Responses of Lung Cells to Metals in Manufactured Nanoparticles

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Human exposure to manufactured nanoparticles is increasing as new materials are developed and incorporated into industrial and consumer products. Dr. Veranth's team tested nanoparticle powders of SiO_2, TiO_2, Fe_2O_3, ZnO, CeO_2 which represent commercial chemicals that are currently being produced as nano-sized powders.

Dr. Veranth's team found that these nanoparticle powders were toxic to human lung cells, but that the potency was similar to larger particles of the same nominal substance. The lung contains multiple cell types. Experiments used cultured human lung epithelial and vascular endothelial cells to study the effects on both the lung surface that is directly exposed to inhaled air and the underlying cells separating the air exchange surface from the blood.

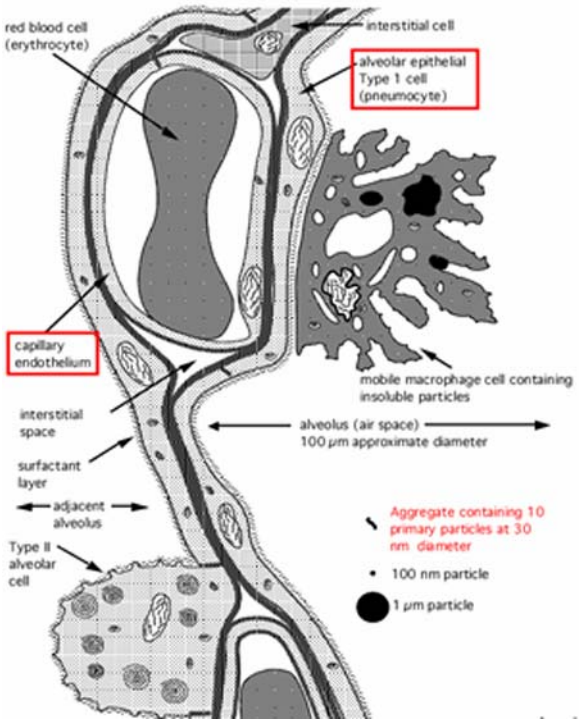

Figure. *Caption*.

Nanoparticles of metal oxides do not appear to cause cell damage by unusual mechanisms, nor are these particles exceptionally dangerous compared to more common ambient and environmental particles. Of course, breathing any type of dust is never good for health, and particle exposure should always be minimized.

Reference/Publication

Veranth, J.M., E.G. Kaser, M.M. Veranth, M. Koch, and G.S. Yost. 2007. Cytokine responses of human lung cells (BEAS-2B) treated with micron-sized and nanoparticles of metal oxides compared to soil dusts, *Particle and Fibre Toxicology* 4:2.