Geologic Sequestration

Regulatory and Legislative Updates
Regulatory Updates

• U.S. EPA
  – Final Rule: UIC Class VI Wells
  – Class VI Guidance Documents
  – Final Rule: Greenhouse Gas Reporting Program
EPA Final Rule:  
Class VI UIC Wells

• Approved 12/10/10: 75 FR 77230

• Authorized by the Safe Drinking Water Act (SDWA) to protect Underground Sources of Drinking Water (USDW)

• Based on existing UIC Program with modifications to address unique nature of CO₂ injection (relative buoyancy; subsurface mobility, corrosivity in presence of water, and anticipated large injection volumes)
EPA Final Rule: Class VI UIC Wells

• Applies to owners or operators of wells that will be used to inject CO$_2$ into the subsurface for the purpose of long-term storage

  • http://water.epa.gov/type/groundwater/uic/wells_sequestration.cfm
EPA Final Rule: Class VI UIC Wells

Key elements:

✓ Extensive geologic site characterization requirements

✓ Construction and operation requirements that include use of injectate-compatible materials and automatic shutoff systems

✓ Development, implementation, and periodic update of a series of project-specific plans to guide project management

✓ Periodic re-evaluation of the area of review to incorporate monitoring and operational data and verify that the CO₂ is moving as predicted

✓ Rigorous testing and monitoring (direct and indirect) of well, groundwater, and CO₂ plume

✓ Extended post-injection monitoring and site care

✓ Clarified and expanded financial responsibility requirements for corrective action, plugging, post-injection site care, closure, and emergency and remedial response

✓ Considerations for Class II EOR to Class VI GS permit transitions
EPA Class VI Guidance

• Open for Public Comment until 8/25/11:
  – Geologic Sequestration of CO$_2$: Draft Underground Injection Control (UIC) Program Class VI Well Primacy Application and Implementation Manual
EPA Class VI Guidance

• Closed for Comment (5/31/11)
  – Class VI Well Site Characterization Guidance for Owners & Operators
  – Class VI Well Area of Review Evaluation & Corrective Action Guidance for Owners & Operators
  – Class VI Well Construction Guidance for Owners & Operators
  – Draft Class VI Well Project Plan Development Guidance for Owners & Operators
EPA Final Rule: GHG Reporting Program

• Final Rule for mandatory reporting of GHG from large U.S. GHG emissions sources published on 10/30/09 – 40 CFR Part 98

• Final Rule for mandatory reporting of CO₂ injection for geologic sequestration, Subpart RR, published on 12/1/10

• Final Rule for mandatory reporting from all other facilities that inject CO₂ underground for any reason, including EOR, Subpart UU, published on 12/1/10
EPA Final Rule: GHG Reporting Program

• EPA will use reported data to:
  – Subpart RR: monitor the growth and effectiveness of geologic sequestration as a GHG mitigation technology over time and evaluate relevant CAA policy options
  – Subpart UU: evaluate data obtained on CO$_2$ received under this part in conjunction with data obtained from Subpart PP on CO$_2$ supplied to the economy
EPA Final Rule: GHG Reporting Program

• EPA designed rule so that facilities can comply with requirements without disrupting or delaying normal operations

• EPA estimated Annual Cost
  – Subpart RR: $320,000 for deep saline formation projects
  – Subpart UU: $4,000

• www.epa.gov/climatechange/emissions/ghgrulemaking.html
EPA Final Rule: GHG Reporting Program

Subpart RR Reporting Requirements:
✓ Report basic information on CO₂ received for injection
✓ Develop and implement an EPA-approved site-specific monitoring, reporting, and verification (MRV) plan
✓ Report the amount of CO₂ geologically sequestered using a mass balance approach and annual monitoring activities
✓ Applies to all facilities that hold a UIC Class VI permit
✓ Geologic sequestration R&D projects will be granted an exemption so long as report basic information on CO₂ received under Subpart UU
✓ EOR facilities may opt-in to these requirements even if they do not hold a UIC Class VI permit
EPA Final Rule: GHG Reporting Program

Subpart UU Reporting Requirements:

✓ Report basic information on CO$_2$ received for injection

✓ Annual report must be filed with EPA by March 31, 2012 reporting only basic information on CO$_2$ received in 2011
EPA Draft Proposed Rule: RCRA Exemption

• Comments asking for clarification on how RCRA hazardous waste requirements apply to CO₂ streams

• EPA considering a proposed rule under RCRA to conditionally exempt hazardous CO₂ streams from RCRA requirements in order to facilitate implementation of geologic storage

• Draft rule was sent to OMB for regulatory review 3/22/11

• Projected publication in Federal Register July 2011

• Over 50 environmental groups signed a letter opposing any such exemption; the letter was addressed to numerous Federal agencies participating on a CCS task force
Regulatory Updates

• Wyoming DEQ
  – Final Rule: UIC Class VI Wells
  – Primacy Application
  – Rulemaking: Bonding and Financial Assurance
Chapter 24: Class VI UIC Well Permits

- Officially filed November 5, 2010

- No person shall sequester \( \text{CO}_2 \) unless authorized by a UIC permit issued by the DEQ.

- Specifically exempts injection of \( \text{CO}_2 \) for purposes of EOR projects approved by the WOGCC UNLESS the operator converts to geologic sequestration upon cessation of EOR operations (Sec. 1)

- Specifically exempts injection of any \( \text{CO}_2 \) stream that meets the definition of hazardous waste (Sec. 3)
Chapter 24: Class VI UIC Well Permits

- Restricts Class VI well injections to Class V (hydrocarbon commercial) or Class VI groundwaters as defined in Chapter VIII (Sec. 4)

- Prohibits construction of new, or operation or maintenance of any existing Class V wells for non-experimental geologic sequestration (Sec. 6)
Chapter 24: Class VI UIC Well Permits

Key Elements:

✓ Minimum siting criteria (Sec. 7)
✓ Area of review delineation and corrective action (Sec. 8)
✓ Construction and operation standards (Sec. 9)
✓ Pre-injection logging, sampling and testing (Sec. 10)
✓ Operating, mechanical integrity, testing, monitoring and reporting requirements (Secs. 11-14)
✓ Plugging (Sec. 15)
✓ Post-injection site care and closure (Sec. 16)
✓ Emergency and remedial response (Sec. 17)
✓ Financial responsibility – in a manner prescribed by the Director (Sec. 18) (further discussion below)
Wyoming Primacy Application

• WDEQ (WQD/LQD) has UIC Program Primacy (Class I, III, IV and V)

• Must apply for Class VI primacy

• EPA conducting “cross-walk” analysis of Chp. 24 Rules to identify differences and whether they are:
  – Inconsequential
  – Reflect a regulatory gap
  – Reflect a lesser stringency standard
Wyoming Primacy Application

• Anticipated adjustments:
  – Waiver to inject in non-USDW aquifer that overlies a USDW must be provided to the director of the public drinking water program; WDEQ does not have public drinking water program primacy; EPA Region VIII has ability to review and comment, but no ability to deny permit; will have to provide for this step
Anticipated adjustments:

- Clarify pursuant to final EPA rule that at point EOR Class II injection project reaches a threshold of potential threat to USDW a Class VI permit will be required; will have to provide for transition from Class II to Class VI permit; DEQ may be able to administratively delegate Class VI permitting function to WOGCC in this situation.
Wyoming Primacy Application

• Timing and Process
  – WDEQ cannot issue Class VI permits after 9/6/11 unless EPA has approved WDEQ’s primacy application
  – EPA is program administrator during any gap period
  – WDEQ aims to submit primacy application before 9/6 (streamlined process since primacy over rest of UIC program)
  – Simultaneously, WDEQ will engage in rulemaking to address issues identified in cross-walk analysis
  – WDEQ objective to have primacy and new rules in place by end of 2011
Bonding and Financial Assurance Rules

- Wyo. Legislature established a working group to address this issue in 2008
- W.S. 35-11-313 amended in 2010
  - Well permit application must include a certificate of public liability insurance or evidence that state or federal self insurance requirements are satisfied
  - Directs WDEQ to promulgate rules with specific bonding and financial assurance requirements
  - Wyoming statute is more specific than EPA rules, but EPA requires long term care for 50 years or at Director’s discretion; Wyoming rules will have to meet this requirement, but should be sufficient for primacy application
- WDEQ has been participating in a national working group and is using the contractor’s report in drafting rules
  - Biggest issue is assessment of cost/probability associated with releases to groundwater and corrective action and releases to the atmosphere requiring some control
WDEQ Class VI Contact:

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  Manager, Groundwater Section  
  Water Quality Division  
  (307) 777-5985  
  http://deq.state.wy.us/wqd
Legislative Updates

• 112th U.S. Congress
  – Less Climate Change Activity
  – Energy Bills
  – CCS Bills
  – Bills to Limit EPA CAA Authority

• Wyoming State Legislature 2011
  – Nothing new regarding CCS or EOR
  – See W.S. 35-11-313 through 318 (2008-2010)
Selected Energy Bills

• H.R. 1959 – Pain at the Pump Act
  – Rep. Tonko (D-NY)
  – Amends IRS Code to repeal certain oil and gas tax incentives, *including the tax credit for EOR*, and to invest the savings in clean energy programs
  – Introduced 5/24/11; Referred to Subcommittee on Energy and Environment 6/9/11
Selected Energy Bills

- S.1321 – to establish energy policies to reduce dependence on foreign oil, save Americans money, increase U.S. competitiveness, improve energy security, improve environmental stewardship and other purposes
  - Sen. Lugar (R-IN)
  - Read twice and referred to Committee on Finance 6/30/11
  - Bill text not yet available
  - Sen. Lugar’s website indicates **Section 101 of the bill encourages the build-out of national infrastructure to increase EOR**
    - implements a fixed allotment of competitive tax cuts for manufacturers and power generators to catalyze upfront investment
    - Cites DOE figures of 38-58 billion barrels of oil available through proven EOR technologies
    - Cites opportunity to net $150 billion in Federal revenues through 2030
Selected Energy Bills

• S. 1220 – Fulfilling U.S. Energy Leadership Act of 2011
  – Sen. Conrad (D-ND)
  – Lessen U.S. dependence on foreign energy, promote clean energy, and strengthen the economy
  – In part, amends Energy Policy Act of 2005 to establish a large-scale carbon storage program; up to 10 demonstration projects; competitive selection; opportunity for federal indemnification up to $10MM
  – Addresses credits for carbon sequestration (Sec.412-413)
  – Read twice and referred to Committee on Finance 6/16/11 (related to S. 591 and S.699)
Selected Energy Bills

• H.R. 1023 – No More Excuses Energy Act of 2011
  – Rep. Thornberry (R-TX)
  – Amends IRS Code to extend tax credits or otherwise incentivize domestic use oil refinery facility financing, wind energy, alternative fuel development, onshore production and nuclear energy
  – Repeals the minimum gas capture requirement for purposes of CO₂ sequestration tax credit
  – Referred to Subcommittee on Energy and Power 3/15/11
CCS Bills

• S. 699 – DOE CCS Program Amendments Act of 2011
  – Sen. Bingaman (D-NM)
  – Authorizes Secretary to enter into cooperative agreements to provide financial and technical assistance to up to 10 demonstration projects for commercial application of integrated CCS from industrial sources
  – Establishes site safety, environmental protection and remediation, and site closures requirements
  – Provides indemnification ($10MM) for liability in excess of amount of liability covered by financial protection maintained by recipient
  – Provides employee training grants for state and tribal permitting agencies
  – Committee on Energy and Natural Resources: ordered to be reported with amendments favorably 5/26/11
CCS Bills

• S.757 – To provide incentives to encourage development and implementation of carbon capture technologies (from dilute sources using direct air capture technologies)
  – Sen. Barrasso (R-WY) and Sen. Bingaman (D-NM)
  – Offers competitive technology financial awards
  – Committee on Energy and Natural Resources: ordered to be reported with amendments favorably 5/26/11
Bills to Limit EPA CAA Authority

• Congressional Response to Massachusetts v. EPA and subsequent Endangerment Finding
• Bills and amendments defeated in early 2011
Bills to Limit EPA CAA Authority

• Energy Tax Prevention Act of 2011 (H.R. 910 and S. 462)
  – Rep. Upton (R-MI) and Sen. Inhofe (R-OK)
  – With limited exceptions would have prohibited EPA from using CAA to promulgate, implement or enforce GHG regulations from any U.S. source category for purpose of addressing climate change
  – Passed full House 4/7/11 (255:172); failed to meet 60-vote Senate threshold 4/6/11 (50:50)
Bills to Limit EPA CAA Authority

• EPA Stationary Source Regulations Suspension Act (S. 231)
  – Sen. Rockefeller (D-WV)
  – Would have prevented EPA Administrator from taking any CAA actions to regulate stationary source emissions of CO$_2$ or methane for 2 years
  – Defeated on Senate floor 4/6/11 (12:88)
Bills to Limit EPA CAA Authority

• Defending America’s Affordable Energy and Jobs Act (S. 228)
  – Sen. Barrasso (R-WY)
  – Would prohibit the President or any federal agency head from promulgating regulations providing for the control of GHG, taking action relating to or taking into consideration the climate effects of GHG emissions, considering climate effects in implementing or enforcing laws, or conditioning or denying any approval based on climate effects, except as otherwise authorized by this Act or another Act of Congress.
  – Read twice; referred to Committee on Environment and Public Works 1/31/11
Bills to Limit EPA CAA Authority

• H.R. 1023 – No More Excuses Energy Act of 2011 (see above)
  – Amends the CAA to exclude GHG from definition of “air pollutant” and declares nothing in CAA authorizes or requires the regulation of climate change or global warming
  – Referred to Subcommittee on Energy and Power 3/15/11
Questions?

Thank You

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