

**EPA Proposed Rule for CO₂ Geologic Sequestration Wells Under the UIC*:
Highlights**

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New well class - Class VI

- “Class VI. Wells used for geologic sequestration (GS) of carbon dioxide beneath the lowermost formation containing a USDW” (draft 40 CFR§146.5 (f)).

Aspects of geological sequestration not covered by this rule

- “The SDWA does not provide authority to develop regulations for all areas related to GS. These areas include, but are not limited to, capture and transport of CO₂; determining property rights (i.e., to permit its use for GS and for possible storage credits); transfer of liability from one entity to another; and accounting or certification for greenhouse gas (GHG) reductions. EPA is not proposing regulations for CO₂ under the Clean Air Act (CAA) in this proposed rulemaking.” (73 FR 43,495)
- “While preventing releases of CO₂ to the atmosphere is not within the scope of this proposal, today’s proposed rulemaking also addresses the risks posed by releases to the atmosphere by ensuring that injected CO₂ remains in the confining formations.” (73 FR 43,498)

EOR

- These rules do not apply to EOR wells (73 FR 43,502)
- Director would have discretion to “grandfather” the only the construction requirements for existing Class I and Class II wells seeking a permit for GS of CO₂ (provided he/she is able to make a determination that these wells would not endanger USDWs). Operators would need to meet all other requirements of today’s proposed rule (e.g., area of review and site characterization, operating, monitoring, MIT, well plugging, post-injection site care and site closure requirements) (73 FR 43,502)

Purity of CO₂

- “Carbon dioxide stream means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.” (draft 40 CFR §146.81(d))

* 73 FR 43,491-43,541 (July 25, 2008)

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Classification of CO₂

- “EPA regulates both pollutants and commodities under the UIC provisions; however, today’s proposal does not address the status of CO₂ as a pollutant or commodity.” (73 FR 43,496)
- “Because the types of impurities and their concentrations in the CO₂ stream are likely to vary by facility, coal composition, plant operating conditions, and pollution removal technologies, EPA cannot make a categorical determination as to whether injected CO₂ is hazardous under RCRA.” (73 FR 43,503)
- “Whether or not there is a “hazardous substance” that may result in CERCLA liability from a sequestration facility depends entirely on the make-up of the specific CO₂ stream and of the environmental media (e.g., soil, groundwater) in which it is stored. CERCLA exempts from liability certain “federally permitted releases” including releases in compliance with a UIC permit under SDWA. Therefore, Class VI requirements and permits will need to be carefully structured to ensure that they do not “authorize” inappropriate hazardous releases.” (73 FR 43,504)

Area of Review (AoR)

- AoR is based on the subsurface three-dimensional extent of the carbon dioxide plume, associated pressure front, and displaced brine. “To delineate the AOR, [owners or operators]... must predict, using computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, and pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present.” (draft 40 CFR§146.84(c))
- “Today’s proposal would require that the owner or operator periodically reevaluate the AoR during the injection operation. Reevaluations would occur at a minimum fixed frequency, not to exceed 10 years, as agreed upon by the Director. (73 FR 43,507)

Phased Corrective Action

- Director has discretion to allow owners or operators to perform corrective action (methods to assure that wells don’t serve as conduits for the movement of fluids into USDWs) on an iterative, phased basis over the operational life of a GS project. Prior to injection, the owner or operator would identify all wells penetrating the confining or injection zone within the site AoR, but only be required to perform corrective action to those wells in the portion of the AoR that would be intersected by the CO₂ plume or pressure front during the first years of injection. As the project continues, the owner or operator would continue to perform corrective action on wells further from the injection well to assure that all wells in the AoR that need corrective action eventually receive it. (73 FR 43,508)

Basin Scale Impacts

- “Risks to USDWs from improperly managed GS projects can include... changes in regional groundwater flow, and the movement of saltier formation fluids into USDWs, causing degradation of water quality.” (73 FR 43,497)
- “It is also possible that multiple owners or operators will be injecting CO₂ into formations that are hydraulically connected, and thus the elevated pressure zones may intersect or

interfere with each other.” (73 FR 43,506)

Monitoring

- “Under today’s proposal, owners or operators would be required to track the subsurface extent of the CO₂ plume and pressure front using pressure gauges in the first formation overlying the confining zone or using indirect geophysical techniques (e.g., seismic, electrical, gravity, or electromagnetic surveys) or other down-hole CO₂ detection tools, monitor for geochemical changes in subsurface formations, and if directed, monitor at the surface.” (73 FR 43,514)
- “An integrated monitoring and modeling strategy should be used to track the evolution of the CO₂ plume and associated pressure front. Monitoring is necessary to verify initial model predictions.” (73 FR 43,514)

Financial Assurance

- “Today’s proposal would require owners or operators to demonstrate financial responsibility for ...injection well plugging, post-injection site care and site closure, and emergency and remedial response using a financial mechanism acceptable to the Director.” (73 FR 43,520)
- “The SDWA authority does not extend to financial responsibility for activities unrelated to protection of USDWs (e.g., coverage of risks to air, ecosystems, or public health unrelated to USDW endangerment). It also does not cover transfer of owner or operator financial responsibility to other entities, or creation of a third party financial mechanism where EPA is the trustee.” (73 FR 43,520)

Post Closure Period

- “EPA is tentatively proposing a post-injection site care (monitoring) period of 50 years with Director’s discretion to change that period to lengthen or shorten the 50-year period if appropriate” (based on site performance). (73 FR 43,519)
- During the post-injection site care period the owner or operator would be required to monitor plume location and pressure differentials, following the post-injection site care and site closure plan submitted as part of the permit application and approved by the Director. (73 FR 43,518)

Adaptive Approach

- “EPA will continue to evaluate ongoing research and demonstration projects, review input received on this proposal, and gather other relevant information, as needed, to make refinements to the rulemaking process. If appropriate, EPA will publish notices to collect new data before issuing a final rule on CO₂ injection for GS. EPA plans to issue a final rule in advance of full-scale deployment of GS. EPA will track implementation of the final GS rule to determine whether these requirements continue to meet SDWA objectives and, if not, revise them as needed.” (73 FR 43,522)

State-Federal Interaction

- “Although EPA believes that the most effective approach for the comprehensive management of CO₂ GS projects would be achieved at the State and Tribal level, it is recognized that some injection activities may raise cross-state boundary issues that are beyond the scope of this rulemaking. EPA is aware that some States with primacy for the UIC program are actively engaged in the process of developing their own regulatory frameworks for the GS of CO₂.” (73 FR 43,497)