Class II to Class VI Transition: Opportunities, Risks, and Benefits

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National Risk Assessment Partnership

Opportunity

Class II injection sites and associated infrastructure (wells, pipelines, compressors, etc.) present an opportunity to sequester additional CO_2 beyond saline reservoirs that are the typical target of Class VI operations.

Input Needed

1. What are the key conversion issues?
2. Should NRAP consider disposal of carbonated produced water and use of acid gas injection wells in addition to CO_2-EOR?
3. What constitutes a significant increase in risk to USDWs?

EPA's Driving Issue:

Potential USDW Endangerment

1. Increased reservoir pressure
2. Many more wells
3. New potential contaminants (oil, PAHs, methane, H_2S, etc.)
4. Known reservoir/caprock properties
5. Opportunities for well reuse
6. Greater monitoring infrastructure

Potential Scenarios

1. Operator wishing to convert a CO_2-EOR site to a Class VI storage facility
2. Operator wishing to continue to operate a CO_2-EOR site as a Class II facility sequestering CO_2 while no longer producing oil and gas
3. Operator wishing to sequester anthropogenic CO_2 along with their acid gas disposal stream in a Class II setting
4. Operator wishing to sequester CO_2 dissolved into a produced water waste stream
5. Use of Class II infrastructure (e.g., wells) under a Class VI permit

Definitions

EPA Class II Designation:

1. CO_2 injection wells used for enhanced oil recovery
2. Produced water injection wells
3. Acid gas (H_2S + CO_2) injection wells

EPA Class VI Designation:

1. CO_2 injection wells for CO_2 sequestration

California Oil and Gas Field

https://www.nytimes.com/2021/04/24/climate/methane-leaks-united-nations.html

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NRAP Phase III Tasks

1. Incorporate hydrocarbon into Open-IAM
2. Area of review with hydrocarbon
3. Risk posed by wells
4. Risk-based guidance for conversion of Class II to Class VI

Well Integrity Issues

1. How do we quantify differences in risk between Class II and VI wells?
2. How do risks of use of a Class II well for monitoring differ from use as an injector?
3. Is long-term performance of a Class II well the principal issue?