Deep Saline Aquifers for Geological Storage of CO_2 and Energy
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☒ **Oral** ☒ **Poster**

Development of Storage Capacity Coefficients for Carbon Dioxide Storage in Deep Saline Aquifers and Oil and Gas Reservoirs

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Abstract
In recent years, the concept of mitigating global climate change through large-scale carbon capture and storage (CCS) into geologic media has gained worldwide attention. Identifying potential geologic sinks for carbon dioxide (CO_2) storage and developing reliable estimates of their capacity to store CO_2 is a critical component of evaluating the potential efficacy of CCS. While several evaluations have been conducted to determine CO_2 storage capacity estimates, they are the result of different methodologies, and a comparison of the results is often difficult and/or misleading. The IEA Greenhouse Gas R&D Programme (IEA GHG) has been working closely with a wide variety of international organizations to develop approaches and methods for developing CO_2 storage capacity estimates that can be applied to assessments at the local, regional, basin, and country scales. Recently, IEA GHG identified the development of technically robust “storage capacity coefficients” as crucial to the advancement of broadly applicable and comparable storage capacity estimates at all scales. IEA GHG has awarded the Energy & Environmental Research Center a project to conduct activities that will result in the definition of a series of storage capacity coefficients that can be applied to estimation of CO_2 storage capacities for a variety of geologic formations at scales ranging from local to country. Specifically, IEA GHG has stated that the effort focus on defining storage capacity coefficients for saline aquifers, depleted oil and gas fields, and oil fields that may be suitable for CO_2-based enhanced oil recovery.
The goals of the project are being achieved through a combination of 1) rigorous review of the published methods for estimating CO_2 storage capacity; 2) acquisition and review of readily available published and unpublished site-specific field-based data and modeling results from CO_2 storage activities at pilot-, demonstration-, and commercial-scale CCS projects throughout the world; 3) compilation of a database of the key variables and parameters affecting storage capacity; and 4) development of storage capacity coefficients based on information gained in Steps 1, 2, and 3. The resulting storage capacity coefficients will be defined as being applicable to the estimation of “theoretical,” “effective,” or “practical” storage capacity at different scales of evaluation as described in the resource hierarchy pyramid presented in the Carbon Sequestration Leadership Forum Phase I report or some other resource assessment tool. The coefficients will be developed in such a way that the evaluators will be able to cascade the storage capacity estimates down from theoretical to effective and to practical levels of estimation if enough data are present.
This study is due to be completed by the end of February 2009, and the preliminary results will be discussed in this paper.
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