Study of chromium sorption from aqueous solution onto soils

L.V. PAVEL - "Gheorghe Asachi" Technical University of Iaşi
D. BULGARIU - University "Al. I. Cuza" Iaşi
Laura BULGARIU, Maria GAVRILESCU - "Gheorghe Asachi" Technical University of Iaşi

The chromium (VI) sorption to the natural soils samples was investigated by batch and column tests. Soil samples were previously analyzed and characterized. The influence of physico-chemical key parameters such as the initial concentration of chromium in solution, soil quantity, pH and the temperature of the solution has been considered in batch tests. The adsorption data are tested for a number of kinetic and isotherm equations. In order to understand the adsorption mechanism, the kinetic parameters of adsorption of chromium (VI) onto the natural soils were determined. An evaluation of thermodynamic parameters on Cr (VI) adsorption onto soil was made. The value of activation energy (Ea) suggests that the rise of the solution temperature favors sorption of chromium (VI)
onto the soil, and the sorption process might be by chemical adsorption. The results are used further to determine chromium bioavailability and the need for soil remediation, based on risk assessment, since Cr (VI) is a powerful
epithelial irritant, and a confirmed human carcinogen.