

#### 15.4 **CO<sub>2</sub> Sequestration in Spent Oil Shale Retorts**

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Oil shale has notoriously high CO<sub>2</sub> emissions per final fuel delivered compared to conventional oil and gas. The CO<sub>2</sub> emissions can be minimized by appropriate process design that limits or eliminates carbonate decomposition. The AMSO strategy of recovering shale oil at low temperatures from the low-carbonate illite-rich oil shale in the Garden Gulch member solves much of the CO<sub>2</sub> emission problem. However, it is also desirable to have a cost-effective way of sequestering CO<sub>2</sub> formed during process heat generation. In this work, we explore the possibility of forming carbonate minerals in spent retorts within the illite-rich oil shale by injection of appropriate mixtures of brine and CO<sub>2</sub>. Elevated temperatures possible in a spent retort make reaction kinetics for carbonate formation far more favorable.

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