



Federal Remediation Technologies Roundtable (FRTR)
*Promoting Interagency Cooperation and Technology Innovation
 To Cleanup Hazardous Waste Contamination*

INTRODUCTION TO GRAND CHALLENGES SESSION

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FRTR 2021 SPRING MEETING
 May 19, 2021

1

1



Federal Remediation Technologies Roundtable (FRTR)

EPA's Technology Innovation Office was formed to help implement the 1980 Superfund Law Act and the 1986 Superfund Law Amended Act.

To advocate for new technologies for Superfund Cleanup activities, such as:

- Contaminated soil cleanup
- Ground-water assessment and remediation
- Decision support tools
- Optimization tools
- Nanotechnology
- Green remediation and more



In situ thermal treatment technologies have advanced markedly, due in large part to research and demonstrations supported and conducted by FRTR Member Agencies. Photograph of the Velsicol Superfund site.

2

2



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Leading the Federal Government's Efforts to Promote Interagency Cooperation to Advance the Use of Innovative Technologies to Cleanup Hazardous Waste Contamination. (FRTR Website: <https://frtr.gov/>)

FRTR was established in 1990 to bring together top federal cleanup program managers* and other remediation community representatives to:

- ✓ Build a collaborative atmosphere among federal agencies involved in hazardous waste site cleanup.
- ✓ 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.
- ✓ Form partnerships to pursue subjects of mutual interest.

* Originally SES-level program managers, targeting agencies with cleanup programs and R&D efforts on innovative remediation technologies. EPA, DOE and DOD Services – Air Force, Navy and Army.

3

3

Member Agencies



4

4

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FRTR Website: <https://frtr.gov>

Resources ▾ Meetings and Other Materials ▾

FRTR Home

- What's New?
- Technology Screening Matrix
- Cost & Performance Case Studies
- Decision Support Matrix
- Environmental Cost Engineering
- Remediation Optimization

Federal Remediation Technologies Roundtable

Leading the Federal Government's Efforts to Promote Interagency Cooperation to Advance the Use of Innovative Technologies to Cleanup Hazardous Waste Contamination

The **Federal Remediation Technologies Roundtable (FRTR)** works to build a collaborative atmosphere among federal agencies involved in hazardous waste site cleanup. FRTR was established in 1990 to bring together top federal cleanup program managers and other remediation community representatives to:

- Share information and learn about technology-related efforts of mutual

5

CLU-IN EPA United States Environmental Protection Agency Technology Innovation and Field Services Division

Clean-Up Information

Contaminated Site

Technologies Contaminants Issues Strategies & Initiatives Technology Developer Tools Training & Events Additional Resources

Providing information about innovative treatment and site characterization technologies while acting as a forum for all waste remediation stakeholders

New Documents
Superfund Remedy Report, 16th Edition
 EPA prepares the Superfund Remedy Report to provide information and analyses on remedies EPA selected to address contamination at Superfund National Priorities List and Superfund Alternative Approach sites. This report is the latest in a series, prepared since 1991, on Superfund remedy selection. The latest edition focuses on the analysis of Superfund remedial actions selected in fiscal years 2015, 2016 and 2017.
 The data that forms the basis of the analyses contained in *SRR 16th Edition* can be found at [Superfund Data and Reports](#) by downloading *Contaminant of Concern Data for Decision Documents by Media, FY 1982-2017* and *Remedy Component Data for Decision Documents by Media, FY 1982-2017*.
 » [View or Download Report & Fact Sheet](#)

Live Web Events

- May 12: Design and Construction Issues at Hazardous...
- May 12: Design and Construction Issues at Hazardous...
- May 13: TPH Risk Evaluation at Petroleum-Contamina...
- May 17: Risk e-Learning Webinar Series: Session I - D...
- May 18: Mining Webinar Series: Assessment and Reh...
- May 19: FRTR at 30 Years: Grand Challenges and Opp...

TIFSD's News Corner

- TechDirect & Email Newsletters
- Courses & Conferences
- Federal Contract Opportunities Update (May 2-9)
- Recent Additions
- New Publications
- Technology Innovation News Survey

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6

Recently Selected Source Remedies*

Technology	Number of Decision Documents (FY15-17)	Percent Source Decision Documents
In Situ Treatment	35	20%
Solidification/Stabilization	9	5%
Soil Vapor Extraction	9	5%
Thermal Treatment	8	5%
Bioremediation	6	3%
Chemical Treatment	5	3%
Cap (amended, in situ sediment)	2	1%
Amendments (in situ sediment)	2	1%
Multi-phase Extraction	2	1%
Electrokinetics	1	1%
Flushing	1	1%
Soil Amendments	1	1%
Ex Situ Treatment	50	29%
Containment/Disposal	117	67%
MNR/EMNR	6	3%
Institutional Controls	124	71%
Other	43	25%

*MNR means monitored natural recovery. EMNR means enhanced MNR. Most applied technologies were innovative.

7

7

Recently Selected Groundwater Remediation Technologies

Remedy	Number of Decision Documents (FY15-17)	Percent Groundwater Decision Documents
Ex Situ Treatment (P&T)	22	20%
In Situ Treatment	56	51%
Bioremediation	30	27%
Chemical Oxidation/Reduction/Neutralization	26	24%
Thermal Treatment	6	5%
Permeable Reactive Barrier	5	5%
Multi-phase Extraction	4	4%
Air Sparging	3	3%
Solidification/Stabilization	2	2%
Electrokinetics	1	1%
Flushing	1	1%
Phytoremediation	1	1%
Vapor Extraction	1	1%
Monitored Natural Attenuation	22	20%
Containment (Vertical Engineered Barriers)	1	1%
Institutional Controls	78	71%
Alternative Water Supply	5	5%

* P&T is pump and treat which originally constituted 97% use but now is only used at 20%.

8

8



30 Years of Advancing Interagency Cooperation and Technology Innovation*

Today, FRTR's priorities and initiatives include:

- **Technologies for improving Conceptual Site Models and optimizing remediation.**
- **Emerging techniques for site characterization and treatment of emerging contaminants such as per- and polyfluoroalkyl substances (PFAS).**
- **Advances in site characterization and remediation technologies for heavy metals and radionuclides in soil, sediments, and water, including those used at mine sites.**
- **Mutual understanding of subsurface modeling and visualization capabilities and limitations.**
- **Web-based strategies for improving technology transfer among technical experts.**

* FRTR 30-Year Anniversary Fact Sheet at: https://frtr.gov/pdf/30_Years_of_FRTR_Nov2020.pdf

9

9

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Questionnaire to Senior Leaders of FRTR Member Agencies

Grand Challenges:

What are the grand challenges facing your agency regarding remediation over the next decade?

Technology Needs and Research Gaps:

Focusing on specific technology needs, the FRTR has identified these cross-cutting issues going forward:

- **Contaminant source and site characterization**
- **Emerging contaminants**
- **Remedy resilience under evolving climatic conditions**

What are your agency's remediation technology needs or research gaps for these issues? Are there other key issues not captured above?

10

10

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Questionnaire to Senior Leaders of FRTR Member Agencies

Advancing New Technologies:

- ✓ *What are the main barriers to advancing application of innovative remediation approaches from your agency's perspective?*
- ✓ *Do you have recommendations for overcoming these barriers and/or incentivizing new technology application?*
- ✓ *Are you aware of any promising new remediation technologies on the horizon?*

Initiatives and Coordination:

- ✓ *Are there any strategic remediation initiatives/programs underway in your agency for advancing site cleanups?*
- ✓ *Are you aware of resources, opportunities, or other groups that would enhance FRTR's coordination efforts?*

Vision for Future of FRTR:

- ✓ *What do you see as the key value of the FRTR for your agency, and what would you hope to see FRTR accomplish in the next 5 – 10 years?*

11

11

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AGENDA TOPICS

- ✓ *Responses to the questionnaire are the basis for the Spring 2021 FRTR Meeting Sessions on May 19 and 26th.*
- ✓ *FRTR Steering Committee will summarize the responses prior to panel discussions.*
- ✓ *Senior Leaders will highlight their Agency's responses and participate in panel discussions*
- *May 19th focusing on "Grand Challenges" and*
- *May 26th focusing on "Advancing Remediation Technologies".*

12

12

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Thank You

13