

The international IEA Weyburn CO<sub>2</sub> Monitoring and Storage Project aims to monitor and predict the behaviour of injected CO<sub>2</sub> into the Midale reservoir at the Weyburn oil field in southern Saskatchewan, Canada. One aspect of this project has been to identify likely geochemical changes that result from the injection of CO<sub>2</sub> into the reservoir (Midale Formation). This paper provides a summary of fluid chemical and mineralogical changes occurring in a series of well-constrained laboratory experiments that have utilised samples of Midale core from the Weyburn field and synthetic formation water based upon measured well fluid compositions. This information and other physical data (Durocher et al., this issue) are then used to test, constrain, and verify predictions from geochemical modelling activities, as a prelude to extending theoretical predictions to reservoir-scales and long timescales.