



Remediation of Groundwater Contaminated with Cadmium by Nano Zero Valence Iron (nzvi) under Variations of pH Value and Amount of Temperature

Seyedeh Mohaddeseh Taheri (1) and Saeid Sotoodeh Nia (2)

(1) Master of Science, Imam Khomeini International University (IKIU), Qazvin, Iran, Islamic Republic Of (Irrigationmt1382@yahoo.com), (2) Master of Science, Imam Khomeini International University (IKIU), Qazvin, Iran, Islamic Republic Of (saeids40@gmail.com)

Abstract

Various agricultural and industrial practices can have direct and indirect adverse effects on the environment and water resources. Iron Nanoparticles as strong sorbent while absorb and sequester, reduce cadmium exist in the environment. In this Research work in order to Study the PH changes On the cadmium absorption by nZVI, with injecting nitric acid, sodium hydroxide solution to 0.2 ppm cadmium in reaction with 2g/l nZVI, while providing Acidic conditions, alkaline, Cadmium concentration changes trend was investigated. Also, about the high concentration of cadmium in order of waste Leachate (4 ppm) in reaction with nanoparticles absorber with a concentration of 2g/l with HCL injection, sodium hydroxide, cadmium absorption levels were studied in time ranges of 1, 2, 3 and 4 hours and iron ion concentration was measured in this condition. in other hands in order to investigate temperature changes in the absorption amount, a 4 ppm solution in reaction with absorber was placed under temperature rise conditions and cd concentration changes were measured. With respect to mentioned conditions in the 4 ppm solution after 4 hours from the start of the experiment, absorption percentage equals to 15.5% in acidic conditions and in alkaline conditions, this percentage increased to 96.75%. In determining the role of temperature rise on the reduction of cadmium within first 1 hour with applying temperature rise conditions, cadmium concentration to initial concentration ratio decreased 73.25% and after 6 hours from reaction start, this ratio decreased to 61.5%.