

Federal Remediation Technologies Roundtable

Questionnaire to Senior Leaders of FRTR Member Agencies

Report out for FRTR
Spring 2021 Webinar



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Common Themes in Responses

- What are the challenges?
- Technology needs and gaps?
 - Contaminant source and site characterization
 - Emerging contaminants
 - Remedy resilience under evolving climatic conditions



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You may share your thoughts on these questions using the Q&A live today.

** You may use the anonymous submission if preferred*

You may also send your thoughts by email to FRTR@emsus.com by May 31, 2021.

1) Grand Challenges:

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

2) 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?

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Senior Leader Respondents

- US NRC
- DOE
- DOI
- EPA
- NAVFAC
- NIEHS
- USACE
- USGS



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Grand Challenges

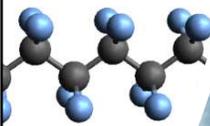
- **Climate change and climate resiliency**
 - Factor into long-term remedy decisions
- **Emerging contaminants**
 - Characterization, cleanup, and risk assessment considerations
- Large, complex and difficult-to-remediate sites (low permeability, groundwater, recalcitrant contaminants)
- Technology selection/use of flexible strategies
- Limited resources
- Limitations of current cleanup technology
- Training new personnel, including RPMs

Photo credit: <https://www.niehs.nih.gov/health/topics/agents/climate-change/index.cfm>

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PFOS



● Carbon ● Sulfur



Photo credit: Ed Gilbert, EPA

Technology Needs and Gaps

- **Emerging Contaminants**
 - Toxicity and behavior data
 - Interim guidance
 - Expanded research
 - Methods for sampling, analyzing contaminants
 - Treatment technologies



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Technology Needs and Gaps

- **Contaminant Source and Site Characterization**
 - Cost-effective characterization at an appropriate scale for large sites
 - Dynamic conceptual site model (CSM) tools for remedy design
 - Source reduction technology development
 - Robotic sampling methods
 - Improved inventory of resource extraction sites (abandoned mines) and features
 - Improved understanding of the necessary balance between modeled assumptions and actual field data
 - Improved sensors and real-time monitoring
 - Improved subsurface characterization



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Technology Needs and Gaps

- **Remedy Resilience Under Evolving Climatic Conditions**
 - Treatment and containment strategies that can weather climate events
 - Integrated climate, topographic, geologic, geophysical, hydrologic and biologic models of watersheds for more accurate modeling of site cleanup impacts
 - Predicting future climate conditions in different U.S. regions
 - Better understanding of sea level rise on remedies near shorelines
 - Role of renewables on remediation

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