

عنوان مقاله:

Using Modified Multi-Walled Carbon Nanotubes with Ultrasonic Homogenizer for BTEX Removal from Aqueous Solutions

محل انتشار:

مجله بین المللی مطالعات سلامت, دوره 4, شماره 3 (سال: 1397)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Hamidreza Pourzamani ^۱ - *۱. Department of Environmental Health Engineering, School of Health, Isfahan University of Medical Sciences, Isfahan, Iran*

Iman Parseh ^۲ - *۲. Department of Environmental Health Engineering, School of Health, Yasuj University of Medical Sciences, Yasuj, Iran*

Mostafa Hadei ^۳ - *۳. Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran*

Fatemeh Rashidashmag h ^۴ - *۴. Section of Sanitary Engineering, Department of Water Management, School of Civil Engineering and Geosciences, Delft University of Technology, Delft, Netherlands*

Mohammad Darvish ^۱

*Saed Fadaei ^۱

خلاصه مقاله:

Background: BTEX refers to a volatile compound with single aromatic ring in petroleum including benzene, toluene, ethyl benzene, and xylenes. Due to its flammability, toxicity and carcinogenicity properties, BTEX has many adverse effects on human health. This study aimed to evaluate the efficiency of multi-walled carbon nanotube (MWCNT) modified with an ultrasonic homogenizer (UH) to remove BTEX from aqueous solutions. Methods: MWCNT was modified in different concentrations, times and intensities. Then, the best condition was selected. After modification based on the design of experiments (DOE), ۱۶ experiments were arranged at ۴ levels with ۴ factors. Samples required for simulation were built according to the standard methods and then analyzed by gas chromatography mass. Results: The results revealed that the optimum conditions for modified carbon nanotubes were obtained at concentration of ۳۰% sodium hypochlorite, time of ۵ seconds, and intensity of ۵۰ dB. The optimum conditions for initial BTEX concentration, MWCNT dose, contact time, and pH were ۱۰۰ mg/L, ۲۰۰۰ mg/L, ۲۰ min and ۷ respectively. Conclusions: The results indicated that carbon nanotubes modified with homogenizer are a simple and effective technique to remove BTEX from the environment.

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کلمات کلیدی:

Nanotubes, Carbon, Water quality, Chromatography, Gas

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