Summary of EPA Workshop on
Geologic Sequestration Financial Responsibility Implementation

EPA provided the following disclaimer to the webinar participants:

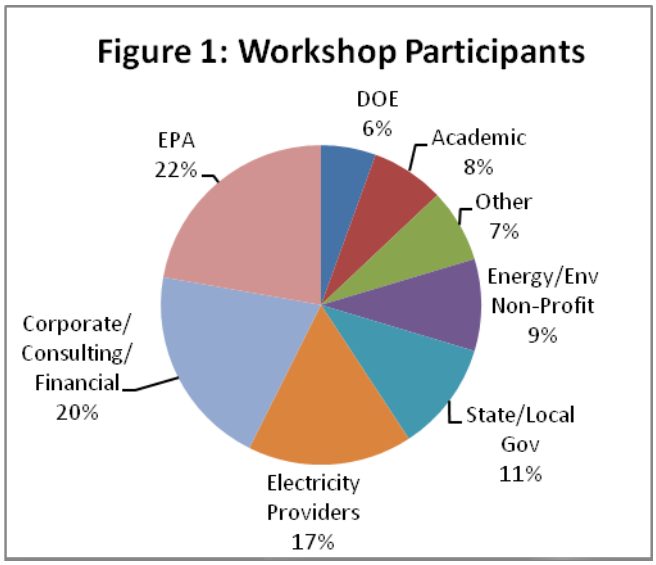
The Safe Drinking Water Act (SDWA) provisions and EPA regulations described in the Class VI Rule contain legally-binding requirements. The Guidance makes suggestions and offers alternatives that may be helpful for implementation efforts, but are not legally binding. This workshop provided an opportunity for information sharing on implementation practices and efforts. Neither the Guidance nor this workshop substitute for the Class VI Rule.

On September 28, 2011, EPA conducted a workshop on financial responsibility implementation for carbon dioxide geologic sequestration (GS) Class VI wells. The goals of the workshop were to provide an overview of financial responsibility requirements for GS projects and to encourage information sharing on implementation options and issues. The workshop addressed the following:

- An overview of the GS Rule, financial responsibility within the UIC program, and the financial responsibility guidance
- An explanation of initial financial responsibility demonstrations, ongoing responsibilities, and stakeholder involvement
- A discussion of common implementation issues, including the availability and affordability of qualifying GS financial responsibility instruments and the state primacy application process

Approximately 60 people attended the workshop, either in person or by webinar. Participants included representatives from energy companies, oil and gas companies, financial services companies, law firms, academia, state government, and federal government agencies. Figure 1 summarizes webinar participant affiliation.

A facilitated discussion followed the presentation on financial responsibility implementation practices and instrument options. Participants were given the opportunity to share their experiences with and thoughts about various financial instruments as well as the application process, and had the opportunity to ask questions to a panel of experts. Appendix A includes brief biographical information about the expert panel. The purpose of this report is to summarize the workshop and discussion that followed.



Workshop Overview

The workshop was presented in two parts. Part I provided background information on the Class VI Rule and guidance, including an overview of the financial responsibility requirements in the Underground Injection Control (UIC) Program. Part II focused on financial responsibility implementation topics, including information on the initial demonstration and a review of financial instruments and the availability and affordability of qualifying financial instruments. Appendix B presents slides for the workshop.

- In the first part of the presentation, Steve Platt of EPA Region 3 presented background information on the Class VI Rule and guidance. The Rule and the guidance took an adaptive approach for their development, involving stakeholder comments and informing the public, and the guidance presents explanations to aid implementation efforts. Mr. Platt described that the Class VI Rule was designed by the UIC Program to protect underground sources of drinking water (USDWs), not to promote GS activities. In particular, financial responsibility requirements in the Class VI Rule create incentives to meet environmental obligations. Owners or operators must demonstrate and maintain financial responsibility for the following GS activities: performing corrective action on wells in the Area of Review, injection well plugging, post-injection site care and site closure, and emergency and remedial response (40 CFR 146.85(a)). In addition, Mr. Platt described the roles and responsibilities for both owners and operators and state or EPA regulators, and summarized qualifying GS financial responsibility instruments.

- In the second part of the presentation, Joe Tiago of EPA Headquarters discussed financial responsibility implementation. Mr. Tiago began his presentation with an overview of key implementation topics. The owner or operator must make an initial financial responsibility demonstration by choosing an appropriate instrument or combination of instruments from the list of qualifying instruments and submitting documentation (e.g., proof of insurance) and a permit application to the Director. The Director then begins an initial review to evaluate and approve the demonstration by assessing the completeness and accuracy of the financial responsibility demonstration, evaluating the financial stability of the independent third party, and requesting additional information as necessary. The Director should also involve and notify stakeholders as part of the review process. Stakeholder involvement is a requirement for UIC permitting (based on 40 CFR Part 25 and 40 CFR Part 124). EPA believes that stakeholders should be involved as early as possible in the permitting process. Following the initial review, owners or operators must update cost estimates annually for inflation and following amendments to GS activity plans. The Director must review and approve all updated cost estimates. Mr. Tiago went on to highlight some common implementation issues. One potential issue exists due to the developing nature of the GS market, which causes the availability and affordability of financial instruments to vary across time and location. However, Mr. Tiago emphasized that all qualifying instruments have been used in other UIC well classes, although the use of escrow accounts has been limited to a few states, and that Director flexibility, third party financing, and appropriate site selection may make instruments more available and affordable. Another issue involves the Class VI primacy application process, which is independent of the other UIC well classes. Mr. Tiago emphasized that states can submit a primacy application at anytime. EPA evaluates states' proposed regulations based on their stringency and equivalence to federal regulations. Mr. Tiago concluded

the presentation with additional information for each type of qualifying financial instrument, including example forms/templates for instrument demonstration.

Discussion Overview

Following the presentation, EPA held a facilitated discussion to encourage participants to share their thoughts and concerns about GS financial responsibility implementation. Mr. Joe Tiago of EPA Headquarters was available to answer questions along with expert panelists including: Mr. Ben Harper of Zurich North America; Mr. Steve Platt of EPA Region 3; Ms. Melissa Pollak of the University of Minnesota; Mr. John D. Stumpf or Old National Trust Company; and Mr. Brian White of Illinois Environmental Protection Agency. These experts were selected to share information from the perspective of the insurance industry, banking/financial services, academia, and EPA regional and state regulators. The discussion was facilitated by Mr. Charles Hernick of The Cadmus Group, Inc.

Note: opinions of the workshop participants reflected in this summary are not necessarily those of EPA.

Participants provided the following comments on the Class VI primacy application process:

- A few states have indicated their intent to submit a primacy application, but at this point in time, EPA has not received any applications for primacy. Once a primacy application is submitted, EPA must review the package and complete the rulemaking process before approving the application. The timing of application approval will depend on individual state factors, including the states' proposed regulations equivalence to federal regulations. While states are applying for primacy, it is the responsibility of EPA to review permit applications.

Participant also provided the following comments on the status of Class VI permit applications:

- EPA Region 5 has received at least one Class VI application, but the application did not include complete financial responsibility information and the details on the proposed financial instruments are not available. All financial mechanisms must be in order before the EPA can issue a permit.

The following thoughts were offered on financial responsibility requirements and roles:

- "Stakeholder" is defined as anyone that expresses interest in the project via public testimony, written testimony, etc.
- Credit ratings from rating agencies (e.g., Moody's, Fitch, S&P) are typically used to define stability. Appropriate credit ratings vary across instruments, and Directors should verify submitted financial statements for consistency with the Class VI Rule requirements. The financial responsibility guidance also provides suggestions on how UIC Program Directors can assess the stability of a third party.
- There are approximately four to five insurance companies who have expressed interest in underwriting GS activities.
- The Class VI Rule does not apply to Class II enhanced oil recovery projects, but there is potential for a Class II well to transition to a Class VI well.
- There are two main factors that govern the transition from a Class II well to Class VI well. The factors are: (1) the primary purpose the well, and (2) the type of risks to USDWs. Final

requirements at 40 CFR 144.19 and a forthcoming guidance on Class II to Class VI transition provide information and details on the transition process.

Participants offered the following perspectives on trends in the financial responsibility demonstration process:

- For insurance, owners or operators of GS projects should start to engage with financial institutions as early as possible, as GS projects require a very large technical underwriting process. For example, one participant from the insurance industry prefers at least a six month lead on large-scale projects.
- Participants remarked on a movement away from writing bonds for natural resources. Although owners or operators can still find bonds, their availability depends on the owner or operator's financial strength and reputation and the magnitude of the bond limit. Most companies push towards an insurance solution, and typically do not use bonds to satisfy financial responsibility requirements.
- The trend for landfills has been toward the use of insurance and captive insurance (i.e. an insurance policy underwritten by a company's subsidiary). For hazardous waste sites, bonds, insurance, trusts, and self-insurance are common.
- Participants have found it difficult to find banks and sureties willing to write a blanket bond or issue a letter of credit. Letters of credit may be available for large commercial clients.
- One participant remarked that trust agreements have become the most popular vehicle to demonstrate financial responsibility, at least in the Midwest.

Additional thoughts were provided on project risk and remediation costs:

- Insurance premiums are not based on the coverage required by the regulator, but on the estimated cost for underwriting the GS activity.
- There will be a guidance issued that provides information on common remediation, closure and monitoring activities. The financial responsibility guidance also makes suggestions on the appropriateness of financial instruments for various phases of GS activity. Ultimately, it is up to the owner or operator to select an appropriate instrument or combination of instruments.
- In the public domain, there are few examples of CO_2 releases from enhanced oil recovery activities to use as empirical cost information. However, insurance companies have turned to examples in the oil and gas industry and enhanced oil recovery to develop cost models for GS remediation.
- One participant from the insurance industry considers three types of risk when evaluating potential costs for a GS project: financial risk (risk associated with financial markets), technical risk (risk associated with project engineering), and socioeconomic risk in the surrounding area (e.g., defending lawsuits). The majority of expected losses are not from technical risk; instead, the majority of losses historically have come from socioeconomic risks. Insurance companies have also recently had a harder time estimating financial risk due to market uncertainty surrounding inflation and the treasury yield.

Appendix A: Expert Bios

Ben Harper

Ben Harper is the Climate Product Officer for Zurich's global Climate Office. Ben is based in Atlanta, Georgia. He is primarily responsible for developing new risk transfer products to address climate change risk. Ben and his team have developed products to address concerns ranging from renewable energy sources, carbon emissions, and geologic sequestration. Prior to his current role, Ben managed Zurich North America's environmental engineering unit. Ben has over 20-years of environmental consulting experience in environmental investigation, remedial design, regulatory compliance and civil/environmental construction. Ben holds a Bachelor of Science in Civil Engineering and is a Certified Cost Engineer (CCE).

Steve Platt

Steve Platt began his work with the Environmental Protection Agency, Region 3, in 1978. He presently works in the Ground Water and Enforcement Branch in the Water Protection Division. His primary work in the Region involves the management of the Underground Injection Control (UIC) direct implementation programs in Pennsylvania and Virginia. He is a national expert in the Class II UIC program and has been a member of numerous UIC national workgroups. He was recently a member of the EPA Tier II Workgroup that developed the recently promulgated UIC carbon sequestration regulations. He has been chair of the national UIC Technical Workgroup, twice, and for the past 16 years, EPA's lead in organizing, administering and teaching the yearly UIC Inspector Training Course. Steve has a Bachelor of Science degree in Geology from Susquehanna University and a Master of Science degree in Hydrology from the University of New Hampshire.

Melissa Pollak

Melisa Pollak is a Research Fellow at the University of Minnesota Humphrey School of Public Affairs, specializing in low-carbon energy policy. She is involved in projects studying the risks of potential leakage from geologic sequestration sites and the design and implementation of regulations for geologic sequestration. Melisa has published a number of peer-reviewed articles on various aspects of carbon capture and storage, and has written white papers for the International Risk Governance Council and the CCSReg project. Before coming to the University of Minnesota, Melisa worked as a hydro-geologist at the Minnesota Pollution Control Agency. Melisa holds master's degree in science, technology and public policy, and a bachelor's degree in geophysics from the University of Minnesota.

John D. Stumpf

John D. Stumpf is a Vice President, Senior Financial Advisor and Senior Mineral Specialist at Old National Trust Company. John joined Old National in 1994 as part of the Asset Management Division of Old National Bank. His primary function with Old National Trust Company includes estate, retirement and financial planning and he currently oversees clients and assets in excess of $100 million. John is the Chairman of Trust Mineral Committee and oversees the Mineral Division of Old National Trust Company, working with the company's administrators in the real estate and mineral production areas.

Brian White

Brian White is the Compliance Manager in the Bureau of Land at the Illinois Environmental Protection Agency. Brian has worked at the Illinois EPA since 1988 and as the Compliance Manager since 1990. The Compliance Unit is generally responsible for compliance tracking activities and for reviewing and evaluating statutory and regulatory compliance with the financial assurance requirements for hazardous waste sites, solid waste landfills, and tire storage sites. Brian also helped re-write and update financial assurance regulations for solid waste landfills in Illinois; this included providing both written and oral testimony at hearings in Springfield and Chicago on behalf of the regulatory changes. Brian holds a B.S. in Environmental Health from Illinois State University and has completed postgraduate work towards a Master's in Public Administration from the University of Illinois in Springfield.

Appendix B: Slide Presentation Implementation Workshop and Webinar

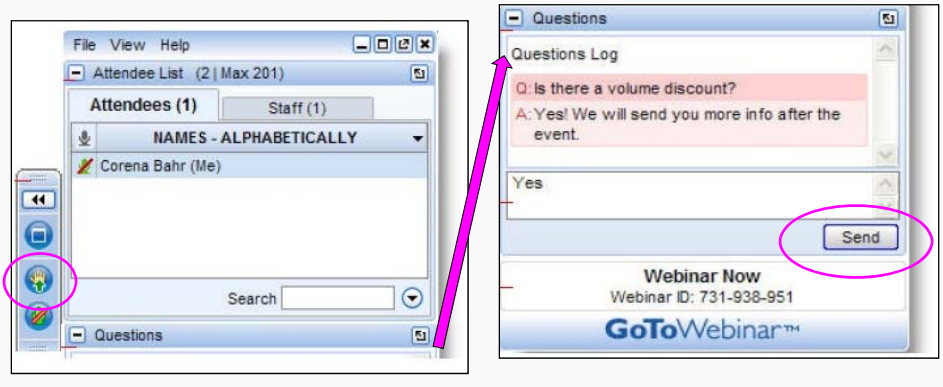
Geologic Sequestration Financial Responsibility Implementation Workshop

September 28, 2011

Call in number: 1-866-299-3188
Meeting number: 2025662190#

At the 2011 Ground Water Protection Council Annual Forum

Control Panel Navigation



Webcast Overview and Purpose

- Part I: Background on Class VI Rule and guidance
  - Steve Platt, EPA Region 3
- Part II: Implementation
  - Joe Tiago, EPA Headquarters
- Part III: Discussion
  - Charles Hernick, The Cadmus Group (facilitator)
  - Ben Harper, Zurich
  - Brian White, Illinois EPA
  - John D. Stumpf, Old National Trust
  - Melisa Pollak, University of Minnesota
  - Steve Platt, US EPA Region 3

Disclaimer

The Safe Drinking Water Act (SDWA) provisions and EPA regulations described in the Class VI Rule contain legally-binding requirements. The Guidance makes suggestions and offers alternatives that may be helpful for implementation efforts, but are not legally binding. This workshop provides an opportunity for information sharing on implementation practices and efforts. Neither the Guidance nor this workshop substitute for the rule.

Part I

Background on Geologic Sequestration Rule and Guidance

Steve Platt, US EPA Region 3

Key Terms

- Geologic sequestration
  - Long-term containment
  - Does not apply to capture or transport of CO_2
  - Does not apply to hazardous waste defined at 40 CFR Part 261
- Injection zone
- USDW
- Director
- Owner or operator

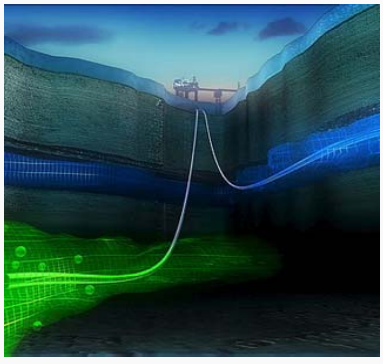


Image: SciAm, 2009.

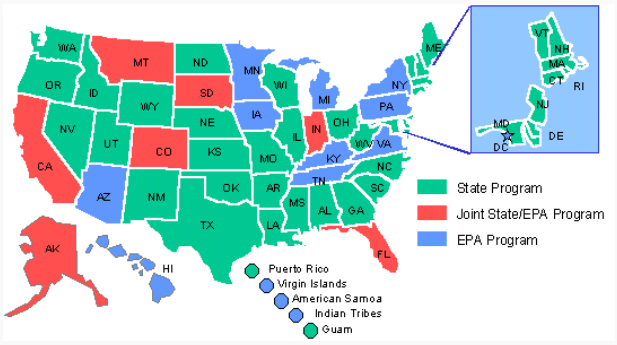
Why Regulate Geologic Sequestration?

- GS has the potential to mitigate climate change by controlling greenhouse gas (GHG) emissions
  - Only current technology ready for addressing large-scale fossil fuel use
- Direct and indirect risks exist from unanticipated release, migration, or changes in subsurface pressure
  - USDWs are most vulnerable
- Objectives include:
  - Preventing contamination
  - Ensuring availability of financial resources for remediation

UIC Program Overview and Purpose

- UIC Program is responsible for regulating construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal
  - Injection must not endanger USDWs (40 CFR 144.12(a))
- Six well classes exist
  - UIC Program designed the new Class VI class to protect USDWs, not to promote GS activities

UIC Primacy Structure



- 33 states and 3 territories have primary enforcement authority (primacy) for the UIC program (green)
- Jointly implemented UIC program in 7states (red)
- EPA directly implements entire UIC Program in 10 states (blue)

Source: EPA, 2011

FR in the UIC Program

- FR creates a financial incentive to meet environmental obligations and ensures that USDWs are protected
- UIC Program requires the demonstration of “financial responsibility and resources to close, plug, and abandon the UIC operation” for all well classes (40 CFR 144.28(d) and 144.52(a)(7))
- Authority of rules and guidances differs among well classes
- Class I rules and Class II guidance are models for GS FR

FR Roles and Responsibilities

- FR requires active management by the owner or operator and regulators
  - Owner or operator
    - Estimate costs (revise estimates periodically)
    - Secure FR mechanism
    - Demonstrate FR mechanisms to state or EPA
    - Maintain FR
  - State or EPA
    - Review FR mechanism and cost estimate with permit application
    - Periodically review project to ensure FR is maintained

Goals of the GS Rulemaking Process

- Ensure protection of USDWs
- Use a clear and transparent process
- Tailor existing UIC program requirements for GS of CO_2
- Use an adaptive approach
- Capitalize on existing EPA, state, tribal and industry experience
- Involve, inform and educate the public

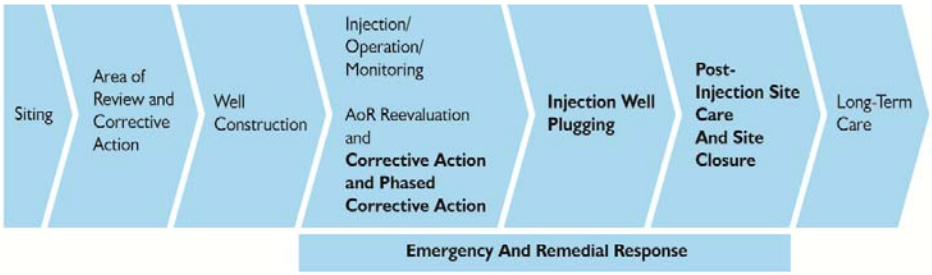
GS Rulemaking Timeline

Activity	Timeframe
Proposed Rule	Published: July 25, 2008 Public Comment Period Closed Dec. 24, 2008
Notice of Data Availability	Published: August 31, 2009 Public Comment Period Closed Oct. 15, 2009
Response to Comments and Final Agency Review	Completed and on website
Final UIC GS Rule Published	**December 10, 2010**
Primacy Deadline	**September 6, 2011**

GS FR Guidance Development

- Purpose of the guidance
  - Explanations/recommendations to aid implementation efforts
- Final guidance published July 2011
  - Available online at: http://water.epa.gov/type/groundwater/uic/class6/gsguidedoc.cfm
- Main guidance topics include:
  - FR coverage options
  - Descriptions of available instruments
  - Matching instruments to specific GS project activities
  - Submission requirements
  - Ongoing responsibilities

Financial Responsibility in the GS Timeline

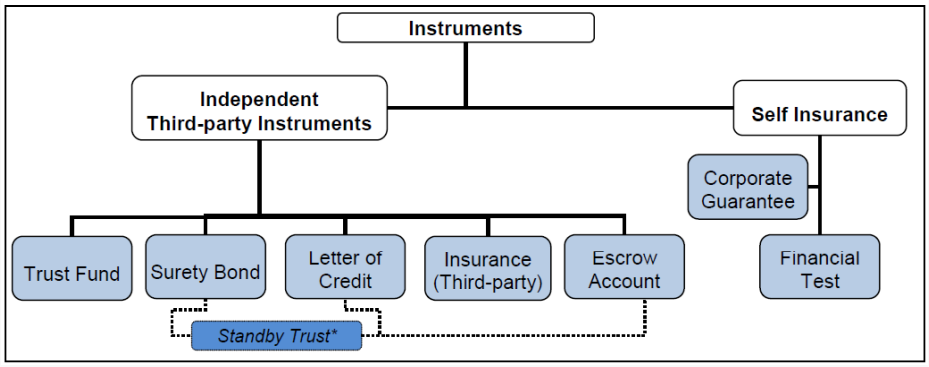


- The owner or operator must demonstrate and maintain financial responsibility and resources for phases in bold
- GS FR demonstration covers more activities than any other UIC well class

Miscellaneous Receipts Act

- EPA does not have authority under SDWA to accept and use funds for financial responsibility due to the restrictions of the Miscellaneous Receipts Act (MRA)
- The MRA requires EPA to deposit the funds it receives into the Treasury
  - Funds cannot be set aside by EPA for UIC Program activities
  - EPA cannot establish an industry trust fund
- Another party must receive the funds
  - A standby trust may be used in conjunction with other FR instruments

Qualifying GS FR Instrument Types



	Third-party Instruments	Self-insurance
General Description	Demonstration of a contract with a qualified third-party provider	Demonstration of profitability and stability
Potential Strengths	• Guarantee by a third party that environmental obligations will be fulfilled • Low oversight costs for regulators	• Historically very low risk of failure • Low cost (annual documentation) for owners or operators
Potential Weaknesses	• Requires owners or operators to set aside capital • Third parties that provide guarantees sometimes fail	• No funds are available if the company fails • Risk of inadequate or excessive oversight by Director

Questions?

Part II

Implementation

Joe Tiago, EPA Headquarters

Implementation Topics

- Implementation overview
  - Initial demonstration and review of financial instruments
  - Stakeholder involvement
  - Ongoing responsibilities
- Common implementation issues
  - Instrument availability and affordability
  - Director's approval and pay-in periods
  - State primacy application process
- Additional information for each type of qualifying instrument
  - Including examples of completed forms/templates from Guidance Appendix B

Implementation Topics

- Implementation overview
  - Initial demonstration and review of financial instruments
  - Stakeholder involvement
  - Ongoing responsibilities
- Common implementation issues
  - Instrument availability and affordability
  - Director's approval and pay-in periods
  - State primacy application process
- Additional information for each type of qualifying instrument
  - Including examples of completed forms/templates from Guidance Appendix B

Initial FR Demonstration

- The owner or operator must choose a financial instrument from the list of qualifying instruments
  - The appropriateness of various financial instruments depends on the characteristics of the instruments and the covered GS project activities
- The owner or operator must submit documentation to the Director along with the permit application
  - Documented proof of an independent third-party instrument or self insurance
  - A detailed written estimate of the cost of performing GS activities in current dollars

Initial Director's Review

- The Director is responsible for reviewing and approving all parts of FR demonstrations, including annual cost updates
- Requirements for qualifying instruments are similar to those used in other well classes
  - EPA may provide technical assistance for initial demonstrations
  - Self insurance historically most difficult to evaluate

Initial Director's Review

- The Guidance outlines important considerations for Director's Review in Chapter 7
  - Assessing the completeness and accuracy of the demonstration
  - Evaluating the financial stability of the independent third party
  - Requesting additional information from the owner or operator, if necessary
  - Evaluating and approving the demonstration
  - Evaluating the demonstration's success
  - Involving and notifying stakeholders

Stakeholder Involvement

- Important component of FR, particularly in reviewing the FR demonstration
- Public participation requirements for GS FR are based on SDWA (40 CFR Part 25)
- Implementation best practice involves beginning stakeholder involvement as early as possible in the permitting process
  - Director limited to basing decisions on SDWA
  - Other stakeholder concerns may need to go through local or state government/agencies

Stakeholder Involvement

- SDWA (40 CFR Part 25) requires outreach
  - Provide public notice to interested parties of pending actions via newspaper advertisements, radio, mailings, or e-mails
  - Hold public hearings and soliciting and responding to public comment
  - Involve a broad range of stakeholders
- Class VI Rule adds additional requirements for Directors
  - Notify agencies about permitting activities
  - Apply SDWA requirements to all supplemental applications
  - Provide public notice of waiver applications

Ongoing Responsibilities

- Owners and operators must update cost estimates
  - On an annual basis for inflation, within 60 days of the anniversary of the financial instrument's establishment
  - Following any amendments to GS activity plans
- The Director must review and approve
  - Annual updates to each project's financial responsibility demonstration, as well as the updated cost estimates
  - Any increase or decrease in the cost estimate, any withdrawal of financial responsibility funds, and any decrease in the face value of financial responsibility instruments

Implementation Topics

- Implementation overview
  - Initial demonstration and review of financial instruments
  - Stakeholder involvement
  - Ongoing responsibilities
- Common implementation issues
  - Instrument availability and affordability
  - Director's approval and pay-in periods
  - State primacy application process
- Additional information for each type of qualifying instrument
  - Including examples of completed forms/templates from Guidance Appendix B

Instrument Availability and Affordability

- Availability and affordability of financial instruments was discussed early in rule/guidance development process and throughout final comment period
  - Most questions related to insurance, sureties and trust funds
- Challenge: GS market still developing and availability/affordability are likely to vary across the country and may change over time
- EPA conducted research by interviewing financial experts, focusing on insurance and sureties

Instrument Availability and Affordability

- Overall: purpose of Class VI FR Rule and Guidance is to ensure protection of USDWs
- Owner and operator concerns tend to focus on up-front costs and effective use of capital
  - Specific cancellation and renewal provisions
  - Length of pay-in period
  - Required timeline for coverage
  - Effectiveness of standby trusts
- Implementation concerns for Directors/states may be more focused on instrument effectiveness
  - Strength of cancellation and renewal provisions
  - Flexibility of pay-in period
  - Director's ability to review demonstrations

Instrument Availability and Affordability

- All qualifying instruments have been used successfully for other UIC well classes
  - Little experience with escrow account
- Two key factors influence the current availability
  - Number of owners and operators looking to obtain instruments
  - Limited amount of experience with commercial-scale GS activities
- Financial structure of certain instruments affects their availability and affordability
- Choice of project site and professional reputation of owner or operator may also play a role

Director's Approval

- Director's flexibility during review and approval of demonstrations was an important topic during the comment response period
- Guidance clarifies examples of where the rule gives flexibility to the Director
  - Flexibility is important since the rule can not cover every possible scenario that would arise
  - Director is expected to base decisions on having adequate data and information to ensure that the demonstration sufficiently protects USDWs
  - Language and discussion consistent with rule

Pay-in Periods

- Director must approve the use and length of pay-in periods for trust funds or escrow accounts
- Concern: length of pay-in period
  - Length should be as short as possible taking into consideration availability and affordability of instruments and project risk
- Concern: burden of up-front cost
  - Third-party financing is an alternative for reducing up-front costs

State Primacy Application Process

- State's proposed regulations evaluated based on the stringency and equivalency of a state's regulations compared with the federal regulations
- Class VI primacy independent of other well classes (under SDWA § 1422)
  - New for UIC Program
  - Intended to create state programs that provide a more comprehensive approach to managing GS

State Primacy Application Process

- Primacy considerations of GS
  - Re-permitting of existing Class I, II, or V wells to Class VI
  - Other federal and state rulemakings and initiatives
  - Interstate communication and coordination
  - Environmental justice
  - Public involvement
  - EPA's adaptive rulemaking approach

State Primacy Application Process

- Two options based on current UIC primacy status
  - States that already have SDWA § 1422 primacy submit a § 1422 UIC Program Revision Application
  - States that have SDWA § 1425 primacy for Class II wells only, or do not have primacy for any UIC programs, submit a New § 1422 UIC Program Application
- States with SDWA § 1425 primacy will need to note difference between programs that are "at least as stringent" vs. "effective"
- EPA encourages "pre-application" discussions

State Primacy Application Process

- Class VI primacy application period (270 days) began on December 10, 2010 (date of publication of the GS Rule in the *Federal Register*) and ended on September 6, 2011
- However, states can submit a Class VI primacy application at <u>any time</u>
- EPA is currently administering the Class VI program for all states

Implementation Best Practices for States with Primacy

- Provide example wording for instruments
  - May be required through regulation or suggested through example forms and made available online
- Designate a "point person" to review GS FR demonstrations
- Establish and maintain good file review/management
  - Keep secure records in both hard-copy and electronic versions
- Perform periodic (e.g., monthly) reviews of orphan wells

Implementation Topics

- Implementation overview
  - Initial demonstration and review of financial instruments
  - Stakeholder involvement
  - Ongoing responsibilities
- Common implementation issues
  - Instrument availability and affordability
  - Director's approval and pay-in periods
  - State primacy application process
- Additional information for each type of qualifying instrument
  - Including examples of completed forms/templates from Guidance Appendix B

Self-Insurance Mechanisms

- Self-insurance involves the owner or operator (or corporate parent) passing a two-part financial test
- Implementation process:
  - Financial coverage criteria
    - Net Working Capital (NWC) and Total Net Worth (TNW) each at least 6 times the current cost estimate
    - TNW at least $100 million (recommended)
    - Assets in U.S at least 90% of total assets or at least 6 times the current cost estimate
  - Financial test
    - Bond rating test
    - Financial ratios test

Financial Tests

- Self-insurance involves inherent risk which inform the financial test and corporate guarantee criteria

	Owner or operator bankruptcy	Third-party bankruptcy
Outcome under **third-party instrument**	Third-party finances activities in event of bankruptcy	New demonstration is needed with alternative third-party
Outcome under **self-insurance**	Environmental obligations go unfulfilled (unless financed by public)	N/A

Financial Tests

- Alternative I: Financial ratios indicate a company's short and long term economic viability as well as its ability to meet short and long term debt obligations, looking at
  - Profitability and cash flows
  - Liquidity
- Alternative II: Bond ratings indicate a company's ability to access capital through bond markets. Rating agencies take into consideration the short and long term viability of the firm
  - E.g. Standard and Poor's investment grade ratings (AAA, AA, A, or BBB)

Self Insurance Form/Template

Financial Coverage Criteria

1. (a) Cost in current dollars for [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] (i.e., all obligations secured by the owner or operator using the financial test)		$____
(b) Sum of the company's financial responsibilities currently met using the financial test or corporate guarantee, including CERCLA and RCRA		
(c) Total of lines a and b		
2. Tangible net worth		
3. Current assets		
4. Current liabilities		
5. Net working capital [line 3 minus line 4]		
6. Total assets		
7. Total assets in U.S.		
	Yes	No
8. Is line 2 at least $100 million?		
9. Is line 2 at least 6 times line 1(c)?		
10. Is line 5 at least 6 times line 1(c)?		
11. Is line 7 at least 90% of Line 6? If not, complete line 12.		
12. Is line 7 at least 6 times line 1(c)?		

Self Insurance Form/Template

Alternative I: Financial Ratios Test

1. Total liabilities		$____
2. Net worth		
3. Current assets		
4. Current liabilities		
5. Net working capital [line 3 minus line 4]		
6. The sum of net income plus depreciation, depletion and amortization		
7. Total assets		
	Yes	No
8. Is line 1 divided by line 2 less than 2.0?		
9. Is line 3 divided by line 4 greater than 1.5?		
10. Is line 6 divided by line 1 greater than 0.1?		
11. Is line 5 divided by line 7 greater than -0.1?		
12. Is net profit greater than 0?		

Self Insurance Form/Template

Alternative II: Bond Rating Test

1. Current bond rating of most recent issuance of this firm and name of rating service (rating service must be either Standard & Poor's or Moody's)	
2. Date of issuance of bond	
3. Date of maturity of bond	
4. Committee on Uniform Securities Identification Procedures (CUSIP) number	

Trust Fund

- A trust fund is a repository of funds set aside for a specific purpose and administered by a trustee designated by the grantor who establishes the trust
- Implementation process:
  - Owner or operator deposits funds in an investment account and provides EPA with an annual valuation of the fund
  - Director accepts additional deposits or release funds as additional wells are drilled or plugging and closure activities are undertaken on some wells
- May provide for a “pay-in period”

Standby Trust

- A standby trust is a mechanism to receive the funds guaranteed by surety bonds or letters of credit on behalf of the UIC Program Director
- Implementation process:
  - Unlike a funded trust, a standby trust is not a stand-alone financial instrument to guarantee financial responsibility
  - MRA (discussed previously) makes it necessary to use a standby trust with certain instruments

Letter of Credit

- A letter of credit is a guarantee that a set amount of money will be available to a specified party under certain conditions
- Implementation process:
  - Owner or operator purchases letter of credit from bank
  - Director requires the bank to pay a third-party beneficiary under specified circumstance (e.g., failure to meet environmental obligations)

Surety Bond

- A surety bond is a guarantee by a surety company that environmental obligations will be fulfilled
- Implementation process:
  - Owner or operator purchases surety bond from surety company or insurance company
  - Performance bond guarantees performance of an environmental obligation
    - Requires contract between contractor and project owner
  - Financial guarantee bond [a.k.a. payment bond] ensures that the surety company will fund a standby trust
    - Trustee uses the money to pay for the environmental obligations covered by the bond

Surety Bond Form/Template

Financial Guarantee Bond

Dated bond executed:_____
Effective date:_____
Principal: [legal name and business address of owner or operator]_____

Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"]

State of incorporation:_____
Surety(ies): [name(s) and business address(es)]_____

EPA Identification Number, name, address, and [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] amount(s) for each facility guaranteed by this bond [indicate [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] amounts separately]:_____

Total penal sum of bond: $_____
Surety's bond number: _____

Surety Bond Form/Template

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the Director that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust funds for the fulfillment of [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

Surety Bond Form/Template

Performance Bond

Date bond executed: _____
Effective date: _____
Principal: [legal name and business address of owner or operator]_____
_____
_____

Type of organization: [insert "individual," "joint venture," "partnership," or "corporation"]
_____
State of incorporation:_____

Surety(ies): [name(s) and business address(es)]_____
_____
_____

EPA Identification Number, name, address, and [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] amounts(s) for each injection well guaranteed by this bond [indicate [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] amounts for each well]:_____
_____
_____

Total penal sum of bond: $_____
Surety's bond number: _____

Surety Form/Template

Upon notification by the Director that the Principal has been found in violation of the [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] requirements of 40 CFR part 146, for an injection well which this bond guarantees performances of [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response], the Surety(ies) shall either perform [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] in accordance with the [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] plan and other permit requirements or provisions for operating under rule and other requirements or place the amount for [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] into a standby trust fund for the fulfillment of [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively.

Insurance

- Insurance is a contract between an insurer and the insured to cover specific risks up to a maximum amount
  - Third-party insurance vs. captive insurance
- Implementation process:
  - Insured pays policy premium
  - Premium is based on carrier's determination of risk
  - If event occurs, insurer pays/reimburses insured

Insurance Form/Template

The insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] for the injection wells identified above. The Insurer further warrants that such policy conforms in all respects with the requirements for the fulfillment of [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] obligations described at 40 CFR 146.84, 146.92, 146.93, and/or 146.94, respectively, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

The insurer may cancel the policy only for failure to pay the premium and by sending notice of cancellation by certified mail to the owner or operator and to the Director for the area in which the injection well(s) is (are) located. EPA requires that cancellation not become final for 120 days beginning on the date of receipt of the notice of cancellation by the Director, as evidenced by the return receipts.

Whenever requested by the Director, the Insurer agrees to furnish to the Director a duplicate original of the policy listed above, including all endorsements thereon.

[Authorized signature of Insurer]
[Name of person signing]
[Title of person signing]

[Signature of witness or notary:]
[Date]

Insurance Form/Template

V. Certificate of Insurance

A certificate of insurance, as specified in this chapter, may be worded as follows, except that instructions in brackets are to be replaced with the relevant information and the brackets deleted:

Certificate of Insurance for [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response]

Name and Address of Insured (herein called the "insured"):_____
_____

Name and Address of Insurer (herein called the "insurer"):_____
_____

Injection Wells covered: [list for each well: The EPA Identification Number, name, address, and the amount of insurance for [corrective action, injection well plugging, post injection site care and site closure, and/or emergency and remedial response] (these amounts for all injection wells covered must total the face amount shown below).]_____
_____
_____

Face Amount: _____
Policy Number: _____
Effective Date:_____

Escrow Account

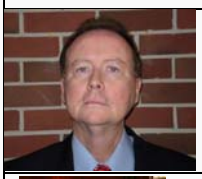
- An escrow account segregates funds held under an escrow agreement (requiring specific obligations to be met) from other accounts of the escrow agent
- Implementation process:
  - Never previously used in the UIC Program
  - Owner or operator deposits funds sufficient to fulfill an environmental obligation
  - Depending on the agreement
    - If obligations are not met, funds are paid to the regulator
    - If obligations are met, funds are returned

Questions?

Part III

Discussion

Charles Hernick, The Cadmus Group (facilitator)
Ben Harper, Zurich
Brian White, Illinois EPA
John D. Stumpf, Old National Trust
Melisa Pollak, University of Minnesota
Steve Platt, US EPA Region 3

Ben Harper Zurich			**Melisa Pollak** University of Minnesota
	**Brian White** Illinois EPA		**Steve Platt** US EPA Region 3
	**John Stumpf** Old National Trust		

Discussion

- **Questions on the presentations**
- Questions for expert panelists
- Open questions and answers

Discussion

- Questions on the presentations
- **Questions for expert panelists**
- Open questions and answers

Discussion

- Questions on the presentations
- Questions for expert panelists
- **Open questions and answers**

Thank You!

For Additional Questions

Joe Tiago

tiago.joseph@epa.gov

Acknowledgment

– Charles Hernick, The Cadmus Group
– Ben Harper, Zurich
– Brian White, Illinois EPA
– John D. Stumpf, Old National Trust
– Melisa Pollak, University of Minnesota
– Steve Platt, US EPA Region 3
– EPA Staff and Management
– The Cadmus Group, Contractor for US EPA

Thank You!

Additional Resources on the Geologic Sequestration of Carbon Dioxide (CO_2)

- EPA Geologic Sequestration of Carbon Dioxide Website: http://www.epa.gov/safewater/uic/wells_sequestration.html
- All guidance documents: http://water.epa.gov/type/groundwater/uic/class6/gsguidedoc.cfm

References

- International Energy Agency (IEA). 2009. Carbon Capture and Storage, Full-scale demonstration progress update. IEA/OECD, Paris.
- EPA. 2008. EPA's Technical Support Document, Vulnerability Evaluation Framework for Geologic Sequestration of Carbon Dioxide.
- EPA. 2009. UIC Program Primacy. Available online at: http://www.epa.gov/safewater/uic/primacy.html
- EPA. 2011. Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Program Class VI Well Primacy Application and Implementation Manual. Available online at: http://water.epa.gov/type/groundwater/uic/class6/gsguidedoc.cfm#open