**Fault reactivation and seismicity risk from CO2 sequestration in the Teapot Dome and northern Newark Basin**

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**Abstract**

The risk of inducing seismic activity by underground injection of carbon dioxide (CO2) has recently emerged as one of the largest concerns for geologic carbon sequestration. The major seismic risk associated with CO2 geologic storage comes from the possibility of reactivation of preexisting faults and fractures due to an increase in pore pressure in the vicinity of the injection zone. Pore pressure increase caused by an underground injection has the potential to activate critically stressed discontinuities by reducing their frictional resistance to slip. For geologic carbon storage, even small induced earthquakes that may not be felt or cause damage on the surface present a concern because they can threaten the seal integrity of the natural reservoir structures and may compromise CO2 containment. Thus, determining the in situ stress field and the distribution of fractures and faults at CO2 storage sites represent important steps for site screening and injection planning.

**Reference**

**Chiaramonte, L., M. D. Zoback, J. Friedmann, and V. Stamp (2008), Seal integrity and feasibility of CO2 sequestration in the Teapot Dome EOR pilot: Geomechanical site characterization, Environ. Geol., 54(8), 1667–1675.**

**Zakharova, N. V., and D. S. Goldberg (2014), In situ stress analysis in the northern Newark Basin: Implications for induced seismicity from CO2 injection, J. Geophys. Res. Solid Earth, 119, doi:10.1002/2013JB010492.**