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TITLE: ASSESSING THE PULMONARY TOXICITY OF SINGLE-WALLED CARBON NANOHORNS

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ABSTRACT: Previous studies have suggested that single-walled carbon nanotubes (SWCNTs) may pose a pulmonary hazard. We investigated the pulmonary toxicity of single-walled carbon nanohorns (SWCNHs), a relatively new carbon-based nanomaterial that is structurally similar to SWCNTs. Mice were exposed to 30  $\mu\text{g}$  of surfactant-suspended SWCNHs or an equal volume of vehicle control by pharyngeal aspiration and sacrificed 24 hours or 7 days post-exposure. Total and differential cell counts and cytokine analysis of bronchoalveolar lavage fluid demonstrated a mild inflammatory response which was mitigated by day 7 post-exposure. Whole lung microarray analysis demonstrated that SWCNH-exposure did not lead to robust changes in gene expression. Finally, histological analysis showed no evidence of granuloma formation or fibrosis following SWCNH aspiration. These combined results suggest that SWCNH is a relatively innocuous nanomaterial when delivered to mice in vivo using aspiration as a delivery mechanism.