Environmental implications of toxic metals and dissolved organics released as a result of CO_2 injection into the Frio Formation, Texas, USA

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Abstract:

In this summary, we discuss results from a US DOE funded multi-laboratory field experiment to investigate the potential for geologic storage of CO2 in saline aquifers, emphasizing environmental implications of changes in fluid chemistry after injection. Approximately 1,600 metric tons of refinery CO2 was injected during October 2004 into a 24-m sandstone zone of the Oligocene Frio Formation – an extensive regional petroleum and brine reservoir (Fig. 1) in the U. S. Gulf Coast (Hovorka et al., 2006). We obtained down-hole and surface samples of formation water and gas from both the injection and observation wells using a variety of sampling tools and methodologies. Samples were obtained from both wells before CO2 injection for baseline data, during the injection to track its breakthrough and post-injection to investigate the 'residual' CO2 (Hovorka et al., 2006) and its leakage into the overlying "B" sandstone section, and temporal changes in fluid composition (Kharaka et al., 2006).

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