

# Eye surface changes following prescribed burns in Australian firefighters

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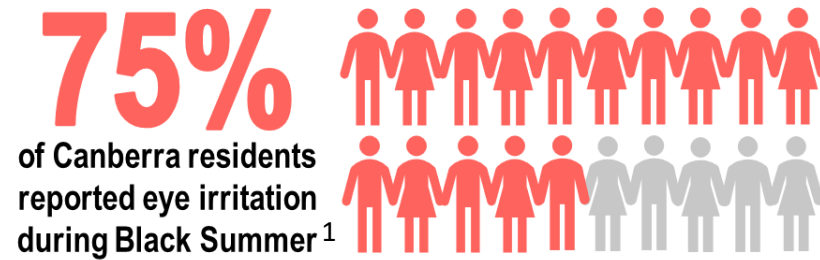
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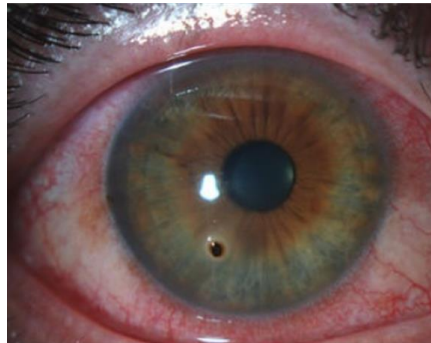
# Eyes, smoke & firefighters



Dry irritated eyes



Corneal foreign body



Conjunctivitis



Bushfire fighter exposure to particles and toxic gases (eg CO, formaldehyde) can exceed safe work limits in prescribed burns and wildfires<sup>2</sup>

1. Rodney, Rachael M., et al. "Physical and mental health effects of bushfire and smoke in the Australian Capital Territory 2019–20." *Frontiers in Public Health* 9 (2021): 682402.  
2. Reisen F et al. Exposure to bushfire smoke during prescribed burns and wildfires: Firefighters' exposure risks and options. *Environment international*. 2011 Feb 1;37(2):314-21.



Our research question:

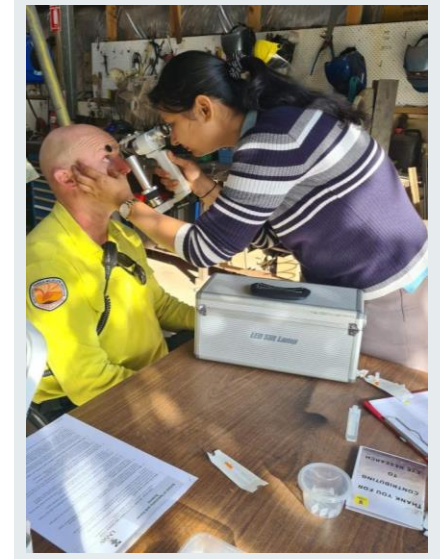
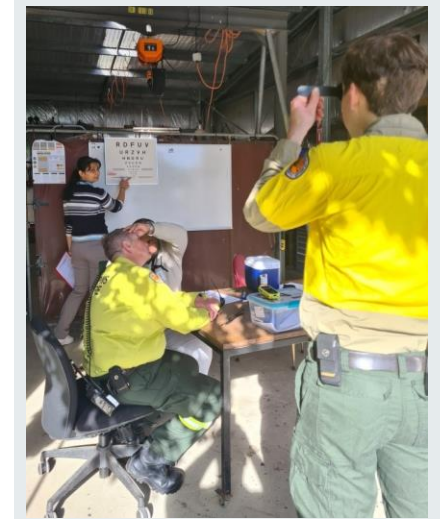
Does prescribed burning affect the eye surface of  
Australian firefighters ?

If so, how?

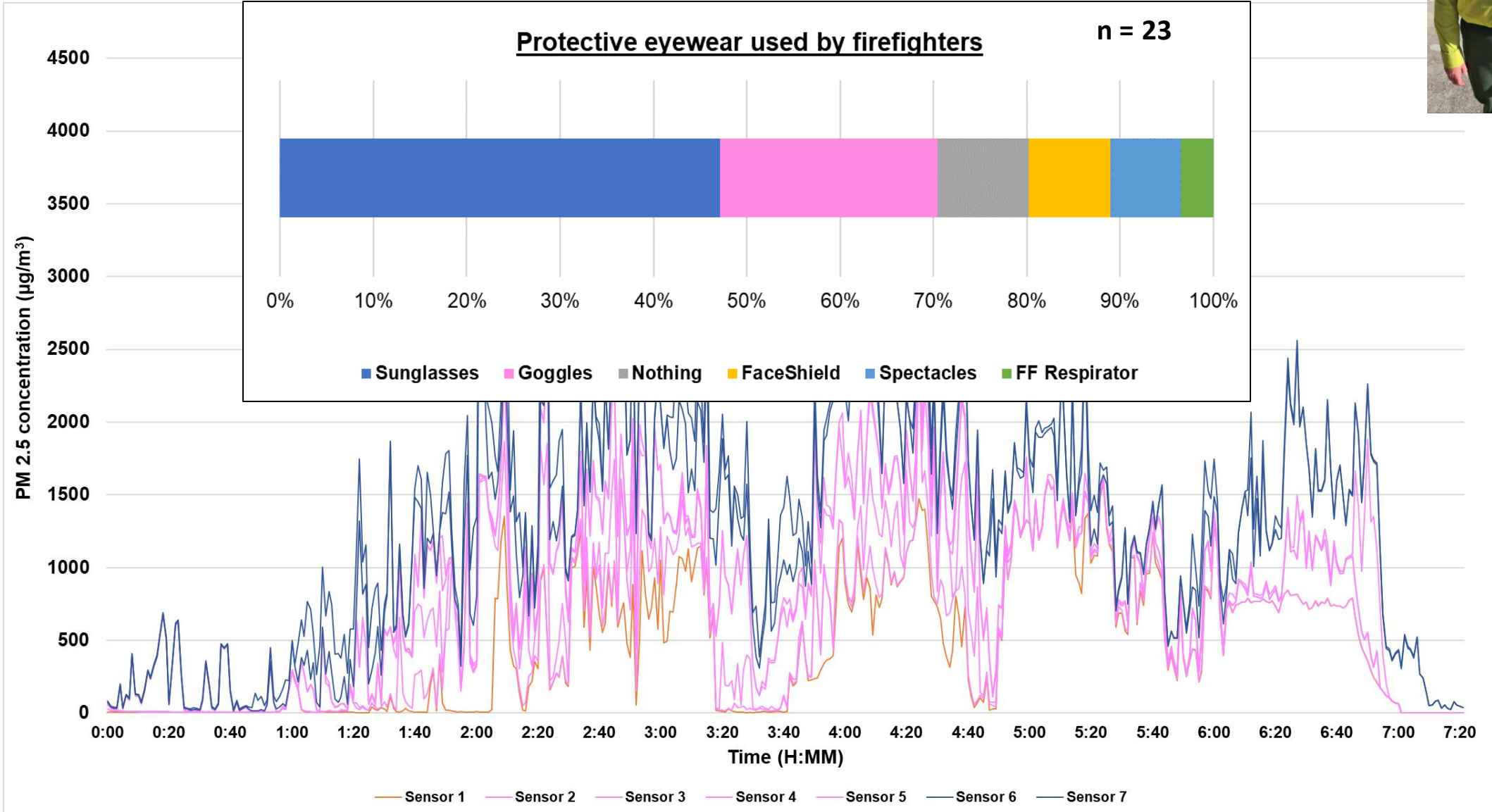


# What we did:

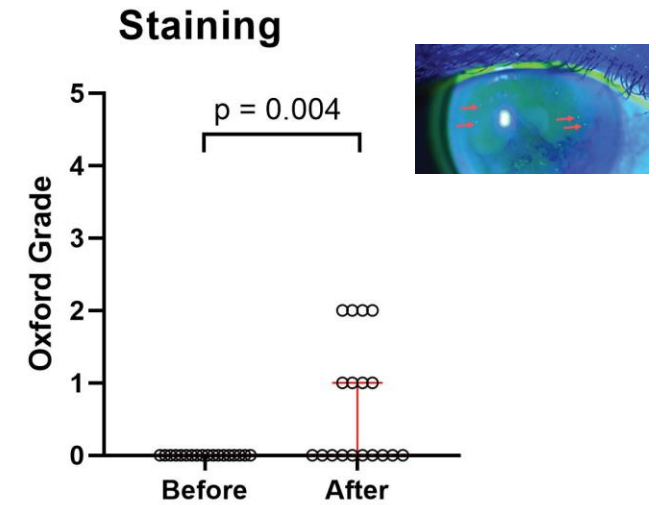
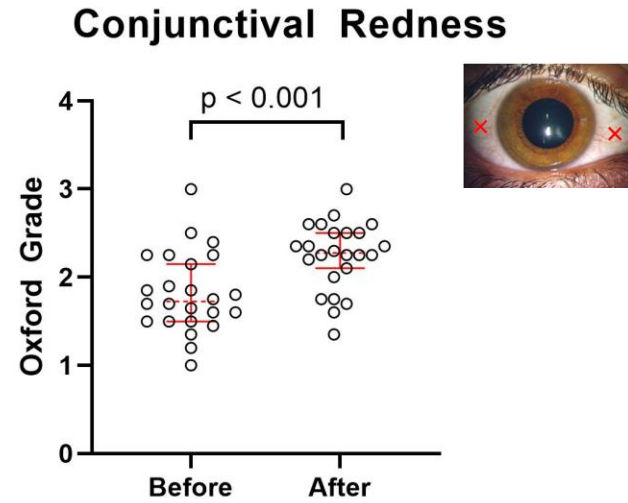
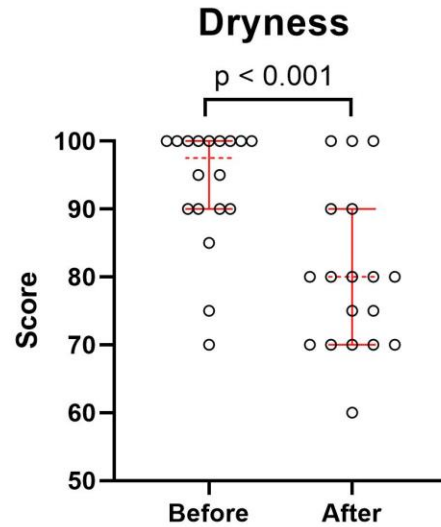
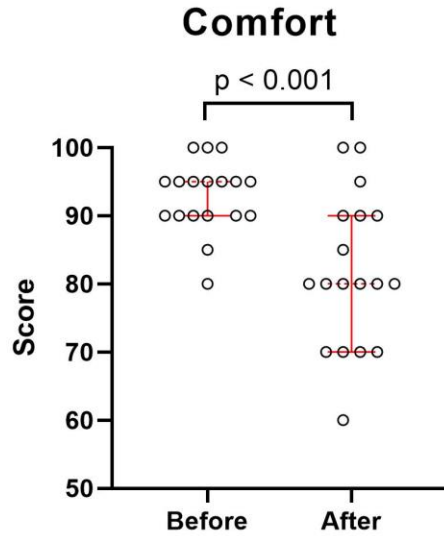
1. Attended 4 prescribed burns in Sydney between September 2023 – March 2024
  
2. Measured eye symptoms and eye surface parameters immediately before and after shift
  - i. Only firefighters whose duties put them on the fire line were included
  - ii. 5-6 firefighters participated at each prescribed burn



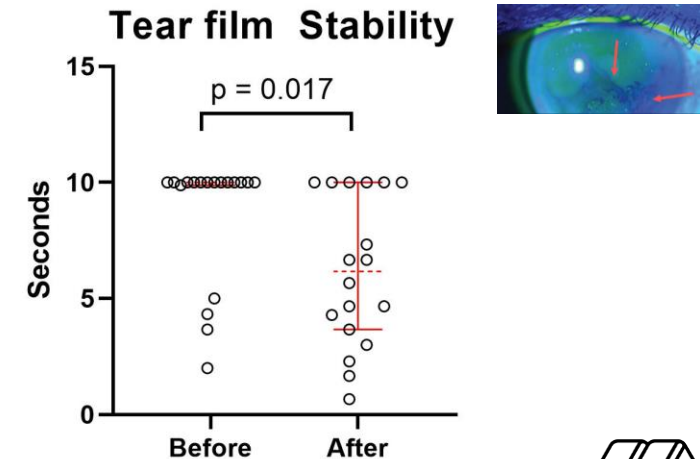
# Results




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- Almost all firefighters had soot around their eyes
- Interventions applied at end of shift:
  - Therapeutic eye drops in 3 firefighters
  - Non-therapeutic eyedrops in 2 firefighters
  - Saline washout accepted by 2 firefighters




# Take home messages



**Both eye symptoms and  
eye surface health are  
poorer after a shift**



**Goggles are used less  
than we expected on the  
fireground**



**Long term implications of  
eye surface changes are  
unknown**



# Acknowledgements

## **Logistics**

1. Felipe Aires (NPWS) & Andy McQuie (NPWS)
2. Kathryn Vandine (RFS)
3. Various Incident Commanders(IC) at NPWS

## **Assistance with data collection**

1. Ali Alghamdi
2. A/Prof Blanka Golebiowski & Prof Isabelle Jalbert

