

## عنوان مقاله:

Screening Produced Water Disposal Challenges in an Oilfield: Scale Formation and Injectivity Impairment

## محل انتشار:

فصلنامه علوم و فناوری نفت و گاز، دوره 10، شماره 4 (سال: 1400)

تعداد صفحات اصل مقاله: 15

## نویسندگان:

Mehdi Amiri - *Ph.D. Petroleum, Department of Petroleum Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Shiraz, Iran*

Jafar Qajar - *Assistant Professor, Department of Petroleum Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Shiraz, Iran*

Azim Kalantariasl - *Assistant Professor, Department of Petroleum Engineering, School of Chemical and Petroleum Engineering, Shiraz University, Shiraz, Iran*

## خلاصه مقاله:

Sarvestan and Saadatabad oilfields produce more than ۱۴۰ bbl/day of wastewater due to oil processing. Due to environmental issues, the produced water is injected into a disposal well through a pipeline with a diameter of ۸ inch and a length of ۵ km. Formation of inorganic scale may accelerate the need for frequent reservoir acid stimulation, restrict flow path, and generally add unpredicted costs for water injection operations. This study predicts scaling tendency and examines scale precipitation at different pressures, temperature, and mixing ratios of injection wastewater with formation water in Sarvestan and Saadatabad oilfields. The experimentally measured chemical analysis of the injection water and formation water was used to estimate the amount, type, and composition of scale due to mixing and changes in thermodynamic conditions. Scaling tendency values for eight types of scale, namely  $\text{CaCO}_3$  (calcite),  $\text{CaSO}_4$  (anhydrite),  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  (gypsum),  $\text{FeCO}_3$  (siderite),  $\text{Fe}(\text{OH})_2$  (amorphous),  $\text{NaCl}$  (halite),  $\text{Mg}(\text{OH})_2$  (pyrochroite), and  $\text{KCl}$  (sylvite), were investigated by commercial software packages OLI ScaleChem and StimCADE. The results show that the significant scales are  $\text{CaCO}_3$  and  $\text{FeCO}_3$  formed in Sarvestan and Saadatabad oilfields. The formation of these scales can lead to severe problems, such as disrupting equipment and decreasing production; thus, it is necessary to predict all types of scales before forming. It allows design and planning for chemical inhibitor treatment and prediction of injectivity problems and acid stimulation.

## کلمات کلیدی:

$\text{CaCO}_3$ ,  $\text{FeCO}_3$ , Produced Water, Scaling tendency, Sarvestan and Saadatabad oilfields

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1434686>



