Development of *in vitro* Toxicological Methodologies for Diesel Fuel Emissions - The EMITTED Study.

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The EMITTED study (Exhaust Measurement and Inhalation Toxicology Testing of Emerging Diesel fuels) is focused on elucidating the formation and toxicity of diesel exhaust emissions. An airway *in vitro* pollutant exposure model was developed to explore the respiratory effects from exposure to diesel exhaust particulate (DEP). The model was constructed using the Calu-3 human bronchial epithelial cell line, and exposed to solutions of suspended titanium dioxide and carbon black particulate matter (PM).

Calu-3 cell viability following exposure to titanium oxide indicated that to sufficiently measure reactive oxygen species (ROS) generation, future experiments should limit DEP exposure concentration and time to a maximum of 40 $\mu g\ mL^{-1}$ and up to 8 hr, respectively. Exposures to this PM also suggested real-time DEP induced intra-cellular ROS production should be assessed over the first 1.5 hr of exposure. High maximum DEP collection efficiencies into liquid cell culture media imply DEP can be collected for cell exposure by this method. The lack of an induced biological response by carbon black makes it sufficient for use as a negative PM control, whereas titanium dioxide's ability to induce a cell response makes it sufficient for use as a positive PM control.