Ambient PM$_{2.5}$ and Risk of Emergency Room Visits for Myocardial Infarction: Impact of Regional PM$_{2.5}$ Oxidative Potential: A Case-Crossover Study

Scott Weichenthal
Health Canada
269 Laurier Ave West, Ottawa, Ontario, Canada, K1A 0K9
Email: scott.weichenthal@hc-sc.gc.ca

Eric Lavigne
Health Canada
269 Laurier Ave West, Ottawa, Ontario, Canada, K1A 0K9
Email: eric.lavigne@hc-sc.gc.ca

Greg Evans
University of Toronto
200 College St, Toronto, Ontario, Canada, M5S 3E5
greg.evans@utoronto.ca

Krystal Pollitt
University of Massachusetts
686 North Pleasant Street, Amherst, Massachusetts, 01003, USA
kpollitt@umass.edu

Rick T Burnett
Health Canada
50 Colombine Driveway, Ottawa, Ontario, Canada, K1A 0K9
Email: rick.burnett@hc-sc.gc.ca

**Correspondence***
Scott Weichenthal
269 Laurier Ave West, Ottawa, Ontario, Canada, K1A 0K9
Telephone: 613-948-7765; Fax: 613-954-7612; Email: scott.weichenthal@hc-sc.gc.ca
Supplemental Figures

Figure S1. Total sampling days for regional oxidative potential (OP) at each site (2012-2013). Values below the 10th percentile (30 days, indicated by the red vertical line) were excluded for sensitivity analyses.
Figure S2. Regional estimates of glutathione (OP^{GSH}) and ascorbate (OP^{AA})-related oxidative potential in Ontario, Canada (2012-2013)
Figure S3. Distribution of daily PM$_{2.5}$ mass concentrations across quartiles of glutathione-related oxidative potential (OP$^{GSH}$).
Figure S4. Ambient PM$_{2.5}$, PM$_{2.5}$ oxidative burden and emergency room visits for myocardial infarction: sensitivity analyses excluding sites with less than 1-month of oxidative potential data. Risk estimates reflect a 5 µg/m$^3$ increase in lag-0 PM$_{2.5}$ and 1 unit changes in PM$_{2.5}$*GSH and PM$_{2.5}$*AA. All models are adjusted for 3-day mean ambient temperature and relative humidity (cubic splines).
Figure S5. Concentration response plots (using cubic splines with 4 knots) for NO$_2$, O$_3$, and O$_x$ and risk of emergency room visits for myocardial infarction adjusted for lag-0 PM$_{2.5}$*GSH and 3-day mean ambient temperature and relative humidity. Slopes for NO$_2$ and O$_3$ increase in two-pollutant models (i.e. including NO$_2$ and O$_3$) compared to single pollutant models.
Figure S6. Concentration response plots for PM$_{2.5}$ and risk of emergency room visits for myocardial infarction above the 90$^{\text{th}}$ percentile of OP$_{GSH}^{\text{GSH}}$ (black line) and below the 50$^{\text{th}}$ percentile (gray line) using cubic splines with 4 knots. All models are adjusted for 3-day mean ambient temperature and relative humidity.