Implementation Session Agenda

- Opening & Importance of Implementation (2 min)
- Product Overview (15 min)
- Small Group Discussions by Sector (25 min)
- Report Outs on Implementation Targets (15 min)
- Wrap-Up/What’s Next (3 min)
Overview

- Tech-Reg addresses barriers to use of S/S:
  - Inconsistent criteria for development of performance specifications
  - Uncertainties associated with prediction of long-term performance
  - Lack of methodologies for measure of long-term compliance

- Concerns regarding what types of contaminants (such as organics) can be treated with S/S have limited its use

- States have been reluctant to use S/S because of the difficulty in assessing performance
Tech-Reg Content

- **Solidification**
  - Entrap contaminants within a solid matrix
  - Coating of contaminant molecule
  - Organics are generally immobilized due to reduced hydraulic conductivity

- **Stabilization**
  - Bind or complex contaminants
  - May involve chemical transformation
  - Metallic contaminants are stabilized by precipitation or by interaction (e.g. sorption) with cement matrix

- **Example: Lead**
  \[
  \text{Pb(HCO}_3\text{)}_2 + \text{CaSO}_4 \cdot 2\text{H}_2\text{O} \rightarrow \text{PbSO}_4 + \text{CaCO}_3 + 3\text{H}_2\text{O} + \text{CO}_2
  \]
Tech-Reg Content

- Provides an approach to identify and evaluate appropriate performance specifications, tests, and parameters
- Describes appropriate implementation and post-implementation sampling and testing
- Evaluates long-term performance of technology
- Provides long-term stewardship methods to measure and verify performance
Steps to Achieve Impact

- Advertise availability of document to appropriate audiences
- Communicate with S/S specific audiences
- Provide internet based trainings
- Give overview and topic-specific talks at appropriate conferences
## Where Tech-Reg Will Provide Impact

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<thead>
<tr>
<th>Expected User Group</th>
<th>Intended Use</th>
<th>Benefit</th>
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| Regulators          | • Consistent approach for reviewing, selecting, testing and/or using performance specifications  
                         • Develop and/or review long-term stewardship programs | • Identify and select appropriate performance specifications for design, implementation, and monitoring of S/S remedies  
                         • Anticipate potential stakeholder concerns                                                  |
| Consultants         | • Consistent approach for performance specifications.  
                         • Treatability studies guidelines  
                         • Long-term monitoring program design | • Regulatory acceptance  
                         • Potential cost and time savings                                                          |
| Site Owners         | • Understand the role of performance specifications | • Potential cost and time savings  
                         • Regulatory acceptance  
                         • Potential for land reuse                                                               |
| Stakeholders        | • Understand the role of performance specifications | • Greater confidence in remedial process  
                         • Potential for land reuse                                                               |
The guidance assumes S/S has already been selected as a remedial alternative.
Case Study of Tech-Reg Use

- Define material performance goals
- Develop S/S material specifications
Case Study of Tech-Reg Use

- Conduct treatability studies
- Develop, test, and finalize construction performance specifications
Case Study of Tech-Reg Use

- Implement S/S

Diagram:

- Inputs:
  - Site Model
  - Site Remedial Goals
  - Concepts (Remedial Process, Implementation, Final Product)
  - Revise (Specifications, Process, Performance Goals, Remedy)

- Actions:
  - Define Material Performance Goals (Section 4)
  - Develop S/S Material Performance Specifications
  - Conduct Tiered Treatability Study (Section 5)
    - Are Criteria Met?
    - yes
  - Develop Construction Performance Specifications
  - Test S/S Process at Field/Pilot Scale
  - Finalize Construction Performance Specifications
  - Implement S/S Treatment (Section 6)
  - Long-Term Stewardship (Section 7)

- Considerations:
  - Basis for Meeting Goals
    - Dilution-Attenuation Factors
    - % Reduction at Source
    - Hydrogeological Modeling
  - Point of Compliance
    - Distance from Source
    - Regulations
    - Hydrogeology
    - Well depth
  - Performance Parameters and Performance Tests (Section 5)
    - Strength
    - Hydraulic Conductivity
    - Leachability
  - Candidate Formulations
    - Leaching Consistency Test
      - Mass Transfer
      - Equilibrium
  - Performance Parameters and Performance Tests (Section 3)
    - Strength
    - Hydraulic Conductivity
    - Leaching Consistency
    - Mass Transfer
    - Equilibrium
Case Study of Tech-Reg Use

- Long-term stewardship to monitor and verify performance
Specific Implementation Target Ideas

- Manufactured Gas Plant (MGP) sites
- S/S specific audiences
- General remediation sites, brownfields
- Oil and gas industry
MGP sites

- Provided fact sheet and short presentation at MGP quarterly meeting in California (June 2011)
- Provided fact sheet to attendees of EPRI MGP meeting (August 2011)
- Provide article for EPRI quarterly newsletter
- 4th Intl. Symposium and Exhibition on the Redevelopment of MGP Sites, March 2012
  - 3 abstracts submitted: (1) Overview of ITRC guidance; (2) Leaching test methods; (3) Long-term monitoring
  - Scheduling an Internet training following the conference
S/S Specific Audiences

- Announcements to S/S Linked-in group about document and training offerings
- Portland Cement Association – requesting a link on their web site
General Remediation Sites/ Brownfields

- RemTech 2011 (October 2011)
  - Presentation by team member on ITRC S/S Team and products
  - Fact sheets to advertise document and training

- Request Pollution Engineering to list internet trainings on web site

- RemTEC Summit 2012 (Date TBD)
  - Submit abstract for conference
  - Schedule an Internet training following conference

- Brownfields Conference (Date TBD) (?)
Oil and Gas Industry

- International Petroleum Environmental Conference (IPEC) (November 2011)
  - Overview presentation on ITRC guidance
  - Distribution of fact sheets
- Article in Society of Petroleum Engineers (SPE) Oklahoma chapter newsletter and web site
Sector Implementation Discussions

- Identify implementation targets for this Product (e.g., sites)
- Identify key personnel (by name if possible) that need this product in your sector
- Identify key messages that would attract people in your sector to use this product
ITRC Solidification/Stabilization (S/S) Team Implementation Session Notes
October 2011

The Fall ITRC S/S Team Implementation Session was attended by a predominance of state regulators, therefore, the group determined that it would be more beneficial to conduct a group implementation discussion versus breaking into small groups by sectors.

1. What sites or type of sites would benefit from this guidance?
   - Navy response: Sites with sediment contaminations may benefit from this guidance.
   - CT state regulator: small marinas with the need to dredge sediments
   - Stakeholder: Lawrence Livermore Laboratory is currently considering S/S for one of its sites
   - State regulator: operating facilities, such as fuel blends (with organic contaminants)

2. What other types of audiences may benefit from this guidance?

   Environmental Justice audiences may be interested in the application of S/S on brownfield sites.
   Environmental Justice contacts include the following:
   - Coordinators at state agencies
   - Manny Stanislaus @ EPA
   - Superfund community coordinators

3. How do we reach Brownfields-related audiences?
   - State Brownfield groups
   - State Brownfield conferences
   - State brownfield coordinators
   - State brownfield programs may be in state economic development programs
   - Real estate developers specializing in brownfields

4. What other mechanisms should we use to advertise the availability of the guidance and training?
   - Send fact sheet to the ITRC Sediment Team (reach sediment-related audience)
   - Department of Defense:
     - RPM newsletter
     - Information in the monthly email to the Air Force Tech Transfer recipients (contact Kim Brown)
     - Notice in the Society of American Military Engineers newsletter
   - National Lime Association
     - Look on web site – could ask for link on web site
     - Blake Scott has contact
     - Coal ash productions
   - MGP Reporter Web newsletter quarterly (put out by GEI); Tom Plante has contact for newsletter