

Characteristics and economic value of the rejected brine at Al-Khobar desalination plant in KSA

ABSTRACT

This paper presents the characteristics of seawater and rejected brine, and the economic value of the rejected brine at Al-Khobar desalination plant, KSA. The rejected brine may be discharged to sea/ocean contains of different salts and dissolved minerals in high concentrations, which carry considerable economic value in relevant industries. It is found that the rejected brine contains huge amount of SO_4^{2-} , Cl^- , Na^+ , Ca^{2+} , Mg^{2+} , K^+ , Fe^{2+} and Cu^{2+} , which have high economic value. Therefore, these minerals can be recovered directly from the rejected brine. This study estimated the quantities of these minerals and the revenue income according to their current market prices. Moreover, this study may help the policy/decision makers to assess the economic value of the brine to establish new industries for brine processing. Seawater and brine samples collected from the Al-Khobar plant. Various physical and chemical properties were observed in order to find economic value of minerals.

Keyword: Rejected brine; Characteristics; Economic value; Seawater; Al-Khobar plant