ADSORPTION OF MERCURY (II) BY KAOLINITE

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D. A. R. SILVA

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D. A. R. Silva

Postgraduate Institute of Science

University of Peradeniya

Peradeniya

Sri Lanka

Like most of the trace elements, the fate of mercury in natural systems is largely controlled by adsorption reactions. Clays play major role in this adsorption process and act as adsorbents in soil. Adsorption of mercury (II) by kaolinite was studied as a function of solution pH and ionic strength in three different background electrolyte systems.

As most studies assume that cation adsorption process in clays take place at 16 to 24 hours, attention was given to establish the proper time interval for use in this mercury (II) adsorption process. The optimum mixing period determined was 24 hours.

Mercury adsorption from 1000 ppb mercury (II) solution was influenced by pH for same background electrolyte in three ionic concentrations of 0.1 M, 0.01 M, 0.001 M separately. Background electrolytes used were sodium chloride, sodium per-chlorate and sodium nitrate. The adsorption edges were described by a pH_{max} value. The pH_{max} for 0.1 M, 0.01 M and 0.001 M sodium chloride were pH 9, pH 9 and pH 8 respectively. Those for sodium per-chlorate were pH 7.5, pH 7 and pH 7 while those for sodium nitrate were pH 6, pH 6 and pH 6.5 respectively. Ionic strength effect was considerable and it was inversely proportional to the adsorption density for all three types of electrolytes. This relationship was clearly observed in all three systems.