Innovation and Remediation in the Federal Contaminated Sites Action Plan

PWGSC Expert Support
May 2012
Overview

- Objective and activities in FCSAP Phase 1 – innovative remedial technologies and approaches

- Revised objective and activities in FCSAP Phase 2 – addition of sustainable and green aspects
Innovative Technologies and Approaches

• Use of Innovative Remedial Technologies and Approaches is recognized as a secondary benefit under FCSAP

• PWGSC given the mandate to promote use of innovative technologies and approaches at federal contaminated sites

• PWGSC initiated a number of activities to deliver on this mandate
FCSAP : PHASE 1 (2006-2011)

Focus on Innovation

- Defining INNOVATION
- Facilitating INNOVATION
- Showcasing INNOVATION
PHASE 1
Defining INNOVATION

Early definition of Innovative Technologies …
• anything, but conventional dig and dump or pump and treat

Expanded definition…
• process or approach with limited full-scale application
• a new application to the site remediation sector
• ‘innovation’ in how the technology is applied,
• approach should be environmentally preferable,
PHASE 1
Facilitating INNOVATION

• Innovative Solution Workshops
• Decision Making Tools
• Delivery Mechanisms
Innovative Solution Workshops

Innovative Solution Workshops (5)
• created awareness among ~1000 federal custodians, technology vendors/consultants and academia of remedial issues and potential technology solutions, and
• explored challenges to advancing innovation.

Vendor Workshops
• explored innovative technology remediation options
Workshop Findings: Innovation Issues/Challenges
Decision Making Tools

- **GOST** (Guidance and Orientation for Selecting Technologies) provides considerations in deciding among remediation technology options.

- **SDT** (Sustainable Development Tool) integrates SD principles into remedial technologies evaluation process;

- **Guidance Standards** provide direction:
  - e.g. Guidance on Human Health Risk Assessment,
  - Standardization of Wildlife Receptor Characteristics…
Delivery Mechanisms

- Review delivery tools and mechanisms;
- Adopt regional best practices;
- Enhance consistency in regional call-ups;
- Combine to create fewer mechanisms and more regional consistency;
- Investigate optional delivery approaches
PHASE 1
Showcasing INNOVATION

- Innovative Technology Profiles
- Editorials
- POS Materials
Federal Contaminated Sites

Technology Profiles

INNOVATIVE REMEDIATION

Swivel/Pint Technologies

The Challenge

Traditional remediation technologies are often limited by the presence of in-situ conditions such as low permeability, low vapor pressure, and low aqueous solubility in low-volatility organic compounds. These conditions can make it difficult to apply conventional remediation methods effectively.

The Solution

Swivel/Pint Technologies has developed a technology called the “Biogas Solution” that addresses these challenges. The technology involves the injection of a proprietary gas into the subsurface, which facilitates the movement of contaminants and enhances the effectiveness of remediation processes.

The Benefits

- Improved remediation efficiency
- Reduced project costs
- Increased project flexibility

INNOVATIVE REMEDIATION

Vessel Disposal

The Challenge

The challenge of disposing of large amounts of contaminated vessel ballast water presents a significant environmental concern.

The Solution

Vessel Disposal offers a solution by developing a method for the disposal of contaminated vessel ballast water. The process involves the collection of ballast water in a specially designed vessel and its subsequent disposal at sea.

The Benefits

- Reduction of environmental impact
- Simplification of regulatory compliance
- Efficient disposal of large volumes

INNOVATIVE REMEDIATION

FEDERAL SITE REMEDIATION

Port Hope Initiative

The Challenge

The Port Hope Initiative focuses on the remediation of a historical spill that occurred in Port Hope, Ontario. The challenge is to safely and effectively remediate the contaminated site while minimizing environmental impact.

The Solution

A multi-disciplinary approach is being employed, including groundwater and air monitoring, as well as innovative technologies such as bioremediation and phytostabilization.

The Benefits

- Reduced environmental impact
- Enhanced public trust
- Innovation in remediation practices

INNOVATIVE REMEDIATION

Smallerail Lightening

The Challenge

The challenge of smallerail lighting involves the need for an effective and efficient system to reduce the risk of accidents and subsequently improve safety for railway operations.

The Solution

A new smallerail lighting system is being developed, which utilizes advanced technology to improve visibility and safety during low-light conditions. The system is designed to reduce accidents and enhance safety for railway personnel.

The Benefits

- Increased safety for railway operations
- Improved visibility during low-light conditions
- Cost-effective solution
Editorials

Focusing on INNOVATION through sustainable principles and practices

“innovative, sustainable and green remediation technologies, approaches and best practices”
PHASE 2
Redefining INNOVATION

So as to:

• Minimize environmental footprint,
  by reducing/minimizing resource utilization and
  maximizing social and economic benefits;

• Minimize incremental human and ecological risks;

• Enhance skills, existing and local businesses and
  jobs, and create new.
PHASE 2: Facilitating INNOVATION

- Skills Enhancement
- Decision Making Tools
- Delivery Mechanisms
Skills

Resources
• Skill/Training resources/needs being identified,
• Expertise sharing across Regions

Training Courses/Webinars on:
• Remediation Technologies,
• CCME Environmental Quality Guidelines,
• Environmental Site Investigations,
• Erosion and Sediment Control,
• Sustainable, green approaches and best practices
• Objective (Performance) Based Contracting
Decision Making /Project Management Tools

GOST available on-line.
SDT available on-line (Fall 2012),
Guidance Standards
• Site closure Tool (PWGSC)/Tool for Risk Assessment Validation (EC)
• Performance Specifications for Solidification /Stabilization Webinar (ITRC)
• Sustainable Remediation Specifications

Annual Demand Forecasts
Delivery Mechanisms

Investigate innovative, sustainable and green (ISGR) remedial delivery approaches through:

• **Policy**… promote use/evaluate use of ISGR;

• **Contracting**… perform specific activities/attain specific outcomes using ISGR;

• **Proposal Evaluations**… identify ISGR approaches, expertise/experience and environmental benefits; and ISGR results/benefits reporting methods.
Phase 2: Showcasing INNOVATION

Case Studies and Profiles of unique, significant and innovative, sustainable and green technologies and approaches being profiled, showcased and posted.

Project Brochures/Posters showcased and distributed at local, regional and national remediation venues, e.g. FCSAP booth.
FCSAP Summary

Phase I:
- Focus on Innovative Technologies
- Development of GOST and SD Tools
- Innovative Remedial Solution Workshops
- Showcasing of Innovative Technologies/Approaches

Phase 2:
- Enhance focus to sustainable and green remedial approaches
- Finalize Sustainability Tool, add to GOST
- Develop Green Procurement Tools
- Showcase Innovative, Sustainable and Green Remedial Approaches