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TITLE: INHALED CARBON NANOTUBES REACH THE SUBPLEURAL TISSUE IN MICE

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ABSTRACT: Carbon nanotubes are shaped like fibres¹ and can stimulate inflammation at the surface of the peritoneum when injected into the abdominal cavity of mice², raising concerns that inhaled nanotubes³ may cause pleural fibrosis and/or mesothelioma⁴. Here, we show that multiwalled carbon nanotubes reach the subpleura in mice after a single inhalation exposure of 30 mg m⁻³ for 6 h. Nanotubes were embedded in the subpleural wall and within subpleural macrophages. Mononuclear cell aggregates on the pleural surface increased in number and size after 1 day and nanotube-containing macrophages were observed within these foci. Subpleural fibrosis unique to this form of nanotubes increased after 2 and 6 weeks following inhalation. None of these effects was seen in mice that inhaled carbon black nanoparticles or a lower dose of nanotubes (1 mg m⁻³). This work suggests that minimizing inhalation of nanotubes during handling is prudent until further long-term assessments are conducted.