

Geological Characterization of the IEA Weyburn CO₂ Storage Site for Long-Term Assessment of the Fate of CO₂

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ABSTRACT

The IEA Weyburn CO₂ Monitoring and Storage Project is designed to evaluate the long-term geological storage of CO₂ within a Mississippian reservoir in southeastern Saskatchewan. The Weyburn Field is the site of an extensive CO₂ injection program for EOR using anthropogenic CO₂ derived from the Great Plains Gasification plant 320 km south in North Dakota. The oilfield is operated by EnCana Resources and the geologic monitoring project is sponsored by a number of governments and industrial sponsors from Canada, the United States, Europe and Japan, including the International Energy Agency (IEA). The information obtained during this study will be used to better understand geo-sequestration potential and to evaluate other geological sites for CO₂ storage.

The monitoring project is highly multidisciplinary and relies on technical information regarding geology and hydrogeology, geochemistry, geomechanics, geophysics, reservoir modeling, seismic and wellbore technology, remotely sensed imagery analyses and soil gas analyses. A primary objective of this project is to determine the long-term fate of CO₂ injected into the reservoir. Evaluating the potential for CO₂ to migrate along both natural (geosphere) and artificial (wellbore) pathways is an integral part of assessment modeling. This presentation will focus on the detailed geological and hydrogeological work being performed to address natural migration potential and its impact on the integrity of long-term storage of CO₂. The integration of this data into the overall CO₂ migration modeling will be discussed.