

# EXTREME AIR POLLUTION EVENTS FROM BUSHFIRES AND CARDIO-RESPIRATORY HOSPITAL ADMISSIONS IN SYDNEY, AUSTRALIA 1994-2007

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**Background and aims:** Extreme air pollution events due to bushfire smoke are expected to increase as a consequence of climate change, yet little has been published about their population health impacts. We examined the association between bushfire smoke pollution events and hospital admissions in Sydney from 1997-2004.

**Methods:** Events were defined as days for which smoke from bushfires caused the 24 hour city-wide average concentration of PM<sub>10</sub> to exceed the 99<sup>th</sup> percentile. We used a time-stratified case-crossover design with conditional logistic regression modeling adjusted for daily meteorology, flu epidemics and holidays. Odds ratios (OR) and 95% confidence intervals (CI) for admissions on event compared with non-event days were estimated. We assessed admissions for all cardiovascular conditions, ischaemic heart diseases, hypertensive diseases, cerebrovascular diseases, all respiratory conditions, asthma, chronic obstructive pulmonary disease (COPD), bronchitis and pneumonia.

**Results:** There were 52 days during the study period in which the extreme particulate pollution was attributable to bushfire smoke. On the day of the smoke events all respiratory hospital admissions increased by 7% (OR 1.071, 95%CI, 1.033, 1.112). Admissions for COPD increased 16% (OR 1.168, 95%CI 1.080, 1.263) and asthma by 14% (OR 1.145, 95%CI 1.036, 1.265). Results were similar at a lag of one day. No associations were observed with other respiratory diagnoses or with cardiovascular admissions.

**Conclusions:** Bushfire smoke pollution events were associated with increases in admissions for respiratory, rather than cardiovascular conditions.