Immobilization Study of Toxic Elements Present in Coal Ash Through the Treatment with Immobilizing Agents

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Abstract

The capacyity to immobilize toxic elements present in coal ashes using organosilane (OS) and surfactant (SF) as immobilizing agents was determined by batch experiments. The coal ashes used in the study was collected at the Figueira Thermal Power Plant, located in the city of Figueira, State of Paraná. Firstly, the influence of ash mass/water volume ratio on the concentration of the elements in the leachates was evaluated. Subsequently, the capacities of immobilization of toxic elements using the different immobilizing agentes, pH and conductivity of the leachates were determined. A significant reduction in the concentration of the elements was observed for all leachate samples obtained from the ashes treated with OS. Concentration reductions using OS were 89%, 77%, 42% and 11% for Cr, Mo, As and Se, respectively. When SF was used to the ashes treatment, the concentration reduction in the leachates was above 60% for all elements. These results show that both the organosilane and the surfactant can be used as immobilizing agents for the retention of toxic elements present in coal ashes.

Keywords: *coal ashes, metal immobilizing agents, organosilane, surfactant.*