



Centre for Air pollution, energy and health Research Brief

August 2021

‘No level of air pollution is safe’: Commitment to continuous emissions reduction through an alternative model for the AAQ NEPM

Federal and state governments are responsible for setting objectives for national air pollution emissions through the National Environmental Protection (Ambient Air Quality) Measures (AAQ NEPM). Researchers at the Centre for Air pollution, energy and health Research (CAR) are proposing an alternative model for the current AAQ NEPM to implement, to better protect the health of all Australians.

What is the AAQ NEPM?

The AAQ NEPM is a monitoring, assessment and reporting framework for ambient air quality¹ that uses a weight-of-evidence approach² to set standards on air pollutants.

Setting a standard involves determining what maximum concentration of an air pollutant is deemed “acceptable” for human exposure in outdoor air quality.

The AAQ NEPM does not compel or direct pollution control measures, nor is the AAQ NEPM “intended for ‘hotspot’ or peak site monitoring to measure pollution levels from emission sources” (NEPC 2021, p.16), such as highly polluting industrial sites. States are advised to “provide data indicative of the air quality experienced by most of the population...” (NEPC 2021, p.17).

The National Environmental Protection Council (NEPC) is responsible for the implementation and review of the AAQ NEPM.

¹ Ambient air quality is defined as the external air environment, it does not include the air environment inside buildings or structures (NEPM, 2021).

² A weight-of-evidence approach takes into account “health protection, WHO guidance, standards in leading jurisdictions (e.g. USA, Canada, EU, UK), the capacity of Australian jurisdictions to meet standards, the scale of the health impacts, and economic considerations such as the effectiveness and efficiency of abatement options.” (NEPC 2021, pp.20-21)

Why is an alternative model needed?

The most recent and best available evidence concludes that **there is no safe level of air pollution** (Liu et al 2019; Hanigan et al 2019). Australia should therefore adopt a framework that seeks to **continuously reduce air pollution emissions over time** to reduce the potential and actual harm that air pollution causes Australians.

A continuous emissions reduction approach is consistent with the Desired Environmental Outcome of the AAQ NEPM, which was recently updated to pursue:

“...ambient air quality that *minimises the risk* of adverse health impacts from exposure to air pollution” (NEPC 2021, p.12; emphasis added).

Standard-setting, as is used by the AAQ NEPM, sets thresholds for exposure to air pollution that contradict a minimal risk and exposure approach.

This is because there is no incentive to reduce or even maintain air pollution levels if they are below the threshold. In addition, because locations are meant to provide ambient air quality levels, monitoring stations are often placed in locations that do not capture high concentrations of air pollution associated with transport emissions (i.e. near roads) or industrial emissions (i.e. near industrial sites).

Air pollution standards in Australia were set at thresholds higher than that at which human health impacts were thought to occur. This is partly a result of the weight-of-evidence approach, which considers the economic costs of abatement policies alongside benefits to health from emissions reduction. As a result, industry often has a disproportionate influence on the thresholds that are set.

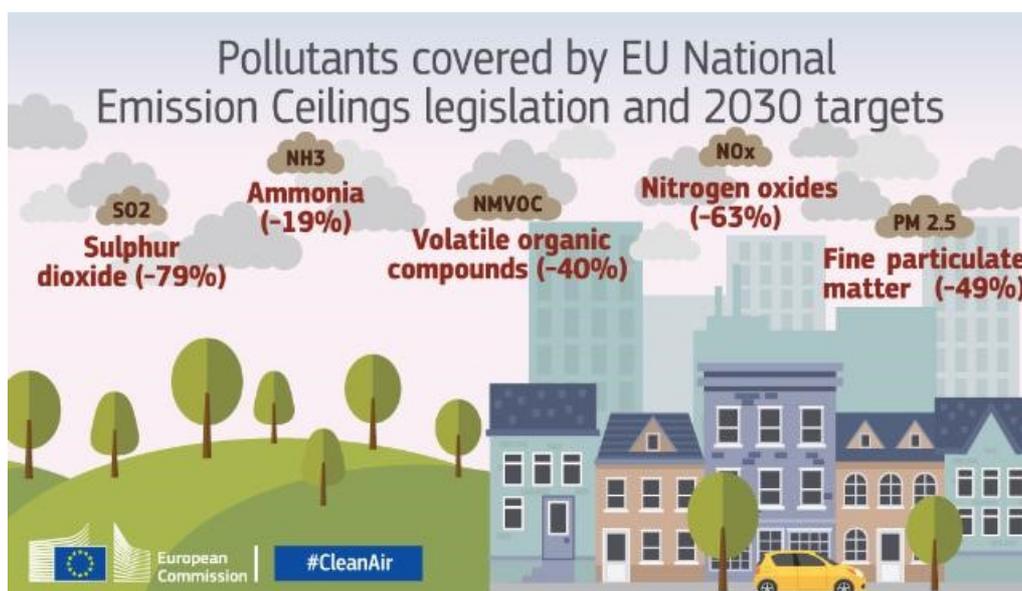
To implement sufficient air quality improvements through the AAQ NEPM, an ambitious alternative model that seeks to continuously reduce air pollutants over time is required to protect all Australians, particularly those vulnerable to air pollution (Zosky et al 2021).

What alternative models can help us to achieve continuous air pollution reduction?

1. The need to pursue an ambitious, longer-term goal on pollution reduction

The European Union (EU) approach to air pollution reduction offers one alternative model to the AAQ NEPM. The EU has set “emission ceilings” (total emission limits) for air pollutants, as well as longer-term emission **reduction targets** to reduce air pollutants over time (see Figure 1 below). The EU intends to review and strengthen air pollution emissions reduction targets every ten years, with a vision to achieve zero pollution for air, water and soil by 2050 (EC 2021).

Figure 1. EU 2030 targets for air pollution emissions (EC n.d.)



2. Account for the most recent scientific evidence on pollution-related health impacts

Canada implements an Air Quality Management System (AQMS) that “provides a framework for collaborative action across Canada to further protect human health and the environment from harmful air pollutants through continuous improvement of air quality” (Canadian Council of Ministers of the Environment n.d.). The AQMS includes air quality standards, as well as air zone management, industrial emissions requirements, airshed coordination and transport-specific initiatives to address mobile sources of air pollution.

3. The need to address point source pollution

California established a Community Air Protection Program (CAPP) in 2018 to target air pollution in communities most impacted by air pollution (CARB 2021). The first state-wide program of its kind in the United States, the program focuses on the co-design of strategies with an initial ten communities to measure air pollution and reduce health impacts. Funding to support early pollution reduction actions is available to facilitate the deployment of cleaner technologies and to support community participation in the program. Local polluting industries are required to accelerate their retrofitting activities and provide greater access to emissions data.

What are the implications of an alternative air pollution reduction model in Australia?

Implementing an ambitious approach to continuous emissions reduction has implications for the current governance of air quality in Australia. Specifically:

- the proposed alternative model is only feasible if underpinned by a commitment from Australian federal and state governments to **pursue an ambitious, longer-term goal on pollution reduction**, similar to the EU (i.e a target of zero air pollution by 2050).
- the weight-of-evidence approach currently used to set standards is based on a methodology prepared in 2011 (NEPC 2011). The methodology needs to be updated to **take into account the most recent scientific evidence on pollution-related health impacts**, and would need to be amended to guide the setting of progressively more stringent air pollution emissions reduction targets nationally and state-wide.
- the proposed alternative model is only viable if **point source pollution is addressed and commensurate legal action is taken following a compliance breach**. Consequently, the introduction of additional monitoring requirements and the expansion of the current monitoring network to cover specific significant pollution sources (such as individual industry premises) is needed. Specifically, we recommend the introduction of a complementary lower cost sensor network that may include hundreds of localised monitors. While lower cost sensors can be less accurate than the national monitoring network, calibrating the lower cost sensors could provide a useful resource and information for both the government and the public on ambient air quality. It also presents an opportunity for citizen science and engagement with air quality, which would positively affect air quality literacy levels across Australia. Beyond monitoring, additional regulatory frameworks would need to be considered to ensure enforcement of, and compliance with, standards at industrial sites.

References

California Air Resources Board (2021). *Community Air Protection Program* [website]. Accessed 18 June 2021. Available from <<https://ww2.arb.ca.gov/capp/about>>

Canadian Council of Ministers of the Environment (n.d.). *Canada's Air* [website]. Accessed 18 June 2021. Available from <<https://www.ccme.ca/en/air-quality-report>>

European Commission Directorate-General for the Environment (n.d.). *Reduction of National Emissions* [website]. Accessed 12 May 2021. Available from <<https://ec.europa.eu/environment/air/reduction/index.htm>>

European Commission (2021). *European Green Deal: Commission aims for zero pollution in air, water and soil* [website]. Accessed 28 May 2021. Available from <https://ec.europa.eu/commission/presscorner/detail/en/ip_21_2345>

Hanigan, I.C., Rolfe, M.I., Knibbs, L.D., Salimi, F., Cowie, C.T. et al (2019). All-cause mortality and long-term exposure to low level air pollution in the '45 and up study' cohort, Sydney, Australia, 2006-2015. *Environ Int.* 126:762-770. DOI: 10.1016/j.envint.2019.02.044

Liu, M.S., Chen, R., Sera, F., Vicedo-Cabrera, A.M, Guo, Y. et al (2019). 2019 Ambient Particulate Air Pollution and Daily Mortality in 652 Cities. *N Engl J Med.* 381:705-715
DOI: 10.1056/NEJMoa1817364

National Environmental Protection Council (2021). *Summary of public submissions and National Environmental Protection Council response.* Accessed 23 May 2021. Available from <<http://www.nepc.gov.au/nepms/ambient-air-quality/variation-ambient-air-quality-nepm-ozone-nitrogen-dioxide-and-sulfur>>

National Environmental Protection Council (2011). *Methodology for Setting Air Quality Standards in Australia.* Accessed 12 May 2021. Available from <<http://www.nepc.gov.au/resource/methodology-setting-air-quality-standards-australia>>

National Environmental Protection (Ambient Air Quality) Measure (Cth). (2021). Accessed on 28 May 2021. Available from <<https://www.legislation.gov.au/Details/F2021C00475>>

Zosky, G.R., Vander Hoorn, S., Abramson, M.J., Dwyer, S., Green, D. et al. (2021). Principles for setting air quality guidelines to protect human health in Australia. *MJA.* 214(6).
DOI: 10.5694/mja2.50964

For more information

This brief has been produced by the Centre for Air pollution, energy and health Research (CAR).



Suggested citation

CAR (2021). 'No level of air pollution is safe': Commitment to continuous emissions reduction through an alternative model for the AAQ NEPM. A brief from the Centre for Air pollution, energy and health Research (CAR). Located online: <https://www.car-cre.org.au/position-papers>

For more information about CAR and our contact us at car@sydney.edu.au or visit our website: car-cre.org.au