ASTM: Cleanups with a Smaller Environmental Footprint

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U.S. Policy Drivers for Greener Cleanups

Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performance

It is the policy of the United States that Federal agencies shall increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution (President Obama)

EPA Strategic Plan FY2014-2018: Cross-Cutting Fundamental Strategy – Working Toward a Sustainable Future

...all headquarters and regional office will consider the following principles:

- 1. Conserve, protect, restore and improve the supply and quality of natural resources and environmental media over the long term;
- 2. Align and integrate programs, tools, incéntives and indicators to achieve as many positive outcomes as possible in environmental, economic and social systems; and
- 3. Consider the full life cycles of multiple natural resources, processes and pollutants in order to prevent pollutions, reduce waste and create a sustainable future"

EPA Office of Solid Waste & Emergency Response Policy (OSWER): Principles for Greener Cleanups

As a matter of policy, 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 Assistant Administrator Mathy Stanislaus)

EPA Region and State implementation policies



Sustainability in Site Remediation

Social:

- » Engaging communities in site cleanup decisions
- » Turning contaminated sites into community assets

• Economic:

- » Redevelopment in blighted areas (aligns with smart growth goals)
- » Fostering employment opportunities in communities where sites are cleaned up
- » Rising property values in communities
- » Remediation in the U.S: A \$7billion/year economic engine

Environmental:

- » Protecting Human Health and the Environment
- » Liberating contaminated sites for reuse (1 remediated acre redeveloped = 4 acres of green field development)
- » Challenge: A smaller footprint in cleaning up sites



Leveraging innovation to achieve efficient remedies with a lower environmental footprint

- Cost effectiveness and large reductions in environmental footprints come from...
 - » Accurate CSM
 - » Well-characterized source areas and contaminant plumes
 - » Optimal remedial strategy
 - » Adaptive management
 - » Streamlined performance monitoring & optimization



- Further footprint reductions are achieved applying greener cleanup best management practices
- As a result, we sustainably protect human health and the environment prepare sites for reuse



Challenge: Lowering the Environmental Footprint of Site Cleanup Projects

Green Remediation*

The practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions.

*as defined by US EPA, *a.k.a.* greener cleanups, etc.



Core Elements for Greener Cleanups





Energy and Emission Reductions

- Reduced emissions of PM, SOx, NOx, and greenhouse gases
 - » Maintaining, repowering, or retrofitting diesel engines...

Energy efficiency practices

- » High-efficiency equipment
- » Variable frequency drives
- » Low-emission vehicles and carpooling
- » Use of local materials and services
- » Combined heat and power

Renewable energy

- » On-site renewable energy
- » Purchased renewable energy



An off-grid, 770-watt PV system at Brooks Camp, AK, powered an air sparging pump used for treating groundwater contaminated by former underground storage tanks.



Water Conservation

- Seek beneficial use of extracted/treated water
- Optimize capture zones of pump and treat (P&T) systems
- Divert clean water around impacted area
- Infiltrate diverted storm water for aquifer storage
- Use less-refined water resources when possible
- Manage stormwater runoff



Portable closed-loop wheel washing systems for reducing onsite and offsite trackout during construction



Materials and Waste

Reduce Material Use

- » Alternative materials or chemicals
- » Materials with recycled content
- » Materials from waste products
- Source unrefined materials locally and/or from recycled sources
- Minimize hazardous and non-hazardous waste generated onsite
- Recycle waste generated on site



Use of passive diffusion bag samplers reduces or eliminates purge water associated with well sampling.



The Challenge....

Integrating Greener Cleanups across the cleanup programs



- Superfund
- RCRA
- Federal Facilities
- Tanks
- Brownfields

Green Cleanup Goals

- Minimize and increase renewable energy use
- Minimize air pollutants and GHG emissions
- Minimize waste use and impacts to water resources
- Reduce, Reuse, Recycle material
- Protect land and ecosystems

CLU-IN GCS Webinar



Why a Voluntary Standard Guide?

- National Technology Transfer Advancement Act (NTTAA) requires EPA to participate in the process when such participation is in the public interest and is compatible with agency and departmental missions, authorities, priorities, and budget resources.
- ASTM is a Standards Development Organization, and it owns the Guide, not EPA
- Open participation in development
- Process: draft, ballot, vote, revise and repeat
- All negative votes must be addressed





The Role of the ASTM Guide in Greener Cleanups

→ ASTM Standard Guide for Greener Cleanups (E2893):

- Codifies best practices and defines a process for reducing environmental footprint
- Includes over 160 BMPs and outlines process for straight BMP application or use of quantification
- Useful protocol for contracting purposes
- Results in a transparent documented process that is reported publicly





Cleanup Program Evolution





Information and Resources

- Guidance Documents
- Free Technical Webinars
- Technical Bulletins
- Fact Sheets
- Case Studies and Project Profiles
- Technology Descriptions

Current and In-depth Information:

- » BMPs for common cleanup approaches
- » Policy information at Federal and State level
- » Assessing a project's environmental footprint
- » Technical support







Thank You!

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www.epa.gov/oswer/greenercleanups/standard.html

