

Seminar Series 2014 - 2015

Southern Ontario Centre for Atmospheric Aerosol Research
University of Toronto

Airway Cell Responses to Inhaled Irritants: Evidence from Human Inhalation Challenge Studies

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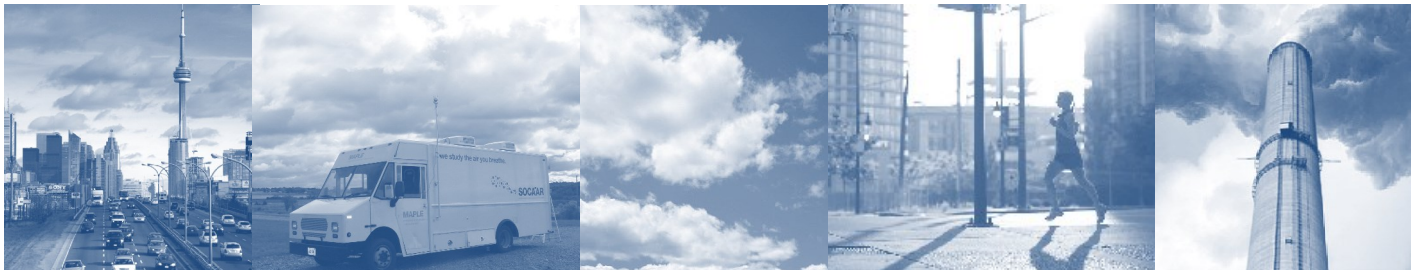
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Cells can be acquired from the lung by several techniques, some more invasive than others. Induced sputum is a relatively non-invasive method of acquiring cells from the surfaces of the large central airways. This is ideal for examining disease states like asthma, where the primary pathology is proximal to large airways, as well as air pollutants like ozone and coarse size PM whose deposition favors large airways. Techniques are now being used to measure a variety of cell responses following exposure to air pollutants –these include differential cell counts, phenotype and functional activation of inflammatory cells, hydration state of the airways, viscoelastic properties mucus, mucin content, gene expression signatures and regulators of gene expression like miRNA. The literature has shown that the presence of pre-existing airway disease has not definitively produced more deleterious cell responses following exposure to ozone. Recently, we classified subjects as inflammatory/neutrophil Responders or Non-Responders, regardless of disease status, and have shown this to be an interesting and robust method of identifying potentially susceptible individuals to the health effects of ozone and likely other pollutants. Indeed we have shown that Responders have a significantly muted genetic response to ozone while concomitantly having an up-regulated inflammatory and innate immune response compared to Non-Responders. Evidence from controlled human exposure studies with ozone will be discussed.

October 27, 2014, 1 – 2 pm

Wallberg Building, 200 College Street, Room 407



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