



Green Remediation at EPA

Developments and Directions

Suzanne Wells

Wells.suzanne@epa.gov

OSWER Office of Superfund Remediation and Technology Innovation



Topics for Today

- Defining green cleanups
- Fostering green remediation efforts across cleanup programs
- What about Superfund?
- Greening cleanups through contracting
- Discussion
- Preview: Green remediation at Lake City Ammunition Plant (Clint Sperry)



What is “Green Remediation”?

***Green Remediation** - The practice of considering **all** environmental effects of remedy **implementation** and incorporating options to maximize the **environmental benefit** of cleanup actions.*



Green Remediation: Common Themes in Site Cleanup Programs

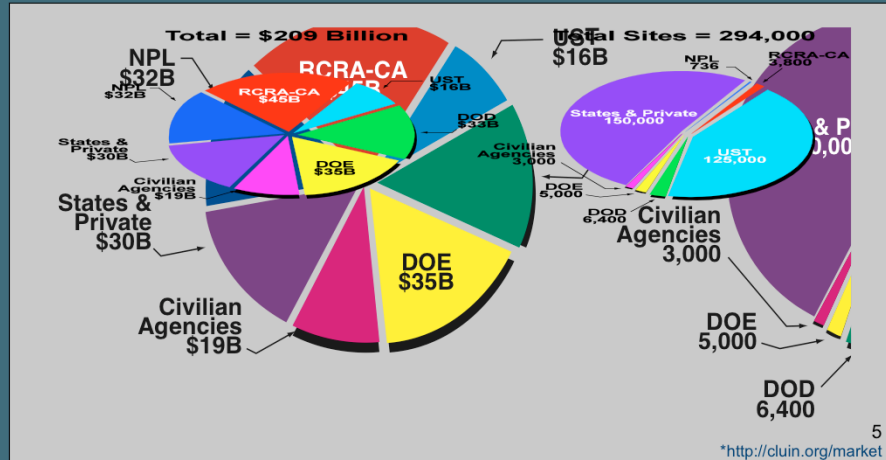
- Fits within existing frameworks
- Opportunities exist throughout site investigation, design, construction, operation, and monitoring
- Addresses core elements





There's Still Much Work to Do

Estimated Number of Sites and Cleanup Cost 2004-2033*



- Sites that have not yet selected a remediation contractor; Does not include site that are already being cleaned up
- We are combining data on a heterogeneous programs
 - Some tend to be larger more complex sites (NPL, RCRA)
 - Some are mixed (DOD, DOE)
 - Some are small (UST, States)

• NPL: funding future RAs will depend on allocation of Superfund resources e.g., between new and old sites and between RA and other activities. RFF projects an average shortfall of \$100-200 million annually over 10 years.

• RCRA is influenced by state oversight resources, private funding, and development. State hazardous waste budgets have not increase in at least 7 yr.

• UST PROJECTION IS FOR 10 YEARS (other markets for 30 yrs.)

• UST State trust fund revenues have been steady (\$1.3 billion in 2003). There is \$2.2 B in Federal LUST Trust Fund not being spent.

• If DOD's current restoration budget (\$1.8 B) is maintained, it would be enough to complete the cleanup work as currently specified, in under 18 years.

• If DOE's current restoration budget (\$1.4 B) is maintained, it would be enough to complete the cleanup work, as currently specified, by DOE's target date of 2035.

• Civilian agencies only spend about \$133 million annually.

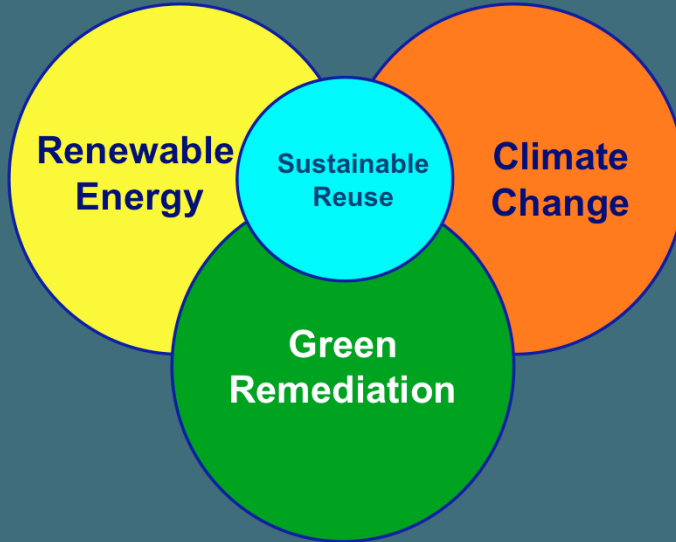
• State and private sites may also be constrained by oversight staff and budgets. However, development often will subsidize the state programs (fees).

• UST & State/VCP programs are highly fragmented. DoD & DOE are larger, consolidated, but hard to penetrate

• Report discusses strategies for penetrating each of these markets (focusing on technology providers)



Related But Not Synonymous





Major Initiatives and Activities

- OSWER Green Cleanup Principles
- Superfund Green Remediation Strategy
- Voluntary Green Cleanup Standards & Certification System
- RE-Powering America's Land: Renewable Energy on Contaminated Lands
- Regional initiatives
 - Climate change strategies
 - Policy and guidance development, etc



OSWER Green Remediation Principles

- <http://www.epa.gov/oswer/greencleanups/principles.html>
- OSWER's goal is to evaluate cleanup actions comprehensively to ensure protection of human health and the environment and to reduce the environmental footprint of cleanup activities, to the maximum extent possible



OSWER Green Remediation Principles

- Consistent with existing laws and regulations, it is OSWER policy that all cleanups:
 - Protect human health and the environment
 - Comply with all applicable laws and regulations
 - Consult with communities regarding response action impacts consistent with existing requirements
 - Consider the anticipated future land use of the site



Superfund Strategy: Overview

- Sets out the Superfund Program's plans to promote green remediation practices during site cleanups without compromising cleanup goals
- Covers three areas:
 - Policy and Guidance
 - Resource Development and Program Implementation
 - Evaluation
- Includes 10 "Key Actions"; each action includes several implementation activities (46 total)

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Workgroup established per OD request in Summer 2008

Overall direction - develop "strategy" to advance and address green remediation in the Superfund Program and develop appropriate and relevant tools to implement the strategy

Workgroup comprised of HQ and Regional staff presented draft strategy January 30, 2009

Final draft Strategy June 30, 2009



10 Key Action Items

1. Clarify the role of green remediation in remedy selection, and recommend potential statutory and regulatory changes
2. Develop a compendium of practices and tools to help project and Program managers integrate green remediation practices
3. Develop Program incentives to encourage use of green remediation practices
4. Address air pollutants and diesel emissions
5. Develop pilot projects to evaluate and demonstrate green remediation applications



10 Key Action Items

(continued)

6. Establish incentives to encourage contractors, assistance agreement recipients, and others to use green remediation practices
7. Communicate and share success stories and lessons learned among “implementers” across the Program and the public
8. Evaluate green remediation application at the site level
9. Develop Program evaluation measures
10. Evaluate the Superfund Green Remediation Strategy



Green Remediation Activities Underway

- Baselines, measures, and metrics
- Multiple cross-program and regional workgroups
 - CCCL (plus subgroups)
 - GCS (plus subgroups)
 - Superfund GR (plus subgroups)
 -too many?
- Collaboration with FRTR, ITRC, ASTSWMO
- Engineering Forum "GR review and technical support" capability
- New incentives (ER3, States, etc).
- Model contract and enforcement provisions
- Remedy-specific green remediation "cheat sheets"

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Green Remediation Activities In Place

- Green remediation primer, website, and profiles of projects, Internet seminars, and archived discussions
- Tech support for Federal and State project managers
- Renewable energy fact sheets, website, and IA with NREL
- NARPM 4- and 8-hour training in 2008, 2009; 2009 OSC Readiness, 2008
- Regional leadership
- Contracts & Administrative toolkit
- Green Remediation pilots



More Information

<http://www.cluin.org/greenremediation>
www.epa.gov/superfund/greenremediation