

Smoke impacts on community health and social perceptions

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Background

Current evidence suggests that public health harm is likely to be minimised by proactive management through prescribed burning, rather than relying on reactive management of severe bushfires as they arise.

There is a lack of specific evidence to support operational guidelines for managing the community impacts of exposure to smoke at the lower concentrations and generally shorter durations of exposure usually associated with prescribed burning, as compared with the more severe and prolonged exposures often associated with uncontrolled bushfires.

This program of research aims to address this gap in knowledge

Research components and aims

The four research components and their aims are summarised below:

(1) Clinical research:

Quantifying individual health responses to smoke exposure during prescribed burning operations

- determining population groups most likely to be vulnerable to impact
- establishing concentration response relationships for health impacts;

(2) Epidemiological research

Quantifying concentration response relationships for selected population health outcomes;

(3) Qualitative research

Describing perceived level of risk to human health and acceptability of prescribed burning among communities affected by prescribed burning;

(4) Interventional research

Evaluating potential exposure mitigation and communication strategies for reducing the health impacts from smoke.

This poster reports on research component (1)

Study Location

The 2013 study took place in the autumn in the Warburton Area, Yarra Valley (to be expanded to other locations in Victoria in 2014).



Warburton 11th April 2013

Methods

Exposure measurements:

The E-sampler Aerosol Monitor is used to measure concentrations of PM_{2.5} (particles with an aerodynamic diameter of less than 2.5 μm):

- Real-time measurements (evaluate peak concentrations)
- Measurements on filters (Chemical analysis on filters)



Health outcomes:

Daily measured health outcomes (about 4 weeks)

- Diary (Day and night symptoms, Medication use, Health services utilisation)
- Lung function measurements

Health outcomes measured on 3 occasions

- Lung inflammation test (exhaled NO)
- Blood pressure
- Blood markers of inflammation

Particulate matter concentration in Warburton during a smoke event

During a prescribed burn smoke event in Warburton in 2013 the Advisory NEPM standard for PM_{2.5} of 25 μg/m³ (daily average) was exceeded on 2 occasions.

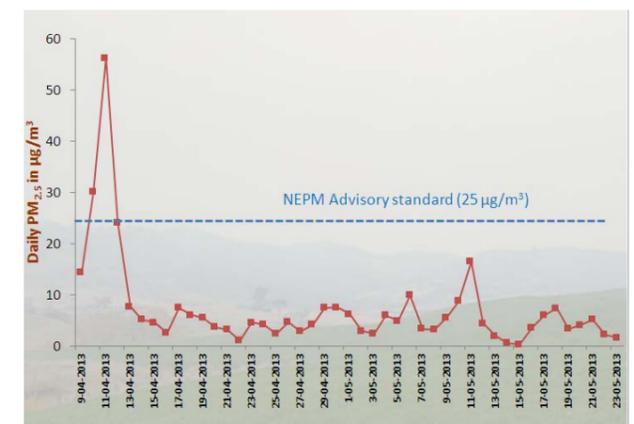


Figure 1: Daily Average PM_{2.5} concentration in Warburton. 9th April - 23rd May 2013

The hourly concentrations varied considerably within a day (Figure 2) and reached a maximum concentration of over 200 μg/m³

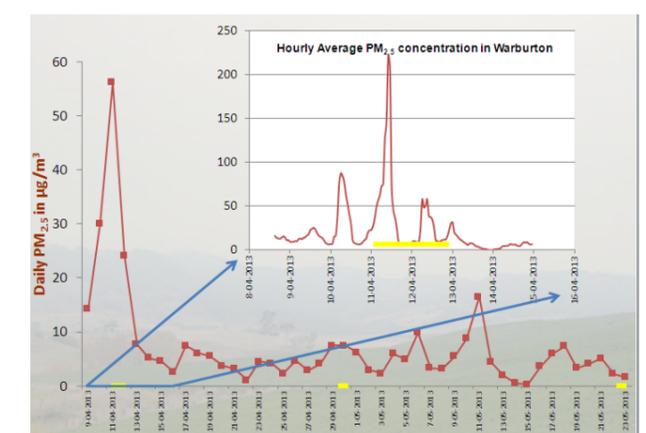


Figure 2: Hourly Average PM_{2.5} concentration in Warburton. 9th - 15th April 2013

Outcomes

This project will provide new information about measurable health risks associated with planned burns and bushfires – the results will inform health advisories and will determine thresholds for action.