Australian Network of Environmental Defender's Offices

Australian Network of Environmental Defender's Offices Inc

Submission on the Draft Variation to the National Environment Protection (Ambient Air Quality) Measure

10 October 2014

The Australian Network of Environmental Defender's Offices (**ANEDO**) consists of eight independently constituted and managed community environmental law centres located in each State and Territory of Australia.

Each EDO is dedicated to protecting the environment in the public interest. EDOs provide legal representation and advice, take an active role in environmental law reform and policy formulation, and offer a significant education program designed to facilitate public participation in environmental decision making.

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Introduction

The Australian Network of Environmental Defender's Offices Inc (**ANEDO**) welcomes the opportunity to comment on the *Draft Variation to the National Environment Protection (Ambient Air Quality) Measure Impact Statement* (**NEPM Impact Statement**) and the proposed variation to the *National Environment Protection (Ambient Air Quality) Measure 2014 (Cth)* (**proposed NEPM**).[1]

ANEDO and individual EDO offices have made a number of submissions in recent years on the need to improve air quality standards across Australia. In its submission to the *Senate Inquiry into the impacts on health of air quality in Australia* (2013), ANEDO noted that accumulating evidence has led to significant concern regarding the impact of atmospheric pollution of population health in recent years. Pollution levels vary dramatically over time for different locations, depending on changing meteorological factors such as wind speed and wind direction. While this can make it difficult to isolate the health effects of individual pollutants, the current international and Australian scientific literature draws strong links between air pollution and adverse health impacts including increased mortality and cardiorespiratory morbidity.[2] As individuals cannot readily control the extent to which they may be exposed to harmful air-borne pollutants there is a reliance on government at all regulatory levels to ensure that appropriate levels of public health protection are established through air quality standards and adequate regulation of polluting activities.

The NEPM Impact Statement has recognised these impacts and, importantly, acknowledges that adverse health effects occur even at exposure levels below those stipulated in current air-quality guidelines and that there is no safe level, or threshold, below which no health effects are observed. As a consequence there is a strong need to update the current NEPM standards to reduce impacts on the community by introducing stricter, compulsory standards and a continual improvement framework.

We note that the National Environment Protection Council (**NEPC**) has requested input from all stakeholders on the options outlined in the NEPM Impact Statement and proposed questions to facilitate the consultation process. In making this submission to the NEPM Impact Statement and the proposed NEPM, ANEDO limits our comments to those questions most relevant for ensuring adequate environmental and health outcomes from this review.

Do you agree that further government involvement is required to address the potential future health impacts and costs of airborne PM?

ANEDO strongly supports continued government involvement in managing air quality to minimise the environmental and health impacts of particulate matter (**PM**). We note the conclusion in the NEPM Impact Statement that "In all jurisdictions emissions of PM10 and PM2.5 have been projected to increase between 2011 and 2036, based on, for example,

[1] This submission has been prepared with input from the EDO NSW Science team.
[2] See for example Schuepp, Karen & Peter D. Sly, 'The developing respiratory tract and its specific needs in regard to ultrafine particulate matter exposure' (2012) 13(2) *Paediatric Respiratory Review* 95; Pope et al, 'Fine-particulate air pollution and life expectancy in the United States' (2009) 360(4) *New England Journal of Medicine* 376.

Australian Bureau of Statistics population and industry forecasts".[3] In this situation, government intervention is necessary to ensure that the health of the Australian population is maintained and improved.

Do you agree that the AAQ NEPM framework is an important element in the management actions to address ambient air quality in Australia?

As ANEDO stated in its senate submission in 2013, the legal framework that relates to the health impacts of atmospheric pollution in New South Wales, and Australia more broadly, is not a clearly identifiable body of law. Due to this complexity and the way relevant instruments are drafted (for example, as policy documents) the legal status of the standards is uncertain and the standards are therefore largely unenforceable. Furthermore, their intersection with state and territory planning regimes is very uncertain.

Despite these concerns, ANEDO believes that the NEPM is a necessary mechanism to drive consistency in air quality standards across Australia and ensure continual improvement across all jurisdictions. However, we recommend further consideration of how improved standards can be more consistently and effectively enforced.

As noted in 2013, it is important that existing mechanisms for enforcement are strengthened. Both improvements to monitoring and reporting requirements, and an increase in the penalties imposed for breach of pollution laws, will help reaffirm and strengthen the deterrent function of enforcement mechanisms. Collation of compliance reports made at a state level will allow for assessment of industry compliance across jurisdictions and will assist in developing enforcement responses that are both pollutant and industry specific.

However, should these measures fail to effectively implement relevant standards, more comprehensive legislative action may be required. One option for clarifying the current framework of policies, standards and various state responses would be to develop a national Clean Air Act. Specific tailored legislation would overcome the problems of clarity and consistency in application and enforcement that current limit effectiveness of the NEPM mechanism.

Do you agree with the introduction of an annual PM_{10} standard, given the apparent adverse health effects of coarse particles and their prevalence in some regions?

ANEDO strongly supports the introduction of an annual PM_{10} annual standard. As noted in the NEPM Impact Statement there is clear evidence that PM_{10} is responsible for significant health impacts independently of its association with $PM_{2.5}$.

[3] NEPM Impact Statement, pg xiii

Do you support upgrading the current AAQ NEPM advisory reporting standards for $PM_{2.5}$ to compliance standards?

ANEDO strongly supports the introduction of compliance standards for $PM_{2.5.}$ Compliance standards for both daily average and annual average for $PM_{2.5}$ should be implemented given the strong evidence of its health impacts. A 2010 study reported that $PM_{2.5}$ accounted for 3.1 million deaths and 3.1% global disability – adjusted life years[4]. Cardiovascular and respiratory functions are affected by the exposure resulting in increased hospital admissions and mortality.

Do you support the preferred numerical values for new/revised 24-hour and annual $PM_{2.5}$ and PM_{10} standards? Which value for the 24-hour PM_{10} standard do you consider to be the most appropriate, and why?

The scientific literature concludes that both long term exposure and short term peaks in exposure cause risk to human health. As such it is necessary to have stringent annual and 24-hour standards for PM.

PM_{10}

ANEDO supports an annual average for PM_{10} of 20μg/m^3 and a 24-hour average of 40μg/m^3. As noted in the NEPM Impact Statement, numerous health impact studies have shown that an increase in PM concentration of 10μg/m^3 can cause significant health impacts. Hence, mitigation measures required as a result of reducing the 24-hour PM_{10} standard by 10μg/m^3 has the potential to significantly improve health and reduce associated costs.

As noted previously, air quality is expected to decline under a business as usual scenario. The NEPM Impact Statement notes that in NSW much of this decline will be driven by the expansion of coal mines. In ANEDO's experience, many Environmental Impact Statements for coal mining activities use the NEPM standards to argue that the increases in air quality generated by their project do not exceed the standards and therefore should be allowed. In ANEDO's view, such an approach is highly inappropriate, given the knowledge that any increase in PM will have an associated health impact. Nonetheless, as long as state and territory governments accept such arguments, reducing the NEPM standards and introducing a continual improvement mechanism (discussed further below) will remain an important tool for limit future growth in PM levels.

$PM_{2.5}$

ANEDO supports an annual average for $PM_{2.5}$ of 25μg/m^3 and a 24-hour average of 8μg/m^3 with a stated goal of reducing this to an annual average of 20μg/m^3 and a 24-hour average of 6μg/m^3 within 5 years. We support a requirement that jurisdictions currently operating below the immediate compliance standards should maintain existing levels in the interim.

[4] Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The lancet. 2013;380:2224-2260

ANEDO believes that the health impact literature shows a clear need for the introduction of $PM_{2.5}$ compliance standards. As with all PM, the lack of a safe threshold means that standards should be set as low as possible. For this reason ANEDO supports the immediate introduction of compliance standards with a commitment to longer term reduction. ANEDO notes that some jurisdictions currently have PM levels below those recommended. These jurisdictions should be required to maintain these air quality standards to ensure that air quality is not made worse before stricter standards are introduced.

One of the concerns expressed in the NEPM Impact Statement is the difficulty of achieving lower compliance standards. However ANEDO submits that having lower standards and a continuing improvement framework would drive improvements in technology, which is one of the strengths of a mechanism such as NEPM.

What is your preferred option for the form of the 24-hour PM_{10} and $PM_{2.5}$ standards? Should the options be trialled?

ANEDO submits that allowable exceedances should not be numerical but must be specifically tied to natural events.

In ANEDO's experience, large PM generating projects use the current exceedance rules to justify increases above compliance standards or to state that any exceedance of compliance standards would still be within the allowed numerical allowance. This is a highly inappropriate use of the exceedances and changes to the NEPM must ensure that such use is not continued. The most appropriate way to do this is to link exceedance to natural events, such as bushfire. ANEDO recognises that this will require additional work to determine which events are 'natural' and what areas might be realistically affected by an individual events, however we submit that these changes are necessary to ensure that the intent of the standards is applied appropriately.

Do you have any comments regarding the possible inclusion of PM metrics, other than PM_{10} and $PM_{2.5}$, in the future?

In the interests of continual improvement and targeted regulatory responses, ANEDO submits that additional particulate characterisation measures (particularly measures of black carbon, diesel exhaust and secondary sulphate particles) are required, and PM_1 measurements should be introduced.

Black Carbon

A $PM_{2.5}$ characterisation study carried out in the Upper Hunter Region of NSW reported black carbon (**BC**) as a strong component of PM. Coal mining activities, power stations, diesel vehicles, wood heaters, bushfires and other industrial activities contribute to the production of BC. Black carbon is increasingly recognised as an example of an air pollutant that affects both human health and contributes to climate change[5]. In 2012, the WHO launched a

[5] European Environment Agency. (2013). Status of black carbon monitoring in ambient air in Europe. Technical report No. 18. Luxembourg: Publications Office of the European Union

systematic review of the accumulated evidence on the health effects of BC and concluded it can provide a better indicator of harmful particulate substances from combustion sources (especially traffic) than undifferentiated PM mass in short-term health effects[6]. However, the evidence for the relative strength of association from long-term studies was inconclusive[7]. In light of WHO and European Union considering BC as an additional standard for air quality, Australia should follow in similar steps. Inclusion of consistent BC monitoring requirements will help inform decisions on the human health impacts of extending mining activities. In light of the above, introducing monitoring of BC is suggested as a precautionary standard.

PM_1

Current scientific literature highlights the possibility that smaller particulates may be responsible for further adverse health impacts. While ANEDO recognises that it is not feasible to develop a comprehensive monitoring network for PM_1 at this time, ANEDO recommends that trial measurement stations are established to allow for informed discussion of PM_1 management in Australia in the future.

Do you agree with the preferred form of the exposure-reduction framework under which an exposure index based on monitoring would be used to track population exposure for major urban areas?

As the NEPM Impact Statement observes, under a business as usual scenario, air quality across Australia is predicted to decline. To avoid this situation and to obtain greater health benefits in the future, a strong exposure-reduction framework is needed. While ANEDO acknowledges the difficulties associated with a target such as a "10% reduction in the annual mean PM2.5 concentration between 2015 and 2025", ANEDO believes that without such clear targets, any reduction will be ad hoc and may not achieve continual improvement. Therefore a specific measurable goal such as the 10% reduction is required.

ANEDO recognises that that the largest health benefits come from protecting large groups of people. Therefore, while ANEDO recognises that it may be necessary in the short term to limit jurisdictions to having to evaluate and report population weighted exposure to particles as PM2.5 for regions with populations greater than 1 million people (Clause 17(3) of the proposed NEPM), ANEDO does not support the proposal of basing the need for measurements on populations of greater than 25,000 individuals nor the current practice of only applying these standards to such populations. Clean air should be considered a fundamental right for all communities, and it is inequitable to only apply these standards to larger populations. A clear timeframe must be set to ensure that all populations are covered by clean air requirements.

[6] Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The lancet. 2013;380:2224-2260

[7] European Environment Agency. (2013). Status of black carbon monitoring in ambient air in Europe. Technical report No. 18. Luxembourg: Publications Office of the European Union

What are your views on the feasibility of an exposure-reduction framework for PM in Australia?

As noted above, ANEDO believes that an appropriately constituted NEPM has the potential to drive continual improvement in air quality. As such a strong and ambitious exposure-reduction framework is required and, with appropriate incentives, would be feasible.

Are there any issues that have not been considered or have not been attributed sufficient weight in the discussion?

Wood Smoke

Inefficient biomass burning by woodstoves is one of the primary contributors to particulate air pollution in urban Australia. In certain areas of Australia, such as Launceston (Tasmania), Tuggeranong (ACT), Armidale and the Upper Hunter (NSW), and Ballarat (Victoria); wood smoke pollution is a particularly severe problem during the winter months[8,9]. Wood heaters are the largest source of $PM_{2.5}$ pollution in Sydney. According to the NSW EPA, domestic solid fuel combustion contributes 8.5% and 23.2% of annual PM_{10} and $PM_{2.5}$ particle pollution, respectively in the Greater Metropolitan Region of NSW[10]. Addressing issues arising from wood smoke are a key consideration for many locations.

As ANEDO submitted to the 2013 Senate Inquiry, while there exists an Australian/New Zealand Standard for wood heater emissions which specifies maximum allowable particle emissions of 4g per kilogram of wood burnt (4g/kg), this is significantly less stringent than standards adopted in other international jurisdictions and is far above the emissions criteria achievable by new technologies. While most Australian jurisdictions have in place regulations requiring compliance with the emissions standard at point of sale there is poor compliance due in part to the limited effectiveness of the industry-run certification procedure and limited enforcement where non-compliance is detected[11]. At present, there is no national efficiency standard for wood-burners in Australia. In comparison, New Zealand regulations call up the Australia/New Zealand standard but set more stringent performance standards so that all wood-burners installed in New Zealand's urban environment must meet a minimum emission standard of 1.5 g/kg and efficiency of at least 65%[12].

While there have been attempts to make the standard stricter for wood heater emissions and introduce efficiency limits, these have been vetoed by industry stakeholders[13]. There is

[8] For example see; Bridgman H, "Preliminary Assessment of Wintertime Air Quality in the Tuggeranong Valley ACT" for ACT Health, December 2009 (available at: http://www.thinedge.com.au/Air-Quality-in-the-Tuggeranong-Valley.pdf); Pope, C.A. and Dockery, D.W., 2006, Health effects of fine particle air pollution: lines that connect, *Journal of the Air and Waste Management Association*, 56: 709-742; and Todd, J.J., 2007, Regulation of residential woodsmoke in Australia, *Clean Air and Environmental Quality*, 41:15-18

[9] Hibberd MF, Selleck, PW, Keywood MD, Cohen DD, Stelcer E and Atanacio, AJ. Upper Hunter Particle Characterisation Study. CSIRO, Australia. 2013

[10] NSW EPA. Air emissions inventory for the Greater Metropolitan Region in NSW, 2008 Calendar year, Consolidated natural and human made emissions: Results. . 2012;Technical report no.1

[11] Environment Protection Heritage Council Briefing Document, *National Approach to Reducing Woodheater Emissions Scoping Paper on Regulatory Options* <http://tinyurl.com/7omeon4>, 2.

[12] 'National Environmental Standards for Air Quality: Authorised Woodburners' New Zealand Ministry for Environment Website <http://www.mfe.govt.nz/laws/standards/woodburners/index.html>.

[13] National Approach to Reducing Woodheater Emissions Scoping Paper on *Regulatory Options,* above n 24, 2.

currently no NEPM Standard for wood heater pollution in Australia. As a result of the failure of regulatory intervention at a national level, some Australian councils have implemented standards that are significantly stricter than the national standards. Waverly and Holyrod Councils in Sydney have banned the installation of new solid fuel heaters altogether. Others such as Armidale Dumaresq Council have set much stricter emissions standards for certain areas.

Given the strong influence of wood heaters in PM signatures, the introduction of strict wood heater standards would be a valuable contribution to the exposure-reduction framework target. These requirements should be incorporated into this consideration of the proposed NEPM.

National Environment Protection (Ambient Air Quality) Measure

The opinions expressed above apply to the specific proposals contained within the proposed NEPM.

The National Environment Protection Goal leaves open for consultation the timeframe to be allowed for compliance with the National Environment Protection Standards for particles as $PM_{2.5}$ and particles as PM_{10}. ANEDO strongly believes that given that the proposals have already been subject to a socio-economic analysis and that the process for reviewing NEPM has been underway for many years it is appropriate for compliance with the standards to be effective from the beginning of the first reporting period following the enactment of the regulation.

As noted above, should the proposed measure fail to effectively implement relevant standards, more comprehensive legislative action may be required. One option for clarifying the current framework of policies, standards and various state responses would be to develop a national Clean Air Act. Specific tailored legislation would overcome the problems of clarity and consistency in application and enforcement that current limit effectiveness of the NEPM mechanism.