Investigating Innovative Approaches to Site Remediation Through the U.S. EPA SITE Program

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RESEARCH & DEVELOPMENT

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Research and Development

- 1,950 employees
- 13 lab or research facilities across the U.S.
- Credible, relevant and timely research results and technical support that inform EPA policy decisions

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Making decisions with sound science requires..

- Relevant, high quality, cutting-edge research in human health, ecology, pollution control and prevention, economics and decision sciences
- Proper characterization of scientific findings
- Appropriate use of science in the decision process

Research and development contribute uniquely to..

- Health and ecological research, as well as research in pollution prevention and new technology
- In-house research and an external grants program
- Problem-driven and core research

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High Priority Research Areas

- Human Health
- Particulate Matter
- Drinking Water
- Clean Water
- Global Change
- Endocrine Disruptors
- Ecological Risk
- Pollution Prevention
- Homeland Security

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National Risk Management Research Laboratory- Research Areas

- Drinking Water Protection
- Watershed Management & Restoration
- Air Pollution Control
- Pollution Prevention and Sustainability
- Contaminated Media Remediation

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Risk Management Research SITE Program

- Purpose: evaluation of innovative technology performance and cost
- *Why is it Important ?*
  - provides relevant innovative technology performance data to regions and other decision makers
  - provides cost data for evaluation of remedial options

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Risk Management Research SITE Program

- Why Important (cont.)
  - SITE focuses on in-situ treatment and hard-to-treat wastes

    58% of all Superfund site source control treatment is in-situ
  - Twice as much Superfund site contaminated soil (28M yd^3) is being treated in-situ than ex-situ(14M yd^3)

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Risk Management Research SITE Program

- Types of Research Activities
  - Evaluation of innovative treatment approaches, and their associated costs
  - DNAPL remediation processes
  - Evaluation of sediment capping or treatment technologies

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Risk Management Research SITE Program

- Types of Research Activities
  - Investigation of mine waste remediation options
  - Evaluation of innovative measuring,monitoring and characterization technologies
  - Containment technology research

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SITE Program Priority Areas

Sites

- **Sites with Mine Drainage**
- **Manufactured Gas Plants**
- **Superfund**
- **RCRA**
- **Other Federal Facilities**

SITE

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SITE Program Priority Areas

Soils/Groundwater

- **DNAPL**
- **Chlorinated Solvents**
- **PCBs**
- **Arsenic, Mercury or other Heavy Metals**

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SITE Program Priority Areas

Sediments

- **Pesticides**
- **PCBs**
- **PAHs**
- **Arsenic, Mercury or other Heavy Metals**

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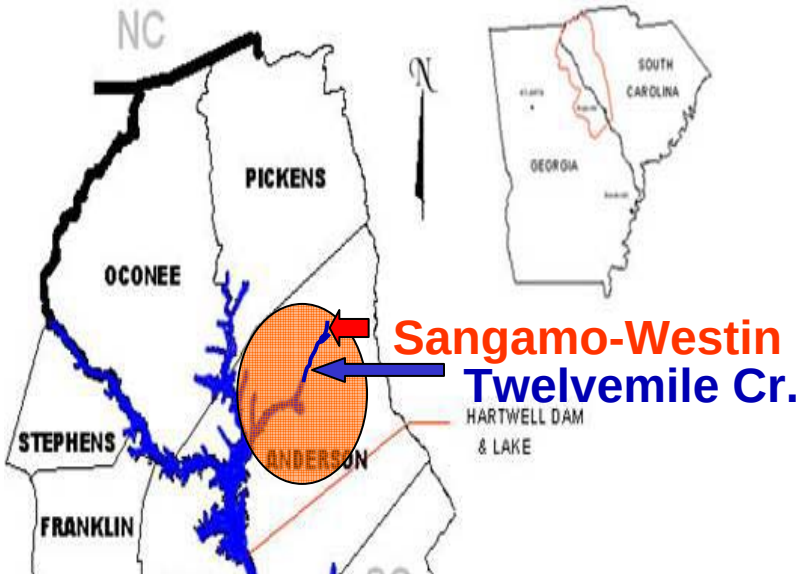
Development of Biological Tools and Methods for Evaluating Monitored Natural Recovery of PCB-Contaminated Sediments at the Sangamo-Weston/ Twelvemile Creek/Lake Hartwell Superfund Site



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What is it?

- EPA estimates ~ 10% of sediment underlying surface waters is contaminated with toxic substances
- Half of sites on the NPL contain PCBs and 10% have PCB contaminated sediments (122 sites)
- PCBs affect not only individual organisms but **whole ecosystems** ***(NRC ref.)***

A multi-phased study to develop a fully integrated assessment of PCB uptake through all levels of the ecosystem

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What Made It a Good Value?

- Place based research with a broad application
- Provides biological tools that serve a dual purpose of assessing condition and gauging the efficacy of mitigation efforts for contaminated sediments
- SITE funded the development of the monitoring framework

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Loring Air Force Base, Maine

- Remediation of in-Situ DNAPL Treatment in Fractured Rock
- Based on SITE performance and cost data, the technology was implemented by the Army Corps in Rhode Island
- Two additional implementations are planned for Maine

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Roosevelt Mills, Vernon, CT

- In-situ chemical oxidation treatment for chlorinated solvent contaminated media
- SITE treatability study results used as decision tool for remediation of the site
- Roosevelt Mills revitalization plan calls for mixed use retail/residential facility

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Future direction

- Place based research with broad applicability
- Demonstration conducted as part of remediation/revitalization
- Continue partnerships/resource leveraging

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Site Homepage…

www.epa.gov/ord/SITE

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