Abstract

Samir Y Marzouk

Hybrid system for iron and manganese reduction from polluted water using adsorption and filtration

The high levels of iron and manganese found in ground water and utilized by living habitats has made it mandatory to seek a local low cost effective technique to decrease their concentrations. In this study, vermiculite clay and cation exchange resin were used as adsorbent and filter media to examine their ability in the removal and retention of those soluble metal. Different initial concentrations of 2, 5, 10, 30, and 50 ppm were examined using column testing. Vermiculite clay could remove iron up to 95% for the 5 ppm initial concentration and completely remove iron from the initial 2 ppm concentration at 70 min. Cation exchange resin worked better at lower concentrations yet couldn’t attain the allowed drinking water levels. For manganese, cation exchange resin performed better where the highest removal rates attained for the 5 and 2 ppm were 99% and 100% successively within the first 10–20 min.