

Bushfire smoke , health and fire management

Dr Fay Johnston ^{1,2} Prof Ross Bailie ¹ Prof Louis Pilotto ³

1. Menzies School of Health Research , Charles Darwin University. 2. Menzies Research Institute, University of Tasmania .
3. University of New South Wales

Introduction

We reviewed the international literature about the health effects of wildfire smoke and conducted a series of studies assessing the impact of smoke from regional savanna fires on the health of people living in Darwin. Most of the fires occurring during the study period were of low intensity , analogous to prescribed burns in southern Australia . The pollution they generated rarely caused Australia's air quality guidelines to be breached.

Summary of results

- As severe fires have become more common around the world, bushfire smoke has been recognised as an increasingly important public health hazard.
- Research has clearly established that airborne particles, the major component of bushfire smoke, can exacerbate heart and lung diseases, cause hospitalisation and death.
- The risks are greater for : (1) people who are exposed to higher levels of pollution , (2) babies and young children, (3) the elderly and (4) people with diabetes, heart or lung conditions.
- Harmful health effects from bushfire smoke, such as worsening asthma, are measurable at pollution levels below current Australian air quality standards .
- Bushfire smoke could be relatively more harmful to the respiratory system than other sources of particulate air pollution . This issue needs further research .

What does this mean for land managers?

- Individuals, corporations and government agencies that manage land to prevent severe bushfires and smoke pollution events over populated areas are performing an important public health service .
- The main intervention for achieving this , namely controlled burning, is not free of risk to the public. While the pollution levels from low intensity prescribed burns is usually far lower than that from severe wildfires , there appears to be no clear lower limit for pollution that is safe for all members of the community . However, these risks need to be balanced against the substantial health risks of severe pollution episodes from intense fires.
- Risks can be minimised by :
 - Managing deliberate burns to (1) minimise the amount of pollution affecting urban areas and (2) avoid exceeding national air quality standards .
 - Good public communication including advance health advisories so that people at higher risk from exposure to smoke can take appropriate action .
- Closer collaboration between public health and fire management researchers will facilitate clarification and communication of the relative risks of severe fires and management interventions to prevent them.