

Comparison of Arsenic Adsorption on clays from Morocco

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In the recent years, growing concern for environmental issues have brought researchers of both analytical and materials science to investigate appropriate processes for the removal and/or monitoring of various pollutants. Among the pollutants, *arsenic is one* of the most toxic elements that can be found, as it is a strong poison and a carcinogen. Unfortunately, it is released into the environment during many industrial processes. Thus, *the removal of arsenic* from process solutions and effluents is necessary to protect the environment.

The aim of this work is to study arsenic adsorption behavior onto clays from Morocco. Four clay samples were investigated: red clay and yellow clay from Oued aou (Tétouan), E clay from Tetouan and stevensite from the south-eastern border of the Tertiary basin of Missouri.

Adsorption isotherms were conducted as a function of pH, and initial As concentration. Also the kinetics of adsorption was investigated and FTIR, CEC, TOC, XRD measurements were performed on red and yellow clays.

Langmuir and Freundlich isotherms were employed to describe the Arsenic adsorption in this clay.

The result obtained shown that these two models are favorable process of red clay and E clay. Furthermore, for yellow clay and stevensite were correlated by the Langmuir and Freundlich models respectively.

The order of affinity of As toward the 4 clays was red clay > E clay > stevensite > yellow clay. This order of affinity is explained by the presence of iron oxides (hematite) revealed by IR analysis of the solid in the red clay. On the other hand, neither CEC nor TOC data allowed us to conclude about this order of affinity.