

# SMOKE IMPACTS ON COMMUNITY HEALTH AND SOCIAL PERCEPTIONS

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## PROGRAM OF RESEARCH

- There is a lack of specific evidence to support operational guidelines for managing the community impacts of planned burn exposure.
- A programme of research was developed to investigate the impacts of land fire smoke (LFS) on community health and social perceptions from different angles:
  - 1) **Clinical Research: Individual level health effects** (assessments for respiratory and cardiovascular sub-clinical conditions)
  - 2) **Epidemiological Research: Population level health effects** (using state-wide exposure modelling and ambulance data)
  - 3) **Exposure Research:** Assessing exposure to fine particulate matter (monitoring for PM<sub>2.5</sub> = particles with a diameter < 2.5 µm)
  - 4) **Qualitative Research (QR): Perception of risk and understanding of messages** (community focus groups and semi-structured interviews)



Credit: Dale Appleton

This study was funded under DSE Schedule 8 from 2012 to 2016. We are now in the final year of the study. The clinical, exposure and qualitative research studies were conducted in three locations in Victoria (see figure below)

### Study locations



### Communications about planned burn events by location (Qualitative Research Results):

**Maffra** - town with ageing population, had a strong association with the land and relied heavily on local ABC radio.

**Warburton** - has one road in and out and relied heavily on electronic road signage. They could not rely on internet and mobile phone apps due to intermittent power and telecom outages.

**Traralgon** - participants were far less aware of planned burn events, were less likely to actively seek information, and more likely to receive information by a variety of means (apps, multiple radio/TV stations).

## SNAPSHOT OF RESULTS

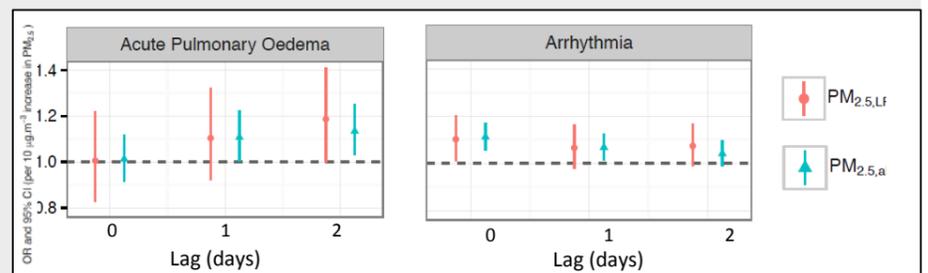
### Clinical Research results

- Exhaled nitric oxide (a marker of lung inflammation) was increased during smoke exposure
- Low risk subjects were susceptible to endothelial dysfunction (a marker of future heart disease) during smoke exposure



### Epidemiological Research Results

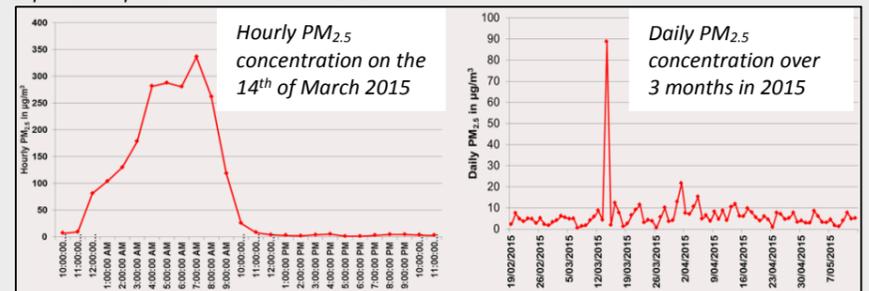
- Exposure to landscape fire smoke (LFS) in Victoria was associated with ambulance attendances for breathing problems, acute pulmonary oedema (accumulation of fluid in the lungs due to weakened heart function) and arrhythmia (abnormal heart rhythm)



### Exposure Research Results

- High short term peaks of PM<sub>2.5</sub> exposure were observed during planned burns (see figure below)

### Exposure to planned burn smoke in 2015 in Warburton



### Qualitative Research Results

- There was a consistent message that communication strategies needed to be well targeted to those most vulnerable
- The different media that people access and the reliability of these needs to be considered when communicating messages (see box)

### OVERALL CONCLUSION

**We found that exposure to landscape fire smoke was associated with specific respiratory and cardiovascular sub-clinical and clinical effects. We recommend that the messages and media related to planned burns need to be specifically targeted to different rural audiences.**