MODELING THE EFFECTS OF THE SILICA NANOPARTICLES ON THE TRANSPORT OF HAZARDOUS NANOPARTICLES INTO LEACHATE THROUGH LANDFILLS SOILS COLUMNS (REGULAR)

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The fate of nanoparticles into the environment are of special interest due to their interactions with the ecosystems. In this paper, the stability and transport behaviors of hazardous nanoparticles into soil landfills are studied using experimental and numerical procedures to simulate the effects of silica nanoparticles natural suspensions during percolation into soil layers of municipal waste landfills. Stabilized suspensions of nanoparticles oxides containing silicon (NPSiO2) and titanium (NPTiO2) were prepared. Thus, leaching experiments results were confronted with numerical prediction within soil column simulating landfills layers to simulate the capture and attenuation of these nanomaterials into municipal waste landfills. It was found that the solution containing NPSiO2 increases the stable concentration of the titanium oxide and strongly decrease the natural soil layer effectiveness to capture the hazardous nanoparticles.