

The environment is a first order issue for lung health

IN THIS ISSUE OF THE JOURNAL, we publish the first of a series of State of the Art articles on environmental health. This is a topic that is front and centre for those concerned about lung health. Not only are the airways and lungs the major portal of entry for airborne pollutants, they are also a major site of disease caused by air pollutants, including asthma-like syndromes, chronic obstructive pulmonary disease, pneumonitis, pneumoconiosis and lung malignancy. Of all the environmental causes of ill-health, air pollutants are, by far, the major contributor to death and burden of disease.¹ Furthermore, the burden of this exposure falls particularly on those living in low- and middle-income countries, where the capacity to reduce exposure and mitigate the effects is weakest. This series is thus a timely reminder of the importance of the environment to lung health.

The link between climate change, the energy transformations required to limit its impact and the adverse health consequences of air pollution has been underappreciated. If managed well, the transition to new energy sources designed to reduce carbon emissions has the potential to also improve air quality, with important health co-benefits. However, some energy solutions, such as waste-to-energy incineration and biodiesel fuels might not yield the same co-benefits. Hence, there is an important need for climate change, energy and air quality scientists and policy makers to work together towards a future that optimises population health outcomes.

The impact of climate change on health, particularly in the Global South, is the topic of the first State of the Art published in this issue of the Journal.² Biomass burning is major cause of poor air quality, both in the outdoor (ambient) environment and indoors.³ Recent wildfires in Australia and California, the deliberate burning of forests for land-clearing in the Amazon in Brazil, and stubble burning on agricultural land around New Delhi in India have all caused major public concern.⁴ However, this is not a new phenomenon and it is not limited to these settings or contexts. The problem is severe and obvious, but the solution is complex and requires ecological, agricultural, sociological, behavioural and economic analysis. A future article in this series will address the health effects of smoke from vegetation and biomass burning.

While attention has focused on outdoor air quality, people spend much of their time indoors where unique exposure sources, in particular, those used for

cooking and heating, may be important contributors to poor air quality. Interventions to improve indoor air quality have the potential to be more readily deployed than those influencing the ambient air, and some studies have investigated the impact of these interventions, with mixed results.⁵ An article in this series will review the current state of knowledge on interventions to improve indoor air quality.

Environmental noise, which often co-exists with major sources of air pollution (for example, vehicular traffic and airports), is also covered in the series. Noise is a source of annoyance, but also disturbs sleep and causes increases in heart rate and blood pressure. Recent evidence suggests it may increase cardiovascular disease risk,⁶ as well as contributing to symptom exacerbation in asthma.⁷

We hope that this State of the Art series will stimulate interest in issues related to environmental health and will encourage those conducting research in this field to consider submitting their work to the Journal.

G. B. MARKS^{1,2}

A. L. HANSELL³

F. H. JOHNSTON⁴

¹*South Western Sydney Clinical School
University of New South Wales
Sydney, NSW*

²*Woolcock Institute of Medical Research
Sydney, Australia*

³*Centre for Environmental Health and Sustainability
University of Leicester
Leicester, UK*

⁴*Menzies Institute for Medical Research
University of Tasmania
Hobart, TAS, Australia*

*Correspondence to: Guy B Marks, South Western
Sydney Clinical School, University of New South
Wales, Goulburn St, Liverpool, NSW 2170,
Australia. e-mail: guy.marks@sydney.edu.au*

References

- 1 Stanaway J D et al. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018; 392(10159): 1923–1994.
- 2 Halpin D, Celli B, Criner G, et al. The GOLD Summit on COPD

- in low and middle income countries. *Int J Tuberc Lung Dis* 2019; 23: 1131–1141.
- 3 Reid C E, Brauer M, Johnston F H, Jerrett M, Balmes J R, Elliott C T. Critical Review of Health Impacts of Wildfire Smoke Exposure. *Environ Health Perspect* 2016; 124(9): 1334–1343.
 - 4 Mervosh S. California air quality: should you wear a face mask for wildfire smoke? *New York Times*, 29 October 2019.
 - 5 Mortimer K et al. A cleaner burning biomass-fuelled cookstove intervention to prevent pneumonia in children under 5 years old in rural Malawi (the Cooking and Pneumonia Study): a cluster randomised controlled trial. *Lancet* 2017; 389(10065): 167–175.
 - 6 Hansell A L, Blangiardo M, Fortunato L, et al. Aircraft noise and cardiovascular disease near Heathrow airport in London: small area study. *BMJ* 2013; 347: f5432.
 - 7 Eze I C, Foraster M, Schaffner E, et al. Transportation noise exposure, noise annoyance and respiratory health in adults: A repeated-measures study. *Environ Int* 2018 Dec; 121(Pt 1): 741–750.