Outdoor Air Quality

Policy Position Statement

Key messages:

Poor air quality is a major yet under recognised cause of significant ill health and mortality globally and in Australia. Major sources of anthropogenic air pollution are vehicle/transport emissions, domestic biomass burning such as wood heaters, landscape vegetation fires, agricultural emissions and energy generation using fossil fuels. In Australia, air quality monitoring and regulation needs continuous improvement to adequately protect public health.

Key policy positions:

1. There is no known absolute safe level for inhalation of particulate matter, therefore population exposure should be minimised.
2. Australia's national air quality standards should be aligned with the 2021 World Health Organization (WHO) air quality guidelines, and greater regulatory efforts made to promote continuous reduction in emissions.
3. Policy makers should promote clean outdoor air and ensure regulatory and monitoring mechanisms exist to mitigate impacts on population health.
4. State based air quality monitoring needs to be enhanced to track short- and long-term exposures and provide better information to support public health and regulatory responses.
5. The current and future levels of urban infrastructure development, and vehicular, household (wood smoke) and industrial emissions in Australia demand urgent action from peak regulatory bodies to protect public health.
6. Enhanced effort is required to reduce combustion of fossil fuels, including incentivising uptake of electric vehicles (EV) and EV-related infrastructure, and other renewable, low-emitting sources of energy.

Audience: Federal, State and Territory Governments, policy makers and program managers, PHAA members, media.

Responsibility: PHAA Ecology and Environment Special Interest Group

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PHAA notes the assistance provided by the research and policy work of the Centre for Safe Air in updating this policy.

PHAA affirms the following principles:

1. There is no safe level of air pollution.
2. The precautionary principle to protect human health through reduction of public exposure to airpollution should apply.
3. The provision of clean air is an environmental health priority that is best achieved through effective intersectoral collaboration between health, environment, industry and planning ministries, and be guided by up to date, evidenced-based national standards, Commonwealth and State legislation and action, and effective regulation.
4. Industrial and infrastructure development needs to be undertaken with adequate planning to reduce air pollution and protect health.
5. Health risk assessments, including those that form part of Environmental Impact Statements from development projects should fully quantify risks to population health including air pollution risks. Public and private sector organisations implementing infrastructure or industrial projects must be held accountable for health impacts of their developments on populations.
6. Increased fossil fuel emissions affect human health directly, through creation of particulate matter (PM) and other compounds, and indirectly by increasing risk of extreme bushfires and dust storms through climate change. Emissions reduction is fundamental to addressing outdoor air quality risks.

PHAA notes the following evidence:

7. Common outdoor air pollutants include PM of varying sizes (<10 µm in aerodynamic diameter: PM_{10}, <2.5 µm in aerodynamic diameter: $PM_{2.5}$), ultra-fine particles (UFP), sulphur dioxide (SO_2), nitrogen oxides (NOx), nitrogen dioxide (NO_2), carbon monoxide, benzene, formaldehyde, ground level ozone, and volatile organic compounds.[1]
8. Air pollution is well established as a key health threat in urban environments across the globe.[2,3]
9. Based on the existing cancer research, PM2.5 regardless of source, is now listed as a carcinogen by the International Agency for Research on Cancer (IARC).[4]
10. There is no 'safe' level of air pollution below which adverse health effects have not been observed. This is true even in countries like Australia which, by international standards, have low levels of air pollution.[5]
11. Research has shown that long-term exposure to anthropogenic $PM_{2.5}$ in Australia is associated with over 2,500 deaths and costs Australians $6.2 billion every year.[6,7]
12. Over the last 20 years, a vast body of medical and scientific research has emerged, linking various air pollutants with health problems.[8–11]
13. Some population groups are more vulnerable to health effects associated with air pollution, including infants, children, pregnant women, the elderly, people with asthma, diabetes and immune compromised conditions.[8] People with lower socioeconomic status may be significantly more likely to be exposed to air

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pollution, and this link has not been adequately studied.[9]

14. Global research confirms a causal association between exposures to air pollutants, particularly $PM_{2.5}$ and increased all-cause mortality, and increased incidence of heart disease,[10] stroke,[11] lungcancer,[12] low birth weight,[13,14] type II diabetes,[15] fetal development, preterm birth, brain development in children and dementia.[16]

15. Importantly, a steep risk in mortality from cardiac disease has been found even at low levels of exposure to some vehicular pollutants.[18]

16. Permanent impairment of lung development is found in children exposed to higher levels of environmental air pollutants including $PM_{2.5}$.[17] One avoidable source of exposure for school children is from vehicles idling outside school gates. Some jurisdictions have anti-idling laws for areas outside schools and childcare centres that prevent this exposure.[20]

17. Substantial health benefits are achievable with modest decreases in air pollution. The greatest gains occur through improvements in air pollution levels at lower concentrations because it is expected that that the dose response curve is steeper at lower air pollution concentrations.[6]

18. In Australia, ambient air pollution is regulated by the Ambient Air Quality National Environment Protection Measures (NEPM) which aim to protect human health and well-being. These measures set standards for six air pollutants which jurisdictions report against. The NEPM set the overarching direction for protecting Australians' health.

19. The NEPM implies there is a 'safe' level of air pollution. Despite an update in 2021, NEPM thresholds for the majority of air pollutants remain higher than the WHO air quality guidelines. The NEPM values for $PM_{2.5}$ is nearly double those of the WHO air quality guidelines.[1,7,18]

20. Under the NEPM Act, States and Territories are held accountable for meeting the NEPM standards simply through public reporting, though incidents or 'exceedances' are reported to the National Environment Protection Council on an annual basis. These reports can take years to become public, thereby reducing their deterrent value.[7]

21. The small number and limited coverage of air quality monitoring stations limits their capacity to detect changes in air quality at a local level, particularly for regional communities.[7]

22. The existing paradigm for management of air pollution focuses on 'ambient' air measured away from any point source or busy road. Urban monitoring stations do not monitor the impact of point sources of pollution (where air pollution levels are much higher), such as busy roads, or wood heater smoke, unless it occurs in proximity of the monitoring station.[19,20]

23. The major sources of air pollution in Australia are road vehicles, coal fired electricity generation, wood fired heating, bushfires, other landscape fires, and coal mining.[21,22] Not all of these are amenable to control measures. An economic analysis of the US Clean Air Act showed that implemented air pollution control measures had benefits much greater than the cost, with a benefit: cost ratio of 25:1.[23]

24. Only 10 per cent of Australian homes have wood heaters[7] and yet wood heater smoke is a major contributor to air pollution in urban and regional communities across Australia. For example, in Sydney and Melbourne, wood heater smoke is the number one source of human made $PM_{2.5}$.[24] Associations of wood burning with identity, tradition and culture remain need to be addressed.[25]

25. Researchers have estimated that around 100 deaths per year are attributed to long term exposure to $PM_{2.5}$ from wood heaters in the Greater Metropolitan Region of NSW.[26] This is more than deaths from $PM_{2.5}$ generated by power stations (45 deaths) and traffic emissions (72 deaths).[26]

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26. Use of air cleaners with high efficiency particulate air filters indoors is one of the few proven mechanisms to protect community members, particularly those people at risk from the air pollution from landscape fires including planned burn offs, and wood heater smoke.[27]

27. On-road traffic emissions represent an important source of $PM_{2.5}$. Researchers have estimated that the long- term exposure to traffic related $PM_{2.5}$ is associated with approximately 70 deaths per year in the Greater Metropolitan region of NSW.[24]

28. The replacement of conventional vehicles with electric vehicles (EVs) would assist Australia in meeting climate goals, reducing greenhouse gas emissions, and decreasing transport related air pollutants.[28] The current price and lack of EV-related infrastructure is a deterrent in Australia.[29] However emissions from tire wear on roads contribute significantly to transport emissions, and replacement of conventional vehicles by EVs will aggravate this problem because of the extra weight of EVs.[30]

29. Implementing this policy would contribute towards the achievement of UN SustainableDevelopment Goal 3 – Good Health and Wellbeing and Goal 15 – Life on Land.

30. Reduction of private vehicle use is key to reducing transport emissions. This can be done through improving public and active transport, and has health co- benefits, through improving physical activity and amenity levels in addition to reducing accident risk and air pollution from transport sources.[31]

PHAA seeks the following actions:

31. Align Australia's Air Quality Standards with 2021 WHO Global Air Quality Guidelines.

32. Establish a national policy framework that aims to continuously reduce the population's exposure to air pollution.

33. Establish a National Environment Protection Agency (EPA) with responsibility for setting air quality standards and overseeing implementation by the States and Territories via a National Clean Air Agreement. A National EPA could also coordinate health and environmental agencies to work together to reduce the burden of air pollution on Australia's population.

34. Increase coverage of validated air quality monitoring networks by States and Territories, includinginclusion of (but not reliance on) citizen-based and business-based monitoring systems that particularly addresses issue of geographic inequalities and identifies pollution hot spots.

35. Ambient air pollution should be measured by States and Territory government agencies with these data provided to the public in both real time and available as downloadable historical data, such as is currently available in NSW.

36. Effective regulatory response to exceedances of air quality standards including evaluation of theproblem, public health impacts and proposed steps to remediate, and provide accessible advice to the affected communities (with a particular focus on vulnerable groups).

37. Government action to meet, if not exceed, Australia's commitment to the Paris Climate Agreement.

38. Improve active and public transport infrastructure and introduce policies that allow Australians to purchase, maintain and easily charge EVs.

39. Australia should immediately adopt the Euro 6 standards for new light vehicles and Euro VI standards for new heavy vehicles and take active steps to retire highly polluting older vehicles, especially those using diesel fuel.

40. Introduction of national policy to reduce wood heater emissions including a fund to incentivise the replacement of wood heaters in existing homes and discourage the inclusion of wood heaters in new

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homes in populated areas. Policy also needs to include more stringent emissions standards, a central wood heater register and a public health promotion program to change attitudes to wood heating.

41. Where air pollution is unavoidable, community harm should be reflected in a polluter pays fee system, such as the Load Based Licensing system in NSW with fees accurately reflecting the community cost of the health harm.
42. Coal fired generators in Australia should have emissions licences for particulate matter, SO_2 and NO_2 in line with international best practice.
43. Continued research funding on the health effects of exposure to air pollutants, the synergistic influence of climate-related factors, characterisation of the sources of air pollution, monitoring regimes, and standards for exposure close to busy roads, and economic analysis of the benefits of pollution reduction – with research disseminated to the public health, scientific and medical communities, governments, businesses and the general community.
44. The expansion of monitoring of the chemical composition of particulate matter.

PHAA resolves to:

45. Advocate for the above steps to be taken based on the principles in this position statement.
46. Collaborate with researchers and community organisations to promote better action on airpollution and continued funding of a comprehensive research program.

Adopted 2016, revised in 2022 and 2025

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