

# **EPA Eyes Strict New Controls For Underground Injection Of CO2**

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EPA is crafting a rule governing underground injection controls (UIC) for new carbon dioxide (CO<sub>2</sub>) storage wells that includes stricter requirements than for underground injection of hazardous waste and other materials, including possible financial assurance and post-closure measures to cover the cost of long-term monitoring and groundwater cleanup.

EPA's consideration of financial assurance measures appears to be the agency's first step toward addressing some of industry's concerns about the long-term liability that may result from carbon capture and sequestration (CCS).

However, agency officials say they are not able to address the full scope of industry's liability concerns and still face scores of questions on how to address the financial assurance and well-closure measures they may include in the rule.

EPA air and drinking water officials are meeting jointly with industry, environmentalists and others seeking input on a range of questions they have on the regulation of commercial-scale CO<sub>2</sub> injection, which many believe is an essential technology in any future greenhouse gas control program.

The upcoming rule—expected for proposal in July 2008 and promulgation in 2011-- is being developed under the Safe Drinking Water Act (SDWA), which requires the agency to ensure that any UIC well does not contaminate underground sources of drinking water (USDWs). Many sources are also concerned that because of the gas' corrosive properties it could acidify underground drinking water in violation of the law's requirements.

## **Stakeholder Meeting**

While many sources expect the agency's upcoming rule will create a new class of UIC wells for CCS, EPA officials said at a stakeholder meeting in Arlington, VA, Feb. 26-27 that the agency has not yet decided whether to create the new well class.

For now, EPA officials are regulating test wells where CO<sub>2</sub> is stored as "experimental" or Class V wells. The agency's Environmental Appeals Board recently granted the agency broad authority to permit the wells under the Class V program ([see related story](#)).

However, for new wells, EPA officials stressed at the meeting that the special properties of liquefied CO<sub>2</sub>—including its buoyancy, viscosity, corrosiveness, and the shear volume to be injected underground as a result of any future greenhouse gas control program—require consideration of significantly stricter control requirements than for other kinds of UIC wells.

As a result, agency officials say they are considering scores of options for control measures that would make the CO<sub>2</sub> injection requirements stricter than the requirements for other UIC wells. For example, the agency is considering strict well-construction standards to prevent corrosion; strict secondary containment requirements such as extra cap-rock to prevent leakage into groundwater aquifers; periodic evaluation of the geologic area around the well known as the area of review; and earlier and more frequent public participation provisions.

Agency officials said they are closer to making a decision on the environmental control requirements than on the post-closure and financial assurance measures.

### **Industry Push**

Industry officials have long pushed for federal regulation to ensure that companies that inject CO<sub>2</sub> are not liable indefinitely in the event the gas acidifies drinking water or captured gas leaks decades after it is stored.

But EPA officials have expressed uncertainty over whether they would be able to address industry's liability concerns in the rule, saying Congress may have to provide them with the authority.

At the meeting, however, EPA officials indicated that they have the statutory right to require long-term, post-closure monitoring and financial assurances for monitoring, well closure and possible remediation. Ann Codrington, an official in EPA's Office of Groundwater and Drinking Water (OGWDW), said the agency does not require long-term monitoring for other classes of UIC wells but the agency believes the drinking water law allows them to require the additional monitoring and remediation they are considering.

Agency officials said they are unsure how they will approach these issues. For example, EPA officials asked whether they should require post-closure well monitoring and if so, for how long after closure? Should the monitoring be required based on well performance standards or other technical requirements? And, should they require financial assurances to cover possible monitoring costs?

Agency officials also asked whether they should require financial assurances for well closures and remediation costs in the event of contamination.

One major concern agency officials face is that SDWA bars the agency from allowing transfer of well ownership, which raises questions as to what type of financial instruments are legal and appropriate.

### **Post-Closure Requirements**

The agency is also considering an extremely long period of post-closure care—around 300 years—because CO<sub>2</sub> sequestration “poses threats well beyond the injection phase,” OGWDW official Lee Whitehurst said at the meeting. However, because SDWA bars well transfer, requiring a lengthy post-closure period may be unrealistic, Whitehurst said.

To address this, the agency is considering several options, including granting states discretion to set post-closure monitoring rules; setting a fixed time period, though agency officials say they lack a scientific basis for such a decision; setting a “reservoir pressure point” where the CO<sub>2</sub> is no longer in danger of mobilizing; or a performance standard that ensures the plume is no longer an endangerment to USDWs; or some combination thereof.

“There has been a lot of debate over these topics,” Whitehurst said, stressing that the agency still has many questions for stakeholders before settling on a proposed rule.

Meanwhile, EPA is also wrestling with several issues for transitioning existing wells to any new permit program. Oil industry officials, for example, are seeking to transfer enhanced oil recovery (EOR) wells into commercial-scale sequestration sites after they are no longer financially viable. And oil industry officials believe they already have the technical know-how to construct and operate CCS wells.

But EPA officials say Class II wells for EOR do not have the same stringent, construction-material based requirements for well construction as the CCS rule is likely to require.

EPA is considering creating a performance standard for the transfers, or economic indicators to help with the idea of a transfer. But, “we are struggling with the line between” EOR and CCS projects, Codrington said.

The agency is also struggling with whether to “grandfather” currently issued Class V permits for experimental CCS projects under the forthcoming rule. Some argue that this is necessary to encourage test sites before the rule comes out, but others say that test permits should be for much smaller volumes, and that the permits should be recast after the rule is finalized.—*Erica Martinson*