

## عنوان مقاله:

Benzene and MTBE removal by Fenton's process using stabilized Nano Zero-Valent Iron particles

## محل انتشار:

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## خلاصه مقاله:

A bench-scale study was designed for removal of Methyl Tertio Butyl Ether (MTBE) and benzene from south of Tehran groundwater. The experiments were implemented on a one-dimensional soil column with similar chemical and physical conditions of the region. Fenton's chemical oxidation with stabilized nano zero-valent iron particles (S-NZVI) as catalyst was used. For treatment of groundwater polluted with 2 mg L<sup>-1</sup> MTBE and 1 mg L<sup>-1</sup> benzene, optimum concentrations of H<sub>2</sub>O<sub>2</sub> and S-NZVI were 1500 and 300 mg L<sup>-1</sup>, respectively. The optimum concentrations led to 78 % elimination of MTBE and 87 % of benzene. Hazardous by-products (acetone and tertio-butyl alcohol) concentrations were less than 0.1 mg L<sup>-1</sup>, which were considered to be negligible. The soil permeability was reduced to 30 % after removal process. To increase the system efficiency and reduce the consumption of iron, the reaction environment was acidified down to pH = 3.2 led to removal efficiency of 90 % and 96 % for MTBE and benzene, respectively. The scavengers (ions) reduced the system efficiency up to 15 %. This study indicates that theoretically the MTBE and benzene could be removed from groundwater using Fenton's chemical oxidation with S-NZVI.

## کلمات کلیدی:

MTBE, Benzene, Groundwater, Fenton, Stabilized Nano Zero-valent Iron

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/926409>

