DISPOSAL OF POLLUTANTS METAL (Cu^{2+} $Ni^{2+,}$ $Cr^{3+,}$ Cd^{2+} and Cr^{6+}) BY MOROCCAN OIL SHALE

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Morocco has large reserves of oil shale, estimated 50 million barrels, allowing it to be ranked in 6th place after the United States, Russia, Brazil, the Democratic Republic of Congo and Italy. Therefore, the industrial development of the national wealth is essential and is now a major concern for policy makers. This natural resource is as a source of unconventional oil, rich in organic substance intimately linked to a mineral matrix; which gives the gross rock important potentialities which allow it to be used as an energy source, the residue is an adsorbent material for the decontamination of liquid and gaseous effluents.

Furthermore, the decarbonated rock consists mainly of clay and silica, by their very known for their adsorbent power of selective nature; and kerogen that is susceptible to be transformed into activated carbon by appropriate activation treatment.

Abstract

In this study oriented towards the enhancement of the national wealth, we studied oil shales from the Tarfaya deposit (layer R1). Gross rock is composed mainly of carbonates (calcite and dolomite); the rate is over 70%. The conversion of oil shale in the adsorbent material was conducted following the acidic raw rock attacks, using acids HCl, HNO_3, H_2SO_4, and H_3PO_4. These acids attack have, on one hand, to eliminate the dissolved carbonates to recover calcium salt form; and secondly, obtaining shale decarbonated HR constitutes an adsorbent material.

The results obtained, following the adsorption of various organic and metal pollutants tests on decarbonated schistes obtained confirmed the good affinity vis-à-vis certain organic contaminants (COV textile dyes) and metal ions ($Cu^{2+,}$ Ni^{2+}, Cr^{3+}, Cd^{2+} and Cr^{6+}).

The characterization of the developed materials, powered by different analytical techniques (scanning electron microscopy, surface area, surface functions determination, FTIR, XRD,) showed the potential adsorbents obtained; these latter are endowed with good textural and structural properties, which shows good agreement with the results of the adsorption tests.