Applying Green Remediation Principles to LUST Sites

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Why the LUST Program?

- Similarity between sites—a single green remediation model can be applied many times over
- Large volume of sites—7500 open incidents
- UST Fund reimbursement of assessment and cleanup costs—opportunity to incentivize greener cleanup choices

What We Do Now

- Collect data—characterize site
- Evaluate cleanup options—remediate site
- Obtain No Further Remediation Letter—return site to productive use

What We Need to Be Doing

- Collect data using greener cleanups principles
  - Reduce investigation-derived waste
  - Sequence work to minimize mobilizations and improve efficiency
- Evaluate cleanup options using greener cleanups principles
  - Design and select a remedy that integrates site reuse plans and reduces energy consumption
- Post-remediation use of property
  - Long-term stewardship of land

What does the LUST Program do that's already green?

- Dig and Haul
  - Reuse of clean overburden
- In-situ Treatment
  - Destruction of contaminants in-place
  - Reuse of treatment system (salvaging)
- Free Product Removal
  - Only remove product > 1/8 inch in a groundwater monitoring well

What does the LUST Program do that's already green?

- Site characterization
  Illinois EPA's LUST Program promotes efficiency by:
  - Having a prescribed approach to investigation of release
  - Allowing stages of investigation to be combined
  - Encouraging contingent work and fewer mobilizations

What does the LUST Program do that's already green?

- Allow remediation of LUST releases in Illinois EPA's Voluntary Cleanup Program
- Make use of risk-based cleanup methodology, or TACO
  - Remediation of soil to Tier 2 remediation objectives
  - Use of groundwater ordinance
- Encourage modification of plans
- Use verbal and electronic communication with consultants to resolve issues
- Provide database, guidance documents, and forms on the Web

Greener Cleanups Workgroup

- Objectives
  - Evaluate usefulness of the matrix when applied to specific sites
  - Locate tank owners and operators receptive to greener cleanups
  - Cultivate pilot projects
  - Develop recognition program for tank owners and operators and environmental consultants

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- Past activities:
  - BP pilot projects
    - Sulfate solution used to treat groundwater contamination in-situ at three service stations
    - Increased degradation rate of benzene
    - Greener cleanups principles satisfied

IEPA Green Cleanup Matrix Applied to Sulfate Bio-Enhancements

action	level of difficulty	feasibility considerations: cost	feasibility considerations: schedule	feasibility considerations: technical complexity	air	water	land	energy
Evaluate active in-situ treatment systems, such as soil vapor extraction, enhanced bioremediation or air sparging.	High	●	●	●●●	Reduces air emissions from on-site construction equipment and trucking waste material.	Reduces erosion and potable water use.	Reduces waste material requiring off-site disposal.	
Evaluate remediation technologies that permanently destroy contaminants.	High	●●●	●●	●●●	Reduces air emissions from on-site construction equipment and trucking waste material. Reduces future migration concerns.	Reduces future migration concerns.	Reduces future migration concerns.	
Routinely evaluate treatment processes for optimal performance.	High	●	●	●●●	Reduces air emissions from treatment processes.	Reduces potable water use and waste water discharge from treatment processes.	Reduces waste material requiring off-site disposal.	Reduces purchased energy use.
Impose idling restrictions on construction equipment.	Low	●	●	●	Reduces air emissions from on-site construction equipment and from staged vehicles.			Reduces fuel use in on-site construction equipment and in trucking waste materials.
Use low-sulfur diesel fuel.	Medium	●	●	●	Reduces air emissions from on-site construction equipment and from staged vehicles.			
Use alternate fuels (biodiesel, E85).	Medium	●	●	●	Reduces air emissions from on-site construction equipment and from trucking waste materials.			Reduces use of petroleum products in on-site construction equipment and in trucking waste materials.
Use construction equipment with enhanced emission controls.	Medium	●	●	●	Reduces air emissions from on-site construction equipment and from staged vehicles.			

Actions specific to this option

Sulfate: +7 +3 +3 +3 add'l benefits

High
Medium
Low

- ● indicates a benefit may add cost, time, or technical complexity - the number of symbols indicates the relative amount of the increase.
- ● indicates a benefit may reduce cost, time, or technical complexity - the number of symbols indicates the relative amount of the reduction.
- ● indicates a benefit may add or reduce cost, time, or technical complexity depending on the project specifics.
- ● indicates a benefit won't likely impact cost, time, or technical complexity.

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- Current activities
  - Take advantage of EPA's Best Management Practices fact sheets for site investigation and various remedial technologies to create greener cleanups criteria for LUST sites
  - Develop criteria for a "prototype" green remediation model
  - More pilot projects