

# Unprecedented bushfire season's smoke was responsible for over 400 deaths

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Bushfire smoke over eastern Australia during the 2019-20 fire-ravaged summer was responsible for 417 excess deaths, 1124 hospitalisations for cardiovascular problems and 2027 for respiratory problems, as well as

1305 presentations to emergency departments with asthma, according to the authors of research published online today by the *Medical Journal of Australia*.

The researchers, led by Nicolas Borchers Arriagada, a Ph.D. candidate with the Menzies Institute for Medical Research at the University of Tasmania, estimated population exposure to particulate matter less than 2.5  $\mu\text{m}$  in diameter (PM<sub>2.5</sub>) for the regions of NSW, Queensland, the ACT and Victoria for which publicly available air quality monitoring data were available, during the last quarter of 2019 and the first quarter of 2020. Data were obtained from the NSW Department of Planning, Industry and Environment, the Queensland Department of Science, ACT Health, and the Environmental Protection Agency Victoria. They defined bushfire smoke-affected days as days on which the 24-hour mean PM<sub>2.5</sub> concentration exceeded the 95th percentile of historical daily mean values for individual air quality stations. They also used data from the Australian Bureau of Statistics, the Australian Institute of Health and Welfare, and the NSW Ministry of Health.

"During the study period, PM<sub>2.5</sub> concentrations exceeding the 95th percentile of historical daily mean values were recorded by at least one monitoring station in the study area on 125 of 133 days," the authors wrote.

"The highest population-weighted PM<sub>2.5</sub> exposure level, 98.5  $\mu\text{g}/\text{m}^3$  on 14 January 2020, exceeded the national air quality 24-hour standard (25  $\mu\text{g}/\text{m}^3$ ) and was more than 14 times the historical population-weighted mean 24-hour PM<sub>2.5</sub> value of 6.8  $\mu\text{g}/\text{m}^3$ .

"Our findings indicate that the smoke-related [health](#) impact was substantial," the authors concluded.

"Smoke is just one of many problems that will intensify with the

increasing frequency and severity of major bushfires associated with climate change. Expanded and diversified approaches to [bushfire](#) mitigation and adaptation to living in an increasingly hot and fire-prone country are urgently needed."

**More information:** Nicolas Borchers Arriagada et al. Unprecedented smoke-related health burden associated with the 2019–20 bushfires in eastern Australia, *Medical Journal of Australia* (2020). [DOI: 10.5694/mja2.50545](#)

Provided by Medical Journal of Australia

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