

## Toxicity of Nanoparticles of Titanium Dioxide and Copper Oxide in Landfills

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Nanoparticles represent a new class of contaminants, as industrial activities involving nanotechnology grow rapidly. Thus, it is extremely essential to study the transport and destination of nanoparticulate materials that are released into the environment so that it is possible to identify the physical and chemical phenomena that occur from the interaction of these nanoparticles. The objective of this work were to study the behavior and transport of TiO<sub>2</sub> nanoparticles in aqueous suspensions through copper impregnated coating soils. Thus enabling preventively the production and use of harmful nanomaterials can be better controlled. In this work titanium dioxide was chosen because it is a nanomaterial widely emitted on an industrial scale and the copper in turn, being an omnipresent soil contaminant. For this knowledge were carried out experimental leaching experiments in PVC column in three modalities: Using pure soil with the aqueous suspension of TiO<sub>2</sub>, using pure soil with the aqueous suspension of TiO<sub>2</sub> and CuO and using soil impregnated with copper and aqueous suspension of TiO<sub>2</sub>. The results obtained in the experimental phase were used in numerical simulation using the Finite Volumes Technique, in order to allow the determination of the kinetic generation rate of the nanoparticles involved. A significant increase in the concentration of titanium dioxide in the suspensions that had a longer contact time with the copper oxide nanoparticles, in particular in the case where the soil was impregnated with copper, leads us to conclude the Influence of copper on the mobility of TiO<sub>2</sub> throughout the leaching process is also facilitated for the deposition process of several nanomaterials.

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