

7/8/19

Adam Carlon  
NEPC Executive Officer  
National Environment Protection Council  
Department of the Environment and Energy  
[nepc@environment.gov.au](mailto:nepc@environment.gov.au)

Dear Adam,

**Re: Review of the National Environment Protection Measure, Ambient Air Quality (AAQ) standards, Ozone (O<sub>3</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Nitrogen Dioxide (NO<sub>2</sub>)**

Asthma Australia welcomes the opportunity to submit its recommendations on the review of the National Environment Protection Measure, Ambient Air Quality (AAQ) standards; Ozone (O<sub>3</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Nitrogen Dioxide (NO<sub>2</sub>). Asthma affects 11% of Australians, or 2.7 million people, and is an inflammatory condition of the airways, commonly caused by exposure to environmental triggers such as the three gases being reviewed: O<sub>3</sub>, NO<sub>2</sub> and SO<sub>2</sub>. Ozone, Sulphur Dioxide and Nitrogen Dioxide are known to be harmful for the short- and long-term health of people with asthma and other respiratory illnesses<sup>1</sup>. Measures which have the potential to significantly reduce the ambient concentration of O<sub>3</sub>, SO<sub>2</sub> and NO<sub>2</sub> must be prioritised, considering the significant potential health benefits of doing so at both a population and individual level.

**Asthma Australia recommends the following:**

1. The desired outcome of the NEPM standards for ambient air quality should be to minimise the risk of adverse health impacts from exposure to air pollution for all people, wherever they live.
2. The National Environment Protection Council (NEPC), take this opportunity to not only establish best practice standards but work on a framework to reduce exposure and enforce the new standards.
3. The new NEPM standards on ambient air quality (AAQ) are established to protect the health of the most vulnerable who live closest to the sources of air pollution.
4. NEPC adopts a new 1-hour SO<sub>2</sub> standard of 60ppb as 99<sup>th</sup> centile of daily worst hour.
5. NEPC adopts the World Health Organisation's (WHO) 24-hour SO<sub>2</sub> standard of 8ppb and permits no exceedances.
6. NEPC adopts a new NO<sub>2</sub> annual standard of 9ppb.
7. NEPC adopts a new 1-hour NO<sub>2</sub> standard of 72ppb as 99<sup>th</sup> centile of daily worst hour.

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<sup>1</sup> World Health Organisation, 2019. [https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)



Australia's air pollution standards, known as National Environment Protection Measures (NEPM), were set in 1998 and are long overdue for revision. These standards are intended to protect public health but they have not kept up with new research on the health impacts of air pollution. Health effects occur at lower concentrations than previously thought, and there is no safe level of air pollution<sup>2</sup>. Air pollution in Australia kills an estimated 3000 people per year.<sup>3</sup>

Many people are exposed to high levels of pollution along busy roads, however the current NEPM does not monitor air quality levels at these hotspots. Roadside exposure can be many times higher than urban background, especially for NO<sub>2</sub><sup>4</sup>. In the Australian Child Health and Air Pollution Study (ACHAPS), significant and consistent relationships were noted between NO<sub>2</sub> exposure and asthma symptoms and symptom reliever use in children.<sup>5</sup> Air quality standards, monitoring and control should protect the most vulnerable, in the most highly polluted areas; therefore Asthma Australia recommends that **the network of NEPM monitors should be expanded to include measurement of road side NO<sub>2</sub> at the most busy roads in each city.**

The three ambient air pollutants SO<sub>2</sub>, NO<sub>2</sub> and O<sub>3</sub> are quick acting respiratory irritants – causing asthma symptoms, asthma attacks, asthma-related emergency health service use and asthma-related burden of disease. O<sub>3</sub> is known to contribute to new onset asthma and worsening other pre-existing lung and airways disease.<sup>1,6</sup> NO<sub>2</sub> and ozone cause other long-term effects – affecting children's lung development<sup>2</sup>, cognitive development<sup>7</sup> and contributing to development and exacerbation of heart disease in adults<sup>8</sup>. This is an opportunity to strengthen our outdated standards in line with current evidence to reduce these impacts on the individual and our population.

**Asthma Australia recommends NEPC adopts a new 1-hour SO<sub>2</sub> standard of 60ppb as 99<sup>th</sup> centile of daily worst hour.** A proportion of people with asthma experience negative effects (worsening inflammation in the lungs which leads to asthma symptoms, attacks and emergency health service

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<sup>2</sup> Barnett, A.G, 2014. It's safe to say there is no safe level of air pollution. Australian and New Zealand Journal of Public Health, accessed: <https://onlinelibrary.wiley.com/doi/full/10.1111/1753-6405.12264>

<sup>3</sup> Australian Government, Australian Institute of Health and Welfare, Australian Burden of Disease study: Impact and causes of illness and death in Australia, 2011 (Revised 2016)

<sup>4</sup> Environmental Protection Agency (EPA) NSW, 2018: <https://www.environment.nsw.gov.au/topics/air/air-quality-basics/indicators-we-monitor>

<sup>5</sup> Williams, G, Marks, G, Denison, L and Jalaludin, B, 2012. Australian Child Health And Air Pollution Study (ACHAPS). Published on the NEPC website: <http://www.nepc.gov.au/system/files/resources/8f043cf5-a911-c1c4-8d3d-143ed55cb112/files/achaps-final-report-may2012.pdf>

<sup>6</sup> REVIHAAP (2013). Review of evidence on health aspects of air pollution-REVIHAAP project. Copenhagen, The WHO European Centre for Environment and Health, Bonn, WHO Regional Office for Europe.

<sup>7</sup> Guxens, M., et al. (2014). "Air Pollution During Pregnancy and Childhood Cognitive and Psychomotor Development Six European Birth Cohorts." *Epidemiology* 25: 636–647.

<sup>8</sup> Gan, W., et al. (2010). "Changes in residential proximity to road traffic and the risk of death from CHD." *Epidemiology* 21(5): 642-649.

use) with even short-term exposure of as little as 10 minutes at levels of 200ppb<sup>9</sup>. Further, observational studies have shown increased hospitalisations occur on days with high SO<sub>2</sub><sup>9</sup>. Limiting the 99<sup>th</sup> centile of daily worst hour to 60ppb will help prevent any 10-minute period exceeding 200ppb.

**We recommend NEPC adopts the World Health Organisations' (WHO) 24-hour SO<sub>2</sub> standard of 8ppb.** Evidence suggests that asthma-related emergency department and hospitalisations increase significantly for each 10ppb increase in ambient SO<sub>2</sub><sup>9</sup>. Australia's current 1-day SO<sub>2</sub> standard of 80ppb is 10 times higher than the recommended WHO standard and this places unnecessary risk and pressure on the 11% of people with asthma in high risk locations.

**Asthma Australia recommends a new annual standard NO<sub>2</sub> of 9 ppb in line with the science.** Epidemiological studies show that children with asthma are predisposed to symptoms of bronchitis associated with long term exposure to NO<sub>2</sub>, which also contributes to reduced lung function growth<sup>10</sup>. Research in Australian schools shows significant effects on childhood asthma if NO<sub>2</sub> levels are above 9ppb.<sup>11,12</sup>

**We recommend adoption of a new 1-hour NO<sub>2</sub> standard of 72ppb as 99<sup>th</sup> centile of daily worst hour,** in line with the recommendations of the NEPC regulatory impact statement but expressed as 99<sup>th</sup> centile of daily worst hour.

Nitrogen dioxide has two main sources; vehicle exhaust and burning coal for electricity, while SO<sub>2</sub> also has two main sources; metal smelting and burning coal for electricity. Vehicle emission control and electricity generation are areas of technological change where low or and zero pollution options are rapidly entering the market. Strong pollution reduction policies based on good standards will assist Australia in achieving the best outcome during this period of change.

Exposure to vehicle pollution is reduced by better vehicle emissions standards, by situating schools and child care away from busy roads, by better public transport, by reducing the use of diesel fuel, and by encouraging electric vehicles.

The NO<sub>2</sub> standard of 9ppb is already met in all cities except Sydney and Melbourne.

Developments such as Sydney's new metro trains and the port Botany rail duplication will take

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<sup>9</sup> Health Canada, 2016. Human Health Risk Assessment for Sulphur Dioxide.

[http://publications.gc.ca/collections/collection\\_2016/sc-hc/H144-29-2016-eng.pdf](http://publications.gc.ca/collections/collection_2016/sc-hc/H144-29-2016-eng.pdf)

<sup>10</sup> World Health Organisation, 2019. [https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

<sup>11</sup> Sunyer, J., et al. (2015). "Association between Traffic-Related Air Pollution in Schools and Cognitive Development in Primary School Children: A Prospective Cohort Study." PLOS medicine 12(3): e1001792.

<sup>12</sup> Williams, G, Marks, G, Denison, L and Jalaludin, B, 2012. Australian Child Health And Air Pollution Study (ACHAPS). Published on the NEPC website: <http://www.nepc.gov.au/system/files/resources/8f043cf5-a911-c1c4-8d3d-143ed55cb112/files/achaps-final-report-may2012.pdf>

cars and trucks off the road, while in Melbourne the new East-West metro will likewise improve air quality by reducing traffic volume. The shift to tighter Euro 6 vehicle emissions standards and to electric vehicles likewise will reduce pollution, so standards that properly protect health are easily attainable.

Power station pollution can be reduced by post combustion treatment of flue gases, and wind and solar based electricity avoid air pollution completely. These are all simple steps that will help Australia meet ambitious clean air objectives set by revised NEPM standards.

In recent consumer experience surveys, two respondents commented in ways that really galvanised our hopes that this NEPM review will result in a safer place for people with asthma:

*“So many things that I've tried to do have just ended up falling flat because all of a sudden I've had asthma and I was just struggling to cope with it.” (Anon).*

*“I cannot sit outside to eat at any restaurant in the CBD (Adelaide) as I find that my asthma symptoms are exacerbated by exhaust fumes within five minutes.” (Anon).*

We need the NEPC to resolve to improve the AAQ Standards as proposed, which will provide the requisite direction and framework for the Environmental Protection Authorities and other governmental departments whose decisions impact on air quality levels. These standards need to be evidence-based, benchmarked to international standards and be designed to reduce the harmful impacts of poor air quality for the millions of Australians with chronic disease, and especially the 1 in 9 Australians living with asthma.

Asthma Australia would like to acknowledge the work done by Doctors for the Environment in developing a rigorous set of recommendations which we have drawn on for our submission and which we completely endorse in parallel.

Yours faithfully,



Michele Goldman  
CEO  
Asthma Australia



### **About Asthma Australia**

Asthma Australia supports the one in nine Australians with asthma to breathe better. Our vision is *A Community Free from Asthma*. For over 50 years Asthma Australia and the Asthma Foundations have been leaders in asthma health care, education, research and advocacy. Asthma Australia delivers evidence-based preventative health strategies through our information provision, telephone helpline and asthma referral and coaching service. The organisation also provides education and training to promote best practice asthma care and first aid training to schools, childcare centres, workplaces and sporting and recreational settings to ensure asthma emergencies are addressed swiftly and appropriately. Asthma Australia supports research that contributes to national and international understandings of asthma and how best to manage the disease. The organisation engages in advocacy on the issues that are important to people with asthma, to ensure policies are in place to support people with asthma achieve optimal health.

Through this work, we reach more than 500,000 Australians each year.

To find out more about our work, visit [www.asthmaaustralia.org.au](http://www.asthmaaustralia.org.au).