

## عنوان مقاله:

Desorption Kinetics of Heavy Metals (Lead, Zinc, and Nickel) Coexisted with Phenanthrene from a Natural High Buffering Soil

## محل انتشار:

ماهنامه بین المللی مهندسی، دوره 32، شماره 12 (سال: 1398)

تعداد صفحات اصل مقاله: 10

## نویسندگان:

Sedigheh Mohamadi - *Environment Research Laboratory, School of Civil Engineering, Iran University of Science and Technology, Tehran, Iran*

Mohsen Saeedi - *Environment Research Laboratory, School of Civil Engineering, Iran University of Science and Technology, Tehran, Iran*

Afsaneh Mollahosseini - *Research Laboratory of Spectroscopy & Micro and Nano Extraction, Department of Chemistry, Iran University of Science and Technology, Tehran, Iran*

## خلاصه مقاله:

This work aims to investigate the competitive time-dependent desorption rate of heavy metals (lead, zinc, nickel) coexisting with phenanthrene from natural high buffering soil. Two non-ionic surfactants (Tween 80 and Brij 35) combined with disodium ethylene diamine tetraacetate salt (Na<sub>2</sub>-EDTA) were utilized as the reagents. The contaminants' time-dependent desorption data was fitted with five kinetic models including parabolic diffusion, Elovich, fractional power function, pseudo-first and -second-order equations. The best removal of contaminants obtained by the mixture of Tween 80/EDTA; desorbing 93% of lead (Pb). The competitive desorption of nickel (Ni) and zinc (Zn) is affected by the stability of Metal-EDTA complexes. Moreover, phenanthrene removal in the soil studied was slow and laborious. The desorption kinetics are well described by parabolic diffusion (for phenanthrene) and pseudo-second-order (for heavy metals of interest). In the soil-surfactant-water system, soil structure changes were negligible; however, Tween 80 influenced the development of crystal faces of CaCO<sub>3</sub> during the process.

## کلمات کلیدی:

Ethylene Diamine Tetraacetate, Heavy-metal, Kinetic, Soil, Surfactant

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1021631>

