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Nanoparticle Deposition in the Human Nasal Passages.

Nasal anatomy differs between individuals. These differences lead to significant differences in respiratory airflow patterns and the subsequent dosimetry of inhaled gases and particles in the respiratory tract. This study used computational fluid dynamics (CFD) to study inter-individual differences in particle deposition patterns. Steady-state inspiratory laminar airflow at 15 L/min was calculated using commercial CFD software. Additionally, flow patterns were calculated using the k-w turbulence algorithm. The deposition of nanoparticles was calculated using a user defined function and deposition patterns were compared between flow scenarios. (Received September 21, 2011)