

# Geologic Sequestration of Carbon Dioxide: Subpart RR

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## Greenhouse Gas Reporting Program

*Under subpart RR of the Greenhouse Gas (GHG) Reporting Program, facilities that conduct geologic sequestration of carbon dioxide (CO<sub>2</sub>) must report basic information on the amount of CO<sub>2</sub> received for injection; develop and implement an EPA-approved monitoring, reporting, and verification (MRV) plan; and report the amount of CO<sub>2</sub> sequestered using a mass balance approach and annual monitoring activities.*

## How Is This Source Category Defined?

The subpart RR source category comprises a well or group of wells that inject a CO<sub>2</sub> stream for long-term containment in subsurface geologic formations. All wells permitted as Class VI by the Underground Injection Control (UIC) program meet the definition of this source category.

Wells that conduct enhanced oil and gas recovery are not subject to this source category unless (1) the owner or operator chooses to opt-in to the subpart RR source category, or (2) the well is permitted as Class VI by the UIC program.

Geologic sequestration research and development (R&D) projects will be granted an exemption from subpart RR.

- A project is eligible for the subpart RR R&D exemption if it will investigate practices, monitoring techniques, injection verification or is engaged in other applied research that will enable safe and effective long-term containment of a CO<sub>2</sub> stream in subsurface geologic formations, including research conducted as a precursor to long-term storage.
- To receive a subpart RR R&D exemption, the reporter must submit to EPA information on the planned duration of CO<sub>2</sub> injection for research, the planned annual CO<sub>2</sub> injection volumes during this time period, the purposes of the project, the source and type of funding for the project, and the class and duration of UIC permit, or, for an offshore facility not subject to SDWA, a description of the legal instrument authorizing GS.
- Facilities that receive an R&D exemption from subpart RR are not exempted from any other source category of the GHG Reporting Program including subpart UU. For other source categories of the GHG Reporting Program, R&D is defined at 40 CFR 98.6.

## What GHGs Must Be Reported?

Facilities that conduct geologic sequestration, including facilities that opt-in to the monitoring and reporting requirements for this source category, must report on the amount of CO<sub>2</sub> received for injection, develop and implement an EPA-approved MRV plan that is best suited for each facility, and report the amount of CO<sub>2</sub> geologically sequestered using a mass balance approach and annual monitoring activities.

## When Does Reporting Begin?

Facilities subject to subpart RR must begin monitoring GHG emissions on January 1, 2011 in accordance with the methods specified in subpart RR. For 2012 only, the GHG report must be submitted to EPA by September 28, 2012. This reporting deadline applies to all subparts being reported by the facility. If your subpart RR facility submitted a GHG annual report for reporting year 2010 under another subpart (e.g., subpart C for general stationary fuel combustion), then by April 2, 2012 you must notify EPA through e-GGRT that you are not required to submit the second annual report until September 28, 2012 (the notification deadline according to 4 CFR 98.3(b) is March 31, 2012, however, because this date falls on a Saturday in 2012, the notification is due on the next business day).

Starting in 2013 and each year thereafter, reports must be submitted to EPA by March 31 of each year, unless the 31st is a Saturday, Sunday, or federal holiday, in which case the reports are due on the next business day.

## What Information Must Be Reported?

Facilities that conduct geologic sequestration must report the following annually:

- The mass of CO<sub>2</sub> received for injection for the first time into a well at the facility.
- The source of the CO<sub>2</sub> received, from the following categories: CO<sub>2</sub> production wells; electric generating units; ethanol plants; pulp and paper mills; natural gas processing; gasification operations; other anthropogenic sources; discontinued enhanced oil and gas recovery project; or unknown.

In addition, these facilities must submit an MRV plan to EPA, implement the EPA-approved plan, and report annually the following:

- The mass of CO<sub>2</sub> injected into the subsurface.
- The mass of CO<sub>2</sub> produced from oil or gas production wells or from other fluid wells.
- The mass of CO<sub>2</sub> emitted from surface leakage.
- The mass of CO<sub>2</sub> emissions from equipment leaks and vented emissions of CO<sub>2</sub> from sources between the injection flow meter and the injection wellhead and between the production flow meter and the production wellhead.
- The mass of CO<sub>2</sub> sequestered in subsurface geologic formations, by subtracting total CO<sub>2</sub> emissions from CO<sub>2</sub> injected in the reporting year.
- The cumulative mass of CO<sub>2</sub> reported as sequestered in subsurface geologic formations in all years since the facility became subject to subpart RR.

Facilities with an EPA-approved MRV plan must also submit an annual monitoring report to EPA which contains the following information:

- A narrative history of the monitoring efforts conducted over the previous calendar year, including a listing of all monitoring equipment that was operated, its period of operation, and any relevant tests or surveys that were conducted.
- A description of any changes to the monitoring program that the reporter concluded were not material changes warranting submission of a revised MRV plan.

- A narrative history of any monitoring anomalies that were detected in the previous calendar year and how they were investigated and resolved.
- A description of any surface leakages of CO<sub>2</sub>, including a discussion of all methodologies and technologies involved in detecting and quantifying the surface leakages and any assumptions and uncertainties involved in calculating the amount of CO<sub>2</sub> emitted.

EPA has temporarily deferred the requirement to report data elements in the above list that are used as inputs to emission equations (76 FR 53057, August 25, 2011). For the current status of reporting requirements, including the list of data elements that are considered to be inputs to emissions equations, consult the following link: <http://www.epa.gov/climatechange/emissions/CBI.html>

## How Should GHG Data Be Calculated?

All facilities that conduct geologic sequestration must calculate the mass of CO<sub>2</sub> received using mass or volumetric flow meters (or the mass or volume of containers), based on the CO<sub>2</sub> concentration in the flow. Reporters may use best available monitoring methods (BAMM) for calculating the mass of CO<sub>2</sub> received through the first quarter of 2011 or up to the end of 2011 if a BAMM extension is approved by EPA.

Each geologic sequestration facility that conducts geologic sequestration (including a facility that opts-in to these requirements of this subpart) must also develop and implement an EPA-approved MRV plan. The major components of the MRV plan include the following:

- Identification of potential surface leakage pathways for CO<sub>2</sub> in the maximum monitoring area and the likelihood, magnitude, and timing, of surface leakage of CO<sub>2</sub> through these pathways.
- Delineation of the maximum monitoring area and active monitoring areas.
- A strategy for detecting and quantifying any surface leakage of CO<sub>2</sub>.
- A strategy for establishing the expected baselines for monitoring CO<sub>2</sub> surface leakage.
- A summary of considerations made to calculate site-specific variables for the mass balance equation. This includes, but is not limited to, considerations for calculating CO<sub>2</sub> emissions from equipment leaks and vented emissions of CO<sub>2</sub> between flow meters and wells, and considerations for calculating CO<sub>2</sub> in produced fluids.

Once its site specific MRV plan is implemented, a geologic sequestration facility must calculate the data listed under the “What Information Must Be Reported?” heading above.

Where flow meters are used to calculate data, CO<sub>2</sub> flow and concentration data must be collected quarterly and aggregated to an annual quantity. To minimize the purchase and installation of new equipment, facilities subject to the UIC program may utilize the CO<sub>2</sub> flow meters installed for purposes of compliance with their existing UIC permits in order to calculate the CO<sub>2</sub> flow data. For facilities receiving CO<sub>2</sub> in containers, the mass or volume of contents in containers and concentration data must be collected quarterly and aggregated to an annual quantity.

## For More Information

This document is provided solely for informational purposes. It does not provide legal advice, have legally binding effect, or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits in regard to any person. The document is intended to assist

reporting facilities/owners in understanding key provisions of the rule. It is not intended to be a substitute for the rule.

For technical information and implementation materials, please visit EPA's Web site at: [www.epa.gov/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.html). To submit a question, select Rule Help Center, and then select Contact Us.

For background information about GHGs and climate change science and policy, please see EPA's climate change Web site at: [www.epa.gov/climatechange](http://www.epa.gov/climatechange).