Federal Remediation Technologies Roundtable: Update on Selected Projects

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FRTR Meeting

Walter Kovalick Jr., Ph.D.
Director
Technology Innovation
and Field Services Division
US Environmental Protection Agency
Kovalick.walter@epa.gov

Project Updates

- Cost and Performance Reports
- Triad Updates
- Persistent Organic Pollutants Document
- Next FRTR meeting

Technology Cost and Performance

Federal Remediation Technologies Roundtable

http://www.frtr.gov

Summary of New and Existing Case Studies and Reports*
Summer 2006

Focus Area	New**	Total
Remediation Technologies	10	384
Site Characterization and Monitoring Technologies	12	164
Remediation Technology Assessments	3	67
Long-term Monitoring and Optimization	15	101
Total	40	716

* See spreadsheet for details

** Includes documents that are close to completion

New Remediation Technology Case Studies

Agency	Case study title	Technology
Air Force	Demonstration-Site Development and Phytoremediation Processes Associated with Trichloroethene (TCE) in Ground Water, Naval Air Station-Joint Reserve Base Carswell Field, Fort Worth, Texas	Phytoremediation
Navy	Nanoscale Zero-Valent Iron Technologies for Source Remediation	Chemical Reduction (nanoscale iron)
EPA	Pump and Treat and In Situ Bioventing at the Onalaska Municipal Landfill Superfund Site Onalaska, Wisconsin	Pump and Treat, Monitored Natural Attenuation, Bioventing
	In Situ Bioremediation at the Cleaners #1 Site in Kent, Washington	Bioremediation (in situ), Thermal Desorption (ex situ)
	In Situ Thermal Desorption at Rocky Mountain Arsenal Hex Pit, Denver, Adams County, Colorado	Thermal Treatment (in situ)
SITE (EPA with Federal partners)	Steam Enhanced Remediation Research for DNAPL in Fractured Rock Loring Air Force Base, Limestone, Maine	Thermal Treatment (in situ)
	Deployment of Phytotechnology in the 317/319 Area at Argonne National Laboratory-East	Phytoremediation
	Stabilization of Mercury in Waste Material from the Sulfur Bank Mercury Mine	Stabilization
	Dredged Material Reclamation at the Jones Island Confined Disposal Facility	Phytoremediation
ESTCP	Edible Oil Barriers for Treatment of Perchlorate Contaminated Groundwater	Permeable Reactive Barrier

New Site Characterization and Monitoring Case Studies

Agency	Case study title	Category
EPA	Sensors Report: Use of Membrane Interface Probe Technology for Detection of VOCs at the Sol Lynn/Industrial Transformer Superfund Site	Organic Chemical Characterization
	Sensors Report: 2D-Recon and EOL Geophysical Survey Techniques for Characterizing Hydrocarbon-Contaminated Soils at the Hotel Pier Site	Geophysical Techniques (Surface)
	Sensors Report: Supervisory Control and Data Acquisition Using Programmable Logic Controllers at the Sprague Road Superfund Site	Miscellaneous/Leak Detection
	$21M^2$: Evaluation of a Former Landfill Site in Fort Collins, Colorado Using Ground-Based Optical Remote Sensing Technology	Geophysical Techniques (Surface)
EPA/Army	Sensors Report: Use of Capacitance Probes to Measure Soil Moisture at the Badger Army Ammunitions Plant	Miscellaneous/Leak Detection
EPA/Navy	Sensors Report: Use of In-Situ Sensors to Monitor Ground Water Velocity at the China Lake Naval Air Weapons System Site	Geophysical Techniques (In Situ/Bore Hole)
EPA/Air Force	Sensors Report: Programmable Logic Controllers and Ozone Analyzers at the Moffett Federal Airfield Site	Miscellaneous/Leak Detection
EPA/DOE	Sensors Report: Automated Sampling and Analysis of Trichloroethene and Hexavalent Chromium Using the Burge System at the North Indian Bend Wash and Nevada Test Sites	Organic Chemical Characterization
EPA - SITE	In-Situ DUOX™ Chemical Oxidation Technology to Treat Chlorinated Organics at the Roosevelt Mills Site, Vernon, CT	Field-Based Strategies/Direct Push/Cone Penetrometer
ITRC	Technical and Regulatory Guidance for the Triad Approach: A New Paradigm for Environmental Project Management	Triad-Related Strategies/Techniques

New Technology Assessment Reports

ITRC	Overview of In Situ Bioremediation of Chlorinated Ethene DNAPL Source Zones	Bioremediation
EPA	Reference Guide to Non-combustion Technologies for Remediation of Persistent Organic Pollutants in Stockpiles and Soil	Persistent Organic Pollutants
ITRC	Characterization, Design, Construction, and Monitoring of Mitigation Wetlands	Bioremediation

New Long-term Monitoring and Optimization Reports

EPA	Remediation System Evaluation - Boomsnub/Airco Superfund Site, Hazel Dell, Washington	Groundwater monitoring program evaluation	Pump and Treat
	Streamlined Remediation System Evaluation (RSE-LITE) - Cape Fear Wood Preserving Site, Fayetteville, North Carolina	Plume capture evaluation, Groundwater monitoring program evaluation	Pump and Treat, Air sparging, and Monitored Natural Attenuation
	Streamlined Remediation System Evaluation (RSE-LITE) - Circuitron Corporation Superfund Site, East Farmingdale, New York	Long-term monitoring program evaluation	Pump and Treat
	Remediation System Evaluation - Douglas Road Landfill, St. Joseph County, Indiana	Groundwater monitoring program evaluation	Pump and Treat
	Optimization Support Evaluation - Greenwood Chemical Site, Newton, Virginia	Plume capture evaluation, Groundwater monitoring program evaluation	Pump and Treat
	Remediation System Evaluation - Groveland Wells Superfund Site, Groveland, Massachussetts	Groundwater monitoring program evaluation	Pump and Treat
	Optimization Support Evaluation - Havertown PCP Site, Havertown, Pennsylvania	Plume capture evaluation	Pump and Treat
	Remediation System Evaluation - Higgins Farm Superfund Site, Princeton, New Jersey	Groundwater monitoring program evaluation	Pump and Treat
	Remediation System Evaluation - Modesto Groundwater Contamination Superfund Site, Modesto, California	Groundwater monitoring program evaluation	Soil Vapor Extraction and Pump and Treat
	Remediation System Evaluation - Reilly Tar and Chemical Superfund Site	Groundwater monitoring program evaluation	Monitored Natural Attenuation
	Remediation System Evaluation - SMS Instruments Superfund Site	Groundwater monitoring program evaluation	Pump and Treat
	Remediation System Evaluation - Wyckoff/Eagle Harbor Superfund Site	N/A	Pump and Treat
DOE	A Cost-Effective Sampling of Groundwater Monitoring Wells: A Data Review & Well Frequency Evaluation	Groundwater monitoring program evaluation	N/A

Federal Agency Cost and Performance Points of Contact

May 2006

Organization	Point of Contact *
USAEC	Layne Young
USACE	Charles Coyle
Navy	Charles Reeter/Joey Trotsky
Air Force	Erica Becvar
ESTCP	Andrea Leeson
DOE	Beth Moore
EPA	John Kingscott/Marti Otto
NASA	Mark Schoppet

* If points of contact have changed, provide new information to otto.martha@epa.gov

Triad Updates

Interagency Activities/Outreach

Triad Outreach/Training

- Triad Community of Practice
  - Cross-organizational discussions; participation from DOE, DoD, states, private sector
  - Monthly Call of CoP – shared:
    - Developments
    - Experience
    - Case Studies
  - 3 active subgroups
    - Leadership (Feds)
    - Marketing
    - Training
      - Inventory of interagency course offerings
      - Developing a Triad curriculum

Triad Outreach/Training

- Training activities
  - EPA
    - Classroom in EPA Regions, states
    - Internet seminars (EPA, ITRC)
  - Air Force
    - 3-Day course
    - Relates RODs to systematic planning
    - Connections to risk assessment
    - 5 deliveries (3 complete)
  - USACE
    - 1.5 Day
    - Focus on systematic planning
    - 4 planned deliveries

Triad Outreach/Training

- Training (continued)
  - Developing Navy version of course through SWDIV
    - Goals
    - Key implementation concepts
  - UFP-QAPP (Federal Facilities, Navy, EPA collaboration)
  - International
    - Data Quality Conference
    - Field Analytical Suppliers Association (FASA)
      - Advance field analytics in Europe
      - Developing a series of training, outreach efforts
      - Collaboration with U.S. Triad training efforts

Persistent Organic Pollutants (POPs)

Persistent Organic Pollutants (POPs) Report

- Title: Non-Combustion Technologies for Remediation of Persistent Organic Pollutants in Stockpiles and Soil
- Provides descriptions of 13 non-combustion technologies
  - 7 full scale, 4 pilot scale, 2 bench scale
- Evaluates technologies bases on POPs treated, media treated, pretreatment requirements, performance, and cost
- Presents case studies
- Document Number: EPA-542-R-05-006

POPs Update

- New technologies
  - Bioremediation (Anaerobic Bioremediation using blood meal, Daramend and Xenorem)
  - Phytoremediation
  - Sonic Technology
- Several technologies are no longer being commercialized (generally due to cost)
  - Gas Phase Chemical Reduction (GPCR)
  - Solvated Electron Technology
  - AEA Silver II
- New site performance data
  - Geomelt, ISTD, MCD, BCD
- New fact sheets
  - Anaerobic bioremediation using blood meal, Daramend, ISTD

Persistent Organic Pollutants (POPs)

- A Contaminant focus area for POPs is at: http://www.cluin.org/POPs
- A pdf copy of "Non-Combustion Technologies for Remediation of Persistent Organic Pollutants in Stockpiles and Soil" is available at: http://www.cluin.org/download/remed/542r05006/final_pops_report_web.pdf

Overview of Technologies Treating Persistent Organic Pollutants (POPs)

Technology	Soil/Stockpile	In-Situ/ Ex-situ	Scale	Contaminant Treated
BCD	Soil/Stockpile	Ex-situ	Bench	Chlordane, Heptachlor, PCBs
Blood Meal	Soil	Ex-situ	Full	Toxaphene
Cerox	Soil	Ex-situ	Pilot	Chlordane, PCBs, Dioxins
DARAMEND	Soil	Ex-situ/ In-situ	Full	Toxaphene, DDT
Geomelt	Soil/Stockpile	Ex-situ	Full	DDT, Dieldrin, HCB
GPCR	Stockpile	Ex-situ	Full	DDT and HCB

BCD = Base Catalyzed Decomposition

Overview of Technologies Treating POPs Continued

Technology	Soil/Stockpile	In-Situ/ Ex-situ	Scale	Contaminant Treated
ISTD	Soil/Stockpile	In-situ	Full	PCBs, Dioxins
MCD	Stockpile	Ex-situ	Full	Aldrin, Dieldrin, DDT
Plasma Arc	Stockpile	Ex-situ	Pilot	HCB
Self Prop. High Temp. Dehal.	Stockpile	Ex-situ	Bench	HCB
Solvated Electron	Soil	Ex-situ	Pilot	DDT, Dieldrin, PCBs, Dioxins
TDR-3R	Stockpile	Ex-situ	Pilot	HCB
Xenorem	Soil	Ex-situ	Full	Chlordane, DDT, Dieldrin, Toxaphene

ISTD – In situ Thermal Desorption

MCD = Mechanochemical Dehalogenation

Information Sources

A pdf copy of "Non-Combustion Technologies for Remediation of POPs in Stockpiles and Soil" is available at: http://www.cluin.org/download/remed/542r05006/final_pops_report_web.pdf

Stockholm Convention

- http://www.pops.int/

International HCH and Pesticides Association

- http://www.ihpa.info/libraryNATO.htm

U.S. Environmental Protection Agency

- http://www.cluin.org/contaminantfocus/POPs
- http://www.clu-in.org/download/remed/acwatechreport.pdf
- http://www.epa.gov/oppfod01/international/pops.htm

United Nations

- http://www.chem.unep.ch/pops/
- http://www.unep.org/stapgef/documents/popsJapan2003.htm
- http://www.gpa.unep.org/pollute/organic.htm
- http://www.who.int/iomc/groups/pop/en/
- http://www.unido.org/doc/29487

Science and Technology Advisory Panel of the Global Environmental Facility

- http://www.unep.org/stapgef/home/index.htm

Next FRTR Meeting

- December 6 or 13, 2006
- Location: One Potomac Yard, 2777 South Crystal Drive (behind the Hyatt), Crystal City
- Potential Topics:
  - Air Emission Control and Monitoring Technologies/Collaborative Opportunities for Waste Site Cleanup
  - Measurement and treatment of emerging contaminants
  - DNAPL cleanup case studies