

# Competitive adsorption of hexavalent chromium and inorganic pollutants on goethite

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## Abstract

Adsorption is one of the most important processes that affect the transport of heavy metals, like hexavalent chromium (Cr(VI)), and other inorganic contaminants in the aquifers. Iron (hydr)oxides, such as goethite, are ones of the most significant adsorbents for such contaminants in the geoenvironment. The present study investigates the Cr(VI) adsorption on goethite, in the presence of other inorganic contaminants such as phosphates and nitrates; for this purpose, batch experiments testing Cr(VI) adsorption, as a function of pH and Cr(VI) initial concentration, are carried out. At these experiments Cr(VI) is added at concentrations which have previously been detected in areas at which the presence of Cr(VI) is of geogenic origin, assuming also the contribution of some anthropogenic pressures, like agricultural activities. The concentration of nitrates and phosphates has a typical value of concentrations usually detected in groundwater affected by intensive agricultural activities.

Keywords: Hexavalent chromium; adsorption; goethite; phosphates; nitrates