OCCUPATIONAL HEALTH & SAFETY

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Overview

To curtail the spread of bushfire, Australia's firefighters often work long hours in hot, smoky conditions with little rest between consecutive shifts. In isolation, heat, smoke, and sleep disruption can impair cognitive and physical abilities. Far less is known, however, about the combined impact these factors can have on work performance. Without this information, fire agencies cannot confidently predict or manage the health and safety risks faced by their firefighters.

Aim

"To determine the individual and combined impact that heat, smoke, and sleep disruption have on the ability of firefighters to remain both healthy and effective across multiple fireground shifts"

Methods

Two hundred male and female firefighters (in small groups) will complete a 'three-day' simulated fireground tour comprising three consecutive fireground 'day' shifts. Firefighters will be randomly allocated into one of eight environmental conditions, including the four below and combinations of **Awake**, **Smoky**, and **Hot**.

Control

Day: 20-22 °C
Night: 12-17 °C
Sleep: 7 – 9 hours
No carbon monoxide

Awake

Night One: ≤ 4 hours sleep
Night Two: ≤ 5 hours sleep
Night Three: ≤ 5 hours sleep

Smoky

Day: 15 ppm Carbon Monoxide
Night: 5 ppm Carbon Monoxide

Hot

Day: 30-35 °C
Night: 20-25 °C

Each 'shift'

Firefighters will perform **physical** and **cognitive** tasks, based on real fireground duties (and verified by experts), across each shift

Outcomes:

"Help fire agencies understand and manage firefighters physical and cognitive abilities to preserve their health and safety during different fireground conditions"

"The research will explore the interplay between the environmental hazards our firefighters face each shift and is likely to produce outcomes that are practical and more relevant to our working environment"
Robyn Pearce, Director – Human Services, Tasmania Fire Service