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Suitability Evaluation of CO₂ Geological Sequestration in the Deep Saline Aquifers of Xining Basin

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Considering the geological conditions of Xining Basin and taking tectonic unit as the evaluation objects, this paper established an index system which included six indicator levels. The six indicator levels covers basic geological conditions, the degree of research and resource potential, regional crustal stability, geothermal geological conditions, socio-economic suitability, the storage potential and the reservoir and cap conditions. Using Analysis Hierarchy Process to determine the indicator weights and indicators overlay analysis to determine the suitability of each tectonic unit. The results of the comprehensive analysis show that the Shuangshu

depression area has relatively good suitability of CO₂ geological sequestration, which can hence be used as the CO₂ geological sequestration priority area. It is shown that Zongzhai depression area have general suitability for CO₂ geological sequestration, whereas the basin margin slope area, Xiaoxia uplift area, Dabaozi-Xining uplift area and Pinganyi depression area are not suitable for the geological sequestration of CO₂.

Key words: CO₂ geological sequestration; Xining basin; Evaluation index system; Suitability evaluation

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