March 18, 2011

Air and Radiation Docket and Information Center
Environmental Protection Agency, Mail Code: 6102T
1200 Pennsylvania Ave., NW
Washington, DC, 20460

Dear Sir/Madam:

The U.S. Environmental Protection Agency (EPA) is bound via a settlement agreement of December 21, 2010 to propose new source performance standards (NSPS) for greenhouse gas (GHG) emissions for new, modified and existing electric generating units (EGUs) by July 26, 2011, and to issue final standards by May 26, 2012. The CCS Alliance, a multi-industry group of entities whose mission is to address barriers to the potential deployment of carbon capture and sequestration, submits these comments in regard to this matter.

Adequate Demonstration

The applicable term EPA must interpret for the purpose of GHG controls is "standard of performance," which Section 111(a) of the Clean Air Act defines as:

> a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

We submit that carbon capture and sequestration (CCS) is not yet adequately demonstrated. CCS holds the promise of removing in excess of 90 percent of GHG emissions from a fossil-fueled EGU. Research has accelerated in recent years but has not been conducted to the extent necessary to show that CCS can be deployed in conjunction with power plants built in locations across the country before CCS was even a concept. The Department of Energy has funded research that has demonstrated a variety of carbon capture technologies on a research scale, and demonstrated sequestration of carbon dioxide on a research scale in promising geologic formations in various parts of the country. There are two commercial-scale integrated gasification combined cycle generating facilities in operation in the United States, which generate power and result in an isolable emission stream of carbon dioxide. Commercial-scale

quantities of carbon dioxide have been injected into oil and gas formations for many years for the purpose of enhancing oil and gas recovery.

Notwithstanding these promising developments, CCS is not yet near a level of maturity that would enable its industry-wide deployment as a technological response to a GHG limitation mandate. There are fewer than a handful of sites worldwide at which more than one million tons per year of CO2 has been injected, and none at which CO2 has been injected at a rate equal to the CO2 likely to be generated annually by a 250 MW electric generation facility. There are 320 units of that size or larger in the United States, comprising the vast majority of U.S. coal-fired generating capacity.[1] We simply do not yet have the level of experience with CCS with any geologic formation, let alone a breadth of experience across a range of geologic formations and other site-specific conditions, necessary to make a determination that CCS has been adequately demonstrated. Existing fossil-fueled plants may be located nowhere near suitable sequestration sites, and CO2 pipeline networks are not widely available, even if lengthy transport were cost-effective.

The report of the President's Interagency Task Force on Carbon Capture and Storage notes:

> The focus of CCS RD&D is twofold: 1) to demonstrate the operation of current CCS technologies integrated at an appropriate scale to prove safe and reliable capture and storage; and 2) to develop improved CO2 capture component technologies and advanced power generation technologies to significantly reduce the cost of CCS, to facilitate widespread cost-effective deployment *after 2020*. [Emphasis added].[2]

The President's task force assumes additional research for a number of years will be necessary before CCS can be widely deployed.

Barriers to Deployment

Setting aside technical readiness, there are legal and commercial barriers to CCS deployment that apply to all facilities, including risk management. The task force report states:

> Long-standing regulatory programs are being adapted to meet the circumstances of CCS, but limited experience and institutional capacity at the Federal and State level may hinder implementation

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[1] "Existing U.S. Coal Plants," SOURCE WATCH, *available at* http://www.sourcewatch.org/index.php?title=Existing_U.S._Coal_Plants (last visited Mar. 17, 2011).

[2] Report of the Interagency Task Force on Carbon Capture and Storage (August 2010), at 9.

> of CCS-specific requirements. Key legal issues, such as long-term liability and property rights, also need resolution.[3]

We submit that GHG NSPS should not be set with an assumption that CCS is "the best system of emission reduction [that] has been adequately demonstrated."

As the task force report notes, there are three main sets of issues that constitute significant legal barriers to undertaking CCS: regulatory structure, liability and risk management, and property rights. It is not EPA's aim in responding to this settlement proceeding to address these barriers. However, it is imperative to recognize that their existence hampers the broad deployment of CCS, and frustrates gaining the experience needed to determine that CCS has been adequately demonstrated.

Regulatory Structure - EPA recently put in place a regulatory structure under the Underground Injection Control (UIC) program to regulate geologic sequestration of CO2. While helpful in many respects in providing industry with the parameters that will be required for siting, construction, operation, monitoring, and post-closure care of a geologic sequestration facility, the UIC rule for geologic sequestration sites leaves key issues essentially unresolved, which we expect some parties may consider a material issue in determining whether to proceed with CCS.

In particular, EPA declined to clearly indicate or, within the scope of its authority, limit the applicability of regulation and liability under the Resource Conservation and Recovery Act (RCRA) and liability under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund).

The final rule declined to state that regulation of CO2 injectate as a RCRA hazardous waste would not apply. While clarifying that CO2 itself is not a hazardous waste, the rule states that "owners or operators will need to determine whether the CO2 stream is hazardous under EPA's RCRA regulations, and if so, any injection of the CO2 stream may only occur in a Class I hazardous waste injection well.[4]

EPA took no steps in the final rule to limit the applicability of Superfund liability to geologic sequestration. The final rule states:

> CO2 itself is not listed as a hazardous substance under CERCLA. However, the CO2 stream may contain a listed hazardous substance (such as mercury) or may mobilize substances in the subsurface that could react with ground water to produce listed hazardous substances (such as sulfuric acid). Whether such substances may result in CERCLA liability from a

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[3] *Id*., at 8.

[4] Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO2) Geologic Sequestration (GS) Wells, 75 Fed. Reg. 77230, 77260 (Dec. 10, 2010).

> GS facility depends entirely on the composition of the specific CO2 stream and the environmental media in which it is stored (*e.g.*, soil or ground water).[5]

The final rule does note that CERCLA's exemption for federally permitted releases will apply, but that "Class VI permits will need to be structured to ensure that they prevent potential releases from the well, which are outside the scope of the Class VI permit and thus not considered federally permitted releases."[6]

Furthermore, other issues in the final rule, such as monitoring that is far more extensive than many parties recommended was necessary, may increase the cost of compliance sufficiently to deter deployment of CCS.

Liability and Risk Management - Whether geologic sequestration can be undertaken cost effectively in connection with an EGU depends in part on whether risk management is available for a proximately located sequestration facility. This will depend on a variety of site-specific factors. A critical point is that a regulator's willingness to approve a facility may not equate to a risk management entity's willingness to address risk at a site.

Few commercial risk management entities are likely to enter this market, as there are few with the expertise and experience in environmental risk management product lines. A broad CCS mandate may increase pressure on regulators to approve sequestration sites in order to keep viable the continued operation of important generation assets. Decisions about financial assurance (risk management), which is required under the final UIC rule, will depend on whether risk can be characterized and assessed adequately. We raise this to emphasize that whether CCS would be available for any given facility at some future point is a complex determination based a range of decisions in which multiple parties will be involved.

Further, many, including the CCS Alliance, have called for a government role in managing CCS risks, which research has shown are an impediment to CCS deployment.[7] Adequate demonstration of CCS is likely to depend on developers understanding the boundaries of the risk associated with this nascent technology

Property Rights - There are at least three property issues that must be addressed in conjunction with geologic sequestration: rights to the use of pore space for sequestration, rights for construction of pipelines for carbon dioxide transportation, and rights to surface access for monitoring and remediation.

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[5] *Id*.

[6] *Id*.

[7] *See Study of Legal Issues Relating to Risk and Liability in Connection with Carbon Capture and Storage*, CCS ALLIANCE (July 2008).

The carbon dioxide plume from geologic sequestration will spread across an area that could comprise many square miles. Even if it so happens that the EGU is located above a geologic formation suitable for sequestration, we are not aware of any current case where the owner of an electric generating unit also currently holds property rights sufficient to accommodate full-scale sequestration over a period of many years.

Assembling property rights sufficient to conduct large-scale sequestration may be a very complicated undertaking. Consider that sequestration in even a moderately populated area could require acquisition of property rights from thousands of property owners. Even if sequestration would be an activity that would qualify for use of eminent domain authority under State law, arranging property rights for the radius of a CO2 plume is likely to involve far more property owners than would be the case for a linear facility, such as a roadway, transmission line, or pipeline.

Note that whether State eminent domain authority could be applied to construction of CO2 pipelines depends both on the circumstances of the project as well as State law. A survey of State utility law shows that the availability of eminent domain authority depends on issues such as whether the entity that applies to construct the facility is a public utility, whether the pipeline is being used to serve end-use customers in the State, and whether the facility is to have a public use.[8]

Conclusion

The CCS Alliance supports efforts to help ensure that CCS technologies are developed and widely, efficiently and cost-effectively deployed in furtherance of any greenhouse gas emissions reduction strategy implemented at the state, regional, or federal level. However, CCS is not yet a technology that should serve as a basis for a new source performance standard for greenhouse gases.

Sincerely,

/s/

Frederick R. Eames
Counsel for CCS Alliance

[8] *Study of Legal Issues Relating to Risk and Liability in Connection with Carbon Capture and Storage*, CCS Alliance, July 23, 2008, available at www.ccsalliance.net.