

DOE's Regional Carbon Sequestration Partnership Program and CO2 Injection in the Illinois Basin

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The United States Department of Energy is sponsoring seven large-scale CO₂ injection projects in the United States. Each of these projects plans to inject one million metric tonnes of CO₂ into saline reservoirs in different geologic provinces to validate the concept of carbon sequestration. The projects' goals are to build the infrastructure required to deploy carbon sequestration technologies throughout the United States and Canada and validate various CCS technology solutions. One of the DOE partnership projects, the MGSC (Midwest Geologic Sequestration Consortium) is developing carbon sequestration solutions in the Illinois Basin, a cratonic basin in the Midwest of the United States.

In April, 2009 the MGSC completed a new 7,236 foot injection well in Decatur Illinois. The well penetrated over 1,600 feet of Cambrian Mt. Simon Sandstone with the injection target intervals encountering porosities of up to 30%, typically >20%. Injection of CO₂ at the Decatur Site is scheduled to begin in August of 2010 and will continue for a three year period. The Decatur injection site is used to illustrate the methods needed to predict CO₂ migration and trapping through the integration of reservoir characterization, geochemical modeling, fluid flow simulation, and geophysical methods. Each of the different methods has limitations and no individual method can be used alone to predict the CO₂ fate and movement. Predictive analysis of plume migration is critical in engendering confidence that the injected CO₂ will remain in the storage reservoir and the plume geometry can be tracked.