety of contaminants and media types. As shown in Exhibit 1, chlorinated solvents, BTEX/TPH, and metals are the contaminants most frequently addressed.
**PROJECT SCALE**

The FRTR has focused the cost and performance effort on full-scale and large field demonstration-scale projects, providing practical information about actual field experiences. Exhibit 2 shows the relative number of full-scale and field demonstration case studies by technology type. More than two-thirds of the case study reports are for full-scale applications.

Exhibit 2. Full-Scale and Field Demonstration Case Studies

- **In Situ vs. Ex Situ**

The FRTR case studies also reflect the overall trend seen in the general hazardous waste remediation community regarding the use of in situ versus ex situ technologies. As shown in Exhibit 3, the relative percentage of in situ technologies deployed since 1990 has steadily increased, with the percentage of ex situ technology deployments decreasing.

**PROGRESS OVER TIME**

Over the past ten years, the FRTR has made a significant contribution to increasing the supply and availability of cost and performance information from federal cleanups. The inventory of reports now encompasses a wide variety of technologies and contaminants and is constantly being expanded by new case studies from contributing agencies. The new reports address technology applications which are deemed to be relevant and often correspond to technical themes which are discussed at regular FRTR meetings such as groundwater treatment system optimization.

In the future, the FRTR will continue to focus on providing cost and performance case studies about timely topics and sharing experiences and lessons learned based on actual field applications of technologies. For example, as shown in Exhibit 4, the FRTR has added case study reports about field-based site characterization technologies such as electromagnetic (EM), radiation, and ground penetrating radar (GPR) tools.

**Exhibit 3. In Situ vs. Ex Situ Treatment**

**Exhibit 4. Site Characterization Case Studies**
ABOUT THE FRTR AND ORDERING INFORMATION

The Federal Remediation Technologies Roundtable consists of senior executives from eight agencies with an interest in site remediation technology. The FRTR meets twice each year to coordinate the exchange of information on remediation technologies and to consider cooperative efforts. Primary members include the U.S. Departments of Defense, Energy, and Interior, National Aeronautics and Space Administration, and the U.S. Environmental Protection Agency. In addition, participants include the Nuclear Regulatory Commission, Tennessee Valley Authority, and the U.S. Coast Guard.

The following FRTR documents are available free-of-charge from the U.S. EPA/National Service Center for Environmental Publications (NSCEP), while supplies last. To order, mail this completed form to:

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Abstracts of Remediation Case Studies

- Abstracts of Remediation Case Studies, Volume 1, March 1995 (EPA-542-R-95-001)
- Abstracts of Remediation Case Studies, Volume 2, July 1997 (EPA-542-R-97-010)
- Abstracts of Remediation Case Studies, Volume 4, June 2000 (EPA-542-R-00-006)
- Abstracts of Remediation Case Studies, Volume 5, May 2001 (EPA-542-R-01-008)


Guide to Documenting and Managing Cost and Performance Information for Remediation Projects


The FRTR Guide provides recommended procedures for documenting the matrix characteristics and technology operation, performance, and cost for conventional and innovative cleanup technologies. An example format is provided, as well as look-up tables for several key remediation parameters.

On-Line Access

The case studies and case study abstracts are available on the Internet through the FRTR home page at http://www.frtr.gov. The home page provides links to individual FRTR members’ home pages, and includes a search function.

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