Frequently Asked Questions for Geologic Sequestration and Injection of Carbon Dioxide: Subparts RR and UU

United States Environmental Protection Agency

Greenhouse Gas Reporting Program

General Information

What is the purpose of this rule?

This rule requires greenhouse gas (GHG) reporting from facilities that conduct geologic sequestration (subpart RR) and all other facilities that inject carbon dioxide (CO_2) underground for any other purpose, including enhanced oil and gas recovery (subpart UU). Geologic sequestration is the long-term containment of CO_2 in subsurface geologic formations and is a key component of a set of climate change mitigation technologies known as carbon dioxide capture and sequestration (CCS).

The information obtained through this rule will inform Agency decisions under the Clean Air Act (CAA) related to the use of CCS for mitigating GHG emissions. Subpart RR information will enable EPA to monitor the growth and efficacy of geologic sequestration (and therefore CCS) as a GHG mitigation technology over time and to evaluate relevant policy options. Subpart UU information will enable EPA to evaluate data obtained on CO_2 received for injection in conjunction with data obtained from subpart PP of the GHG Reporting Program on CO_2 supplied to the economy.

What is the Greenhouse Gas Reporting Program?

The GHG Reporting Program requires reporting of GHG emissions and other relevant information from certain source categories in the United States. For additional information about the program, visit EPA's Web site at: http://www.epa.gov/ghgreporting/.

How is this action related to other Agency efforts on geologic sequestration?

This rule was coordinated closely with EPA's rulemaking establishing Federal requirements under the Underground Injection Control (UIC) program for Class VI injection wells. The UIC program is designed to prevent the movement of such fluid into underground sources of drinking water (USDWs) by addressing the potential pathways through which injected fluids can migrate and potentially endanger USDWs. This rule fulfills a separate but complementary goal, which is to quantify the amount of CO_2 sequestered in geologic formations. EPA designed requirements under this rule with careful consideration of UIC Class VI requirements to minimize overlap between the two programs. For a summary of the UIC program and more details on the final UIC Class VI rule, please see the UIC Geologic Sequestration of Carbon Dioxide Web site at: water.epa.gov/type/groundwater/uic/wells_sequestration.cfm.

What is the statutory authority for this rule?

EPA is finalizing this rule under Clean Air Act (CAA) section 114 which authorizes EPA to collect information or data relevant to the promulgation of CAA provisions.

Where can more detailed information on the rule be found?

For additional information about this rulemaking, visit EPA's Web site at: http://www.epa.gov/ghgreporting/. To submit a question, go to the Contact Us page at http://www.epa.gov/ghgreporting/contactus.html.

Affected Activities

What types of facilities are required to report under this rule?

All facilities that conduct geologic sequestration, including facilities that hold a UIC Class VI permit, are required to report under subpart RR. All other facilities that inject CO_2 underground, such as for enhanced oil and gas recovery or any other purpose, are required to report under subpart UU.

Facilities that conduct enhanced oil and gas recovery are not required to report geologic sequestration under subpart RR unless (1) the owner or operator chooses to opt-in to subpart RR, or (2) the facility holds a UIC Class VI permit for the well or group of wells used to enhance oil and gas recovery.

How are geologic sequestration research and development (R&D) treated under this rule?

Geologic sequestration R&D projects will be granted an exemption from subpart RR. Projects receiving a subpart RR R&D exemption are required to report basic information under subpart UU on CO_2 received for injection.

Reporting Requirements

What are the reporting requirements for facilities that conduct geologic sequestration (subpart RR)?

Under subpart RR, facilities that conduct geologic sequestration by injecting CO_2 for long-term containment in subsurface geologic formations, including UIC Class VI wells, are required to:

- Report the amount and source of CO_2 received for injection.
- Develop and implement an EPA-approved site-specific MRV plan. EPA is not prescribing specific monitoring technologies in the MRV plan, recognizing that facilities can propose a cost-effective approach that is suitable to the geology and conditions at their site.
- Report the amount of CO_2 geologically sequestered using a mass balance approach and annual monitoring activities.

These facilities are also required to comply with other applicable subparts of the GHG Reporting Program such as subpart C (General Combustion) and subpart W (Petroleum and Natural Gas Systems). Facilities that report under subpart RR for a well or group of wells are not required to report under subpart UU for that well or group of wells.

What are the reporting requirements for all other facilities that inject CO_2 underground (subpart UU)?

All other facilities that inject CO_2 underground for purposes besides geologic sequestration (subpart UU), such as for enhanced oil and gas recovery or any other purpose, are required to report the amount and source of CO_2 received for injection.

What are the reporting requirements for facilities that inject CO_2 underground for enhanced oil and gas recovery?

Facilities that inject CO_2 into UIC Class II wells to enhance oil and gas recovery are required to report the amount and source of CO_2 received for injection under subpart UU. Facilities that conduct enhanced oil and gas recovery are not required to report geologic sequestration under subpart RR unless:

- The facility holds a UIC Class VI permit for the well or group of wells used to enhance oil and gas recovery; or
- The owner or operator chooses to opt-in to subpart RR by submitting an MRV plan to EPA and receiving approval of the plan from EPA.

Are facilities that use UIC Class II wells to enhance oil and gas recovery required to develop MRV plans or report additional information required for facilities that conduct geologic sequestration?

No. However, these facilities may choose to opt-in to the subpart RR geologic sequestration reporting requirements.

When does reporting begin?

Facilities that conduct geologic sequestration (subpart RR) are required to submit their first annual reports to EPA by March 31, 2012, reporting basic information on CO_2 received for injection in 2011. These facilities will add data to their annual reports on the amount of CO_2 that is geologically sequestered once their EPA-approved MRV plans are implemented.

All other facilities that inject CO_2 underground for any other purpose, including enhanced oil and gas recovery (subpart UU), are required to submit annual reports to EPA by March 31, 2012 reporting basic information on CO_2 received for injection in 2011.

What are the estimated costs of reporting under this rule?

For a facility that injects CO_2 for the purposes of enhanced oil and gas recovery using UIC Class II wells and only reports basic information on CO_2 received for injection under subpart UU, EPA estimates the typical annual cost of reporting beyond UIC permit requirements to be $4,000. For a facility that conducts geologic sequestration, and is required to report under subpart RR, the typical annual cost of reporting beyond UIC permit requirements is estimated to be $320,000 for deep saline formation projects.

Monitoring, Reporting, and Verification Requirements (Subpart RR)

What equipment is required to monitor CO_2 injection rates?

Facilities reporting geologic sequestration under subpart RR are required to use flow meters to accurately measure the CO_2 injected underground. To minimize the purchase and installation of new equipment,

facilities can measure the CO_2 injected with the flow meters installed for purposes of compliance with their UIC permits.

What equipment or steps are required for monitoring geologic sequestration under subpart RR?

EPA is not prescribing specific monitoring technologies. Instead, facilities that conduct geologic sequestration are required to develop and implement a site-specific MRV plan. The major components of the MRV plan include the following:

- Identification of potential surface leakage pathways for CO_2.
- Delineation of the maximum monitoring area and active monitoring areas.
- A strategy for detecting and quantifying any surface leakage of CO_2.
- A strategy for establishing the expected baselines for monitoring CO_2 surface leakage.
- A summary of how the facility will calculate site-specific variables for the mass balance equation, such as considerations for calculating equipment leakage and vented emissions between flow meters and wells, and considerations for calculating CO_2 in produced fluids.

What is the schedule for MRV plan submission and approval?

EPA has established a submission and approval schedule that allows facilities that conduct geologic sequestration to implement an MRV plan without delay. The reporter may submit an MRV plan to EPA at any time, and for UIC regulated facilities, the deadline for submission is linked to when the reporter obtains its UIC permit. If a facility injects CO_2 for the purposes of enhanced oil and gas recovery and chooses to opt in to these requirements, it may submit an MRV plan at any time. EPA will conduct a technical review of the MRV plan and has outlined the technical review schedule in the preamble to the final rule. Following this iterative process, EPA will issue a final MRV plan as submitted, or with revisions. EPA will post the approved MRV plan on a public website, following the outcome of any confidentiality determination. If the reporter, or any interested person, objects to EPA's final decision, it may be appealed to EPA's Environmental Appeals Board.

Are monitoring technologies for geologic sequestration available today?

Yes. Many of the injection and monitoring technologies that may be applicable for geologic sequestration are commercially available today and have been used for a number of years in other applications. For more information, please see the General Technical Support Document for a description of monitoring technologies (http://www.epa.gov/ghgreporting/reporters/subpart/rr.html).