

estimates of -64 ml ($p = 0.02$) and FVC estimates of -90 ml ($p = 0.008$).

Conclusions Cross-shift decrements in pulmonary function were associated significantly with dairy work. However neither the concentration of PM nor endotoxin components in TSP were associated with these decrements.

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ARE RESPIRATORY DECREMENTS ASSOCIATED WITH EXPOSURE TO PARTICLES INCLUDING ENDOTOXINS ON LARGE CALIFORNIA DAIRIES?

Diane Mitchell, Marc Schenker, Tracey Armitage, Deborah Bennett, Daniel Tancredi, Frank Mitloehner *University of California, Davis, USA*

10.1136/oemed-2011-100382.302

Objectives To determine whether exposure to particulate matter (PM) including endotoxins on large California dairies is associated with decreased cross-shift respiratory function.

Methods Male workers at 13 dairies and one control facility wore personal air samplers collecting total suspended particles (TSP) or PM_{2.5} over their shift. Pre- and post-shift questionnaires and pulmonary function tests were also conducted. TSP endotoxins were assessed using recombinant Factor C and GC-MS. Associations between exposure to PM and cross-shift lung function changes were assessed by regression analysis using GLM's.

Results Data from 205 dairy and 45 control facility workers were analysed. Exposure to either PM or endotoxin was significantly higher in dairy versus control workers ($p < 0.0001$). Geometric mean dairy exposures were 793 and 35 $\mu\text{g}/\text{m}^3$ for TSP and PM_{2.5}; 326 EU/ m^3 and 0.45 picomoles/ m^3 for TSP endotoxin respectively. Across a shift, 29.3% and 15.6% of dairy and control workers respectively had $\geq 3\%$ decrease in FEV₁ while 29.6% and 13.3% of workers had similar decrements in FVC. Cross-shift pulmonary function outcomes were modelled against exposures and potential relevant factors such as smoking, age, shift length and dairy/control worker. PM_{2.5}, TSP and endotoxin exposures were not significantly associated with changes in pulmonary function. Dairy versus control work was associated with cross-shift FEV₁ regression