



Australian Network of Environmental
Defender's Offices Inc

Submission to the Senate Inquiry into the impacts on health of air quality in Australia

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The Australian Network of Environmental Defender's Offices (ANEDO) consists of nine 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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Submission to Senate Inquiry into the impacts on health of air quality in Australia

Introduction

ANEDO is a network of community legal centres in each jurisdiction specialising in public interest environmental law. We have regularly engaged in legal advice and law reform for communities and individuals affected by air pollution. For example, in 2012, EDO NSW published a report: *Clearing the Air – Opportunities for improved regulation of pollution in NSW*.¹ The report makes a number of recommendations for law reform in relation to air pollution in NSW. EDO Victoria has also reviewed the Victorian regulatory regime.² In this context, we welcome the opportunity to make a submission to the Community Affairs References Committee on the impacts on health of air quality in Australia. Our submission focusses on relevant regulatory issues and includes input from our in-house scientific advisory service.

Since the 19th century public health laws have sought to regulate pollution damaging to the health of the community. More recently, environmental and planning laws have specifically addressed pollution in order to protect public health. In light of numerous epidemiological and toxicological studies documenting the link between negative health effects and atmospheric pollutants, this submission outlines some deficiencies in the current environmental and planning laws which regulate air pollution in Australia and highlights further opportunities for law reform.

Key Law Reform Recommendations

- A comprehensive review of NEPM standards must be completed and publicly reported. Any standards identified as not meeting World Health Organisation standards must be amended accordingly.
- A binding national standard consistent with the WHO interim standard should be adopted for PM_{2.5}.
- Australia should adopt the lower WHO standard for annual mean concentration of 20 µg/m³ for PM₁₀.
- Annual Ambient Air Quality NEPM standards should be 'not to be exceeded' standards with exceptions made for 'natural events' rather than allowing for a certain number of exceedence days each year.
- Health Impact Assessment (HIA) should be adopted as part of the environmental impact assessment (EIA) process. This should include comprehensive mandatory assessment of cumulative impacts.
- Site specific 'Best Practice Management' assessment should be adopted as part of the EIA process.
- Inclusion of immediate reporting requirements (requiring use of real-time monitoring) as a condition of consent for polluting developments.
- Review of planning approval regimes to incorporate measure such as buffer zones between certain facilities and residential areas.
- Establishment of a mechanism to compile pollution compliance information reported under various State protocols.

¹ EDO NSW 'Clearing the Air: Opportunities for Improved Regulation of Pollution in New South Wales' (2012), available at <http://www.edo.org.au/edonsw/site/pdf/pubs/120322pollution_discussion_paper.pdf>.

² See: *Walking the Talk? Implementation and enforcement of the Environment Protection Act 1970*. EDO Victoria, available at: <http://www.edovic.org.au/law-reform/major-reports/walking-talk>

- Adoption of a NEPM emissions standard for wood-heaters in line with the most stringent standards adopted in other international jurisdictions
- Increase in the maximum penalties for breach of pollution regulation

Background

Types and Sources of Atmospheric Pollution in Australia

The main atmospheric pollutants emitted in Australia include ozone (O₃), particulate matter, nitrogen dioxide (NO₂), carbon monoxide (CO) and sulfur dioxide (SO₂). Air pollution in Australia comes primarily from motor vehicle emissions, electricity generation from fossil fuels, heavy industry, and home-heating using wood and coal burners.³ In certain parts of Australia bushfires, both naturally occurring and as a result of controlled burning, are also an important source of air pollution.

Owing to the terms of reference for the inquiry, the focus of this submission is particulate pollutants, however a number of comments and recommendations made may apply equally to other forms of air pollution, particularly as certain activities are sources of multiple atmospheric pollutants. Particulate matter pollution or PM, is a complex mixture of small particles and liquid droplets and includes both inhalable coarse particles (larger than 2.5 µm and smaller than 10 µm) and fine particles (smaller than 2.5 µm or 1 µm). Focus in recent years has shifted towards studies of the very small particles, PM_{2.5} and PM₁. As very small particles can enter the respiratory tract and penetrate further into the lungs than larger particles they are believed to be more strongly associated with adverse health effects. Those particles less than 0.1 microns have a high surface to mass ratio increasing their toxic potential and can pass directly into circulation.⁴

There are a number of areas of NSW and around Australia where air quality can be poor and particulate matter exceeds recommended levels on multiple days throughout the year.⁵

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) and Armidale (NSW), Ballarat (Victoria), wood smoke pollution is a particularly severe problem during the winter months.⁶ In Sydney, domestic solid fuel combustion contributes 19% and 29% of annual PM₁₀ and PM_{2.5} particle pollution, respectively.⁷ The NSW Office of Environment and Heritage

³ Tord E Kjellstrom, Anne Neller & Rod W Simpson, 'Air pollution and its health impacts: the changing panorama' (2002) 177(11) *Medical Journal of Australia* 604, 604.

⁴ Peter Rickwood & David Knight 'The health impacts of local traffic pollution on primary school age children' (Paper presented at State of Australian Cities 2009 Conference Proceedings 24-27 2009, Perth) <<http://soac.fbe.unsw.edu.au/2009/PDF/Rickwood%20Peter.pdf>>.

⁵ See for example NSW Environment Protection Authority, *Hunter Valley Annual Air Quality 2012- Fine Particles* <<http://www.environment.nsw.gov.au/resources/aqms/20130037HunterAir2012.pdf>>.

⁶ 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.

⁷ NSW Office of Environment and Heritage, *Why is woodsmoke a problem?* <<http://www.environment.nsw.gov.au/woodsmoke/index.htm>>.

warns on its website that, "[w]ood heaters can produce up to seven times as much particle pollution as cars."⁸ In addition to fine particulate matter, wood smoke also contains noxious gases and a range of known carcinogens. While education of the public and the use of appropriately prepared fuel is key to reducing wood-smoke pollution in Australia, there is a need for improved efficiency and emissions standards relating to wood-burners.

Traffic Air Pollution

Traffic air pollution, which includes vehicular emissions, the suspension of road dust and tyre fragmentation, makes up a significant part of urban air pollution. Localised effects of traffic air pollution may impact on the health of certain potentially vulnerable groups,⁹ and studies have been undertaken into the potential effects of certain fuels (such as diesel).¹⁰ Vehicle design has significantly improved and emission standards in Australia have been progressively tightened over the last decade reflecting Australia's commitment to harmonise with the emission standards developed by the UN. Increasing use of car transport means that motor vehicle emissions remain one of the primary causes of outdoor air pollution. It is one of the chief causes of photo-chemical smog which results from the action of solar ultraviolet radiation on nitrous oxide, one of the pollutants emitted from the exhaust pipes of cars.¹¹

In relation to motor vehicle pollution, there have been real gains made in recent years due to improvements in vehicle design and more stringent emissions standards. Yet while fleet emissions may have been reduced in recent years, traffic volume and proximity have increased that is, there are more cars on the road and more dwellings or workplaces being built close to or along major roadways.¹² It is noted that unless there is drastic overhaul of public transport and urban planning initiatives, including addressing issues of chronic under-funding in public transport development, any gains from improved vehicle technology may be negated by burgeoning vehicle use.

Industry

Another chief contributor to air pollution in Australia is heavy industry. Regulation of pollution output of industry contributions at both federal and state levels forms a key part of pollution control in Australia.

Coal is a particularly large contributor to industrially-sourced air pollution in Australia. Coal can impact on air quality in a number of ways, during mining, extraction and transport as well as in coal-fired power generation. Open cut mining involves drilling and blasting, as well as the use of draglines to remove the overburden to reach coal deposits. These activities can result in the creation of atmospheric pollution, mainly in the form of particulate matter. Transport of the mined coal in uncovered trains can have similar pollution contributions. Coal combustion from local coal-fired power stations also results in atmospheric pollution that consists of fine particulate matter as well as other

⁸ Ibid.

⁹ Rickwood & Knight, above n 3.

¹⁰ For example, see: "Parental occupational exposure to engine exhausts and childhood brain tumors" *International Journal of Cancer* DOI: 10.1002/ijc.27972.

¹¹ Ibid.

¹² See Traffic Volume Data at <<http://www.rta.nsw.gov.au/publicationsstatisticsforms/aadtdata/index.html>>.

noxious substances including nitrogen and sulphate-containing gases.¹³ These gases can then react to form more particulate matter as well as ozone.¹⁴ These substances are in addition to carbon dioxide emissions, which can lead to other health impacts from climate change.

In certain areas of the country, coal related emissions from mining and energy combustion contribute disproportionately to air-pollution. It is due to coal related activities that Hunter Valley residents are exposed to industrial air pollution concentrations that rival any region in Australia.¹⁵ In response to growing public concern, NSW Office of Environment and Heritage (OEH) commissioned Katestone Environmental to conduct a review of coal mining activities in the Greater Metropolitan Region of NSW and report on the health and amenity impacts of particulate pollution from mining activities and the best practice standards available to address these. The report, titled 'NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining' was made public in June 2011.

Health Impacts of Air Pollution

Accumulating evidence has led to significant concern regarding the impact of atmospheric pollution of population health in recent years. While pollution levels vary dramatically by location and over time depending on changing meteorological factors such as wind speed and wind direction, making 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.¹⁶ This is particularly the case where susceptible parts of the community including children, the elderly and those with existing medical conditions are concerned. For example, individuals suffering from respiratory conditions such as asthma and chronic obstructive pulmonary disease can be particularly sensitive to ozone while children, the elderly and adults with cardiovascular or lung disease can be sensitive to particulate pollutants.¹⁷ In addition to clinical outcomes of air pollution such as increased hospital admissions and mortality, the adverse impacts also extend to include diminished quality of life and other subclinical symptoms which may interfere with engagement in daily activities.¹⁸

Importantly, adverse health effects occur even at exposure levels below those stipulated in current air-quality guidelines. Both International and Australian studies show that PM₁₀, PM_{2.5}, NO₂, O₃, CO and SO₂ are non-threshold pollutants, meaning that there is no safe level, or threshold, below which no health effects are observed.¹⁹ PM_{2.5} particles have been shown to be able to cause respiratory and cardiovascular health problems

¹³ Epstein et al, 'Full Cost Accounting for the Life Cycle of Coal' (2011) 1219 *Annals of the New York Academy of Sciences* 73, 74.

¹⁴ Ibid, 85; World Health Organisation, *WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide: Global Update 2005, Summary of Risk Assessment* (2005) <http://www.who.int/phe/health_topics/outdoorair_aqg/en/>, 16-18.

¹⁵ Higginbotham et al, 'Environmental Injustice and Air Pollution in Coal Affected Communities' (2010) 16 *Health and Place* 259, 259.

¹⁶ 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.

¹⁷ Kjellstrom, above n 2, 605.

¹⁸ Official statement of the American Thoracic Society, 'What constitutes an adverse health effect of air pollution?' (2000) 161 *American Journal of Respiratory & Critical Care Medicine* 665, 665-673.

¹⁹ Kjellstrom, above n 2, 604-605.

following both short-term and long-term exposure, even at concentrations just above ambient levels.²⁰ The World Health Organisation (WHO) specifies annual mean concentration of 10 µg/m³ for PM_{2.5} and 20 µg/m³ for PM₁₀ and daily mean concentrations of 25 µg/m³ for PM_{2.5} and 50 µg/m³ for PM₁₀ below which the most severe health impacts may be avoided, although there will still be adverse impacts.²¹ The WHO standard for 20 µg/m³ for PM₁₀ for example, is lower than the Australian standard, and ANEDO submits that Australia should adopt the lower level consistent with the WHO standard.

There is a growing body of scientific evidence of the impact of particulate pollution on health that is independent of other pollutants, and appears to be greater than that of other pollutants, particularly on cardiovascular morbidity and mortality and low birth weight outcomes.²² Kjellstrom et al note that reductions in air pollution may prevent hundreds of cardiorespiratory hospital admissions and deaths each year.²³ Increased hospital admission and premature death means that air pollution represents a real financial cost to the community and thus, in addition to questions of population wellbeing there is also an economic imperative to improve air quality.

Standards, Monitoring and Regulation of Air Quality in Australia

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 legal framework that relates to the health impacts of atmospheric pollution in New South Wales, or Australia more broadly, is not a clearly identifiable body of law. For example, in Victoria, air pollution standards are contained in State Environment Protection Policies (SEPPs) and a range of other policy instruments, guidelines and protocols. Due to this complexity and the way they are drafted (as policy documents) the legal status of the standards is uncertain and the standards are therefore largely unenforceable. Their intersection with the planning regime is very uncertain.²⁴ An EPA review of Victorian SEPPs has been underway for almost 2 years but they have not yet been improved.

In 1994, the Commonwealth passed the *National Environment Protection Council Act 1994*, which was used to reach agreements on pollution including the National Environment and Protection Measure for Ambient Air Quality (“NEPM”) through the Council of Australian Governments. The States have retained responsibility for implementing the scheme, which regulates 6 different pollutants – carbon monoxide, nitrogen dioxide, ozone, sulphur dioxide, lead and small particles. The scheme involves legally binding caps to develop consistency between state Governments as well as strategies to reduce emissions and achieve the standards and mandatory reporting of performance.

²⁰ See for example World Health Organisation, above n 9, 9-14.

²¹ Ibid.

²² Anderson et al, ‘Clearing the air: a review of the effects of particulate matter air pollution on human health’ (2012) 8(2) *Journal of Medical Toxicology* 166; Stieb et al, ‘Ambient air pollution, birth weight and preterm birth: A systematic review and meta-analysis’ (2012) 117 *Environmental Research* 100.

²³ Kjellstrom et al, above n 13, 606.

²⁴ See here for more detail

http://www.edovic.org.au/downloads/files/law_reform/edo_vic_ev_sepp_review_submission.pdf

Despite the NEPM standards there are still notable gaps in the regulation of air pollution in Australia. Most significantly, there is currently no national ambient air quality standard for exposure to PM_{2.5}. There is only a National Advisory Reporting standard for PM_{2.5} of:

- 25 µg/m³ Averaged over one day
- 8 µg/m³ Averaged over one calendar year

It is of real concern that the NEPM standard is still advisory despite the fact that in 2005 the World Health Organisation suggested interim standards for PM_{2.5}. Failure to adopt a binding standard has meant that Australian Courts are unlikely to require development projects to comply with the reporting standard as it is still seen as advisory. In *Ironstone Community Action Group v Minister for Planning & Ors* [2011] NSWLEC 195, Preston CJ held that was not necessary to place standards on PM_{2.5} emissions from the extension of an open cut coal mine.

While the *National Environment Protection Council (New South Wales) Act 1995* suggested that it was the intent of NSW to comply with its obligations under the NEPM, there is no clear requirement to immediately implement those measures. This is problematic as there are overlapping frameworks that relate to air quality and public health. There is no binding standard for PM 2.5 in Victoria either.

In relation to wood smoke pollution standards, 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.²⁵ At present, there is no national efficiency standard for wood-burners in Australia. In comparison, New Zealand regulations call up the Aus/NZ 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%.²⁶

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.²⁷ There is 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.

²⁵ Environment Protection Heritage Council Briefing Document, *National Approach to Reducing Woodheater Emissions Scoping Paper on Regulatory Options* <<http://tinyurl.com/7omeon4>>, 2.

²⁶ 'National Environmental Standards for Air Quality: Authorised Woodburners' New Zealand Ministry for Environment Website <<http://www.mfe.govt.nz/laws/standards/woodburners/index.html>>.

²⁷ *National Approach to Reducing Woodheater Emissions Scoping Paper on Regulatory Options*, above n 24, 2.

Inadequacies in planning approval regimes

Much of the regulation of pollution occurs through the assessment process for planning approvals. Environmental protection laws concerned with pollution then apply to the ongoing operation of the polluting activity once approved through the use of pollution licences. In recent years regulatory reform to fast-track particular types of development or open new approval pathways for certain large developments has led to a watering-down of pollution regulation in State planning regimes.

In NSW recent reforms to planning laws in relation to certain large projects deemed to be of particular import to the State are where such watering-down is evident. If a development is classed as state significant infrastructure (SSI) or state significant development (SSD) by the Minister for Planning, the NSW Environment Protection Authority (EPA) has no discretion to withhold pollution licences or impose higher standards for compliance than those approved by the Minister for Planning and Infrastructure under the conditions of consent.²⁸ The NSW EPA do not have a role in determining the EPL for state significant projects until 5 years after the project has commenced, when the licences are reviewed.

Some recent NSW planning approvals have highlighted problems that arise from this process in relation to the regulation of air pollution. In the assessment of the Maules Creek mine, independent expert evidence sought by EDO NSW clients on the air quality issues raised indicated that the PAC assessment of air quality failed to undertake a proper cumulative impact assessment. The close proximity of a number of mines makes the assessment of incremental impacts above a fixed background level not an appropriate way of assessing the impacts in the area. Instead the experts have indicated that what is required is to model all existing and proposed facilities in the area to properly account for cumulative impacts. The failure to undertake such an assessment has a particular bearing on the approval of the Maules Creek mine given the significant size of the mining project.

The PAC's decision also failed to reflect the findings of the PAC Review of the development. The PAC Review recommended that the mine be required to meet the air quality criteria even if it meant immediate shut-down under adverse conditions.²⁹ The decision making PAC however accepted the advocacy of the Department in favour of weaker protections against noise and dust impacts, so that the proponent is now merely required to "minimise the air quality impacts of the project during adverse meteorological conditions rather than require immediate shut down conditions".³⁰ The community therefore does not have clear enforceable limits to protect air quality. Another recommendation the decision-making PAC chose to ignore is the PAC Review's recommendation that there be real time monitoring of air quality.³¹ The PAC's decision merely requires publication to be 'timely'.

The current planning regime in NSW fails to adequately address health issues relating to particulate pollution. Similar inadequacies exist in the other Australian States. Whilst

²⁸ *Environmental Planning and Assessment Act 1979*, ss 89K(1)(e), 115ZH(1)(e).

²⁹ Planning Assessment Commission Review Report, Maules Creek Coal Project (18/8/11) <<http://www.pac.nsw.gov.au/Projects/tabid/77/ctl/viewreview/mid/462/pac/134/view/readonly/myctrl/ev/Default.aspx>> 57.

³⁰ Planning Assessment Commission Determination Report, Maules Creek Coal Project (24/8/12) <<http://www.pac.nsw.gov.au/Projects/tabid/77/ctl/viewreview/mid/462/pac/245/view/readonly/myctrl/ev/Default.aspx>>, 17.

³¹ Maules Creek Coal Project Planning Assessment Commission Review Report, above n 21, 32.

community health protection is a major concern behind the laws and indeed the origin of the laws, health as consideration is not at the forefront of their current operation.³² To date, none of the state significant development applications for new coal mines in the Hunter or beyond has required a health assessment. The environmental assessments only require an analysis of the air quality impacts. Indeed it is assumed that the relevant air quality standards will always reflect levels aimed to protect public health, despite the lack of binding standards for PM_{2.5}. The focus is overwhelmingly on the positive economic impacts of the project and does not effectively balance the negative externalities, whether they are in the form of atmospheric pollution or environmental damage more broadly. Comprehensive assessment of cumulative impacts is non-existent.

Similar problems exist under the current Queensland regulatory regime, as illustrated by the case study of the Jondaryan Rail Loading Facility (JRLF). The primary cause of detriment to the quality of air surrounding the Jondaryan Rail Loading Facility (JRLF) is air pollution by coal dust. This air pollution stems from the uncovered transportation and storage of coal at JRLF. Uncovered storage and transportation of coal materials facilitates air pollution by coal dust particles. Exposure to coal dust can be detrimental to the health of mine employees as well as those in surrounding areas when the dust particles are small enough that they become respirable (sub-PM₁₀)³³. Health issues associated with occupational exposure to sub-PM₁₀ coal dust particles are predominately respiratory in nature and include serious conditions such as Coal Workers' Pneumoconiosis (CWP), Progressive Massive Fibrosis (PMF) and emphysema. Respiratory issues have also been documented in individuals living in areas near mining sites and stockpiles. Such exposure can lead to increased incidence of asthma and bronchitis. Associated harm also includes reduction in visibility and aesthetic damage to surrounding properties associated with visible coal dust particle deposition.

Air quality in Queensland is currently regulated under the *Environmental Protection Act*, the Environmental Protection Policy and for the JRLF specifically by Schedule B of the Environmental Authority governing the facility. The Environmental Authority is the permit administered to JRLF by the Department of Natural Resource Management (now the Department of Environment and Heritage Protection) and outlines the specific requirements of the permit holder.

There are a number of significant omissions from the requirements set out under Schedule B – Air. 1) The dust monitoring program only requires monitoring of PM₁₀ and does not require monitoring of PM_{2.5}. This is an alarming omission as particles classified under PM_{2.5} pose a greater health risk as they are able to be inhaled deeper to and retained in the alveolar region of the lung³⁴. Further issues arise from the monitoring and fact that results from JRLF monitoring are not made readily available to the public The regulations do not impose a buffer zone around the facility.

In such circumstances ANEDO recommends three reforms to address air quality issues: 1) Imposition of buffer zones between coal mines/loading facilities and habited areas, 2)

³² Christopher Reynolds, *Public and Environmental Health Law* (The Federation Press, 2011), 12.

³³ Martin Jennings & Martyn Flahive, 'Review of Health Effects Associated with Exposure to Inhalable Coal Dust' (2005), Accessed 5 March 2013, Available from URL: http://www.hstrust.com.au/MessageForceWebsite/Sites/326/Files/Jennings_20420_Inhlalable_Coal_Dust_FinalReport.pdf

³⁴ Martin Jennings & Martyn Flahive, 'Review of Health Effects Associated with Exposure to Inhalable Coal Dust' (2005), Accessed 5 March 2013, Available from URL: http://www.hstrust.com.au/MessageForceWebsite/Sites/326/Files/Jennings_20420_Inhlalable_Coal_Dust_FinalReport.pdf

Mandatory covering of coal materials during transport and storage, 3) Monitoring of PM_{2.5} particle levels.

Problems with enforcement

In addition to inadequacies in standard setting and approval processes there are number of problems with enforcement of existing air quality regulation. Between 2006-2008 the NSW EPA recorded a sharp rise in number of breaches by NSW mining companies. Between 2000-2008, over 3000 licence breaches were recorded but only six of those went to Court.³⁵ In the Hunter Region alone, 27 coal mines breached pollution licences 1041 times between 2000-2006.³⁶ There is very little action taken to shut down industries if a breach of environment protection licences (EPLs) or national air quality standards occurs. While suspension or revocation of pollution licenses is a tool available in a number of Australian jurisdictions where multiple breaches occur, it is very rarely used.

As the Katestone report made clear: the majority of development conditions that relate to controlling emissions of particulate matter are not prescriptive, so they can be more challenging to audit, enforce and ensure compliance; assumptions in the EA can be optimistic about the ability of proponents to meet the required level of pollution minimisation or consent conditions may lack specificity about how such minimisation will be achieved.³⁷

Another key problem with enforcement is that much of the regulation of planning approvals and EPLs relies on self-reporting of non-compliance. The dangers of reliance on self-reporting in an air pollution context were made patently clear by the Orica incident in NSW. In August 2011 the known carcinogen hexavalent chromium was accidentally leaked over parts of Stockton in NSW and the company responsible failed to immediately notify the authorities or make affected residents aware of the leak. When the company responsible eventually did inform the authorities, it incorrectly reported that the leak was appropriately contained.³⁸

The system also relies on public complaint to trigger investigation of breaches of the relevant approval or licence. This means that access to monitoring data is essential to allowing members of the public to properly respond to breaches and enforce compliance with AAQ standards or consent conditions. While third parties can in theory enforce pollution laws or breaches of approval, this requires persons to bring their own proceedings in the relevant court and contend with the inherent costs and risks associated with such proceedings.

Both the self-reporting and public complaint mechanisms are reactive responses to pollution events. While action can be taken to protect against further non-compliance the damage has already been done and this is particularly worrying where human health is at issue. A greater focus on air pollution during development approval and a consideration of cumulative air quality impacts through a health focused impact assessment would help alleviate some of the weaknesses in the regulation in relation to

³⁵ Higginbotham et al, above n 10, 264.

³⁶ Ibid.

³⁷ Katestone Environmental, 'NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining' (Study commissioned by NSW Office of Environment and Heritage, 2011), 269.

³⁸ Brendan O'Reilly, *A review into the response to the serious pollution incident at Orica Australia Pty. Ltd. ammonium nitrate plant at Walsh Point, Kooragang Island on August 8, 2011* <<http://www.nsw.gov.au/sites/default/files/Orica-review.pdf>>.

enforcement.³⁹ In light of the deficiencies outlined above, the following law reform recommendations are made in relation to both proactive and reactive mechanisms for pollution regulation.

Law Reform

As noted, pollution laws originate from concerns about the impact of pollution and industrial development on the health of surrounding communities. However, the legal regime as is has evolved through planning and environmental law in practice tends to give greater weight to economic considerations rather than protection of the populations' health in decision making processes. Greater recognition of a citizen's right to a healthy environment would necessitate a move from the focus on economic development to the original purpose and application of these laws: protection of health.⁴⁰ This move would be consistent with recognised human rights. Article 25 of the *Universal Declaration of Human Rights* (1948) provides that 'everyone has the right a standard of living adequate for the health and wellbeing...'. The preamble to the *Constitution of the World Health Organisation*, adopted by Australia, provides that 'the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being'.

With regard to consideration of cumulative impacts on health from air pollution during development assessments, Higginbotham et al argue for the application of the precautionary principle whereby the onus of proof is reversed and placed on polluter to evidence an absence of harm.⁴¹ Proof in the context of the precautionary principle should not require complete evidence but rather a prioritisation of the possible impacts on community health. In the case of particulate matter, mercury, nitrogen and sulphur gases in any case, the epidemiological evidence is clear.⁴²

Planning Laws

The current planning law mechanisms can ensure greater improvements for public health, particularly through the use of health impact assessment mechanisms. The field of health impact assessment (HIA) has grown significantly in recent years many jurisdictions now have legislation to support the use of such assessments in the planning and development process.⁴³ However in Australia there has been no formal adoption of Health Impact Assessments as part of the EIA process. The environmental impact assessment process is able to (and does in some instances) capture the potential health impacts of a development, however as Reynolds notes, the difficulty is ensuring that all the relevant information to make an informed assessment as to health is available and is considered not merely as an ancillary matter.⁴⁴ Furthermore, as noted, current EIA processes do not adequately assess cumulative impacts.

Direct recognition of health impact assessment would help to ensure that health considerations are considered for development approvals of any size. HIA also ensures that equity is a core concept of the analysis, and ensures that recommendations do not lead to an unequal health impact. This is important in dealing with air pollution as individuals in good health may not be as susceptible to air pollution, while people with

³⁹ Reynolds, above n 23, 221.

⁴⁰ Ibid, 71.

⁴¹ Higginbotham et al, above n 10, 264.

⁴² World Health Organisation, above n 9.

⁴³ Ben Harris-Roxas & Elizabeth Harris, 'Differing forms, differing purposes: A typology of health impact assessment' (2011) 31(4) *Environmental Impact Assessment Review* 396, 396-400.

⁴⁴ Reynolds, above n 23, 276.

chronic heart or lung disease, asthmatics, infants or elderly are more susceptible to low level exposure to particulate matter. Accounting for susceptible subsets of the community is particularly significant where the national air quality standards fail to do so.

The inclusion of HIA in the planning assessment process will also allow for greater focus on the health impacts of cumulative pollutant emissions when assessing new developments and setting conditions of consent to manage and mitigate their impacts. Owing to the nature of air pollution impacts, improved assessment of the cumulative impacts on air quality is very important. Cumulative impacts need to be assessed in light of the recognition that there are no safe 'threshold' levels of particulate matter and thus even where increases caused by contribution from a particular development may still fall below the NEPM standards, there are real adverse health impacts that may result from approval of that project. A more focused and comprehensive assessment of the cumulative impacts on human health through the HIA process will help ensure that consent conditions for polluting developments reflect cumulative, rather than contribution limits. In light of the above, it is submitted that HIA should be adopted as part of the EA process in Australian jurisdictions.

In addition to the use of HIA, 'Best Management Practice' determinations should form part of the development approval process at the environmental assessment stage. The Katestone Report included as one of its key recommendations the suggestion that new developments should be required to conduct site specific 'Best Management Practice' (BMP) determinations at the EA stage and that these should be transparently linked to air quality impact assessment.⁴⁵ The report concluded that the implementation of BMP across mines in the Greater Metropolitan Region would result in a 49% reduction of resultant PM₁₀ emissions, however, no mine has completely implemented best practice across a full range of activities.⁴⁶

While the report's findings related specifically to coal mining, widespread application of BMP mechanisms in other heavy polluting industries such as iron and steel manufacture, electricity generation and poultry farming would allow for similarly significant reductions in particulate emissions. The application of BMP at an early stage in the project means that consent conditions can be developed with greater specificity for minimisation requirements including the articulation of strategies to ensure that such requirements can be reasonably met. ANEDO therefore submits that such a requirement could be extended to new developments in a range of particulate emitting industries in Australian jurisdictions, including electricity generation, non-coal land based extraction, quarrying and steel and iron production. The cumulative nature of air pollution means that the implementation of BMP needs to be co-ordinated across industries so that the gains made by one development implementing BMP are not negated by poor management practices at other nearby developments.

As noted above, enforcement procedures are often triggered by public complaints regarding breaches of air quality standards. At present development consent conditions requiring reporting of monitoring data or detected breaches are often articulated in general terms such as requiring reporting in a 'timely' manner. Lack of specificity has meant that reporting is often delayed or inadequate. Where adverse impacts on human health are concerned, delayed provision of monitoring information to those affected is particularly problematic. It is very important then that immediate reporting requirements are included in conditions of consent for polluting developments. Mandating immediate reporting will necessarily require that real-time monitoring of pollution concentrations.

⁴⁵ Katestone, above n 29, 275.

⁴⁶ Ibid, 270.

Ensuring adequate reporting within a reasonable timeframe will go some way towards improving transparency and accountability and allow for more effective use of enforcement mechanisms by affected communities.

In addition, air pollution compliance reports required under various state planning and environmental protection regimes should be compiled at a national level so that patterns of emissions breaches and areas of concern can be identified and better addressed. Collation of reported information will allow for particular industries to be assessed against national air pollution standards so that industry-based responses can be developed to help address issues of non-compliance.

Pollution Laws and Air Quality Standards

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities classifies the National Ambient Air Quality Standards as legal measures that must be met by all levels of government.⁴⁷ Such standards should be consistent with the WHO guidelines and the most stringent standards applied in comparable OECD jurisdictions and pollution licences and environmental assessments should reference these standards.

Currently, the failure to adopt a national standard for PM_{2.5} means that a number of Australian jurisdictions, including NSW, fail to specify any impact assessment criteria for PM_{2.5}. In light of the best available medical evidence and in line with a precautionary approach, it is submitted that the advisory reporting standard should be adopted as the national ambient air quality standard for exposure to PM_{2.5}.

Consideration should also be given to whether annual AAQ NEPM standards should in fact be 'not to be exceeded' standards with exceptions made for 'natural events' rather than allowing for a certain number of exceedence days each year. Under the current approach large polluting industries are not encouraged to lower particulate emissions as there appears to be an assumption that any exceedences can simply be absorbed by these allowed pollution days. While there would need to be discussion to rigorously define what events would fall within the exemption, such an option offers a more appropriate means of setting annual standards and should be carefully considered.

NEPM standards should also be adopted for both woodheater emissions and efficiency. These should reflect reductions and efficiency achievable using the best available technologies and should be consistent with the most stringent standards used in other jurisdictions.

Even where standards are the most stringent currently available, they are generally developed based on the ability of industry to meet them rather than on health grounds and as a result, they fail to adequately account for sensitive subsets of the community with lower tolerance to particulate matter concentrations including children and the elderly. It is important then that the standards are viewed as a ceiling for pollution concentrations rather than a benchmark for best practice. The fact that no threshold below which no adverse health impacts occur means that focus should be on reducing pollution concentrations as much as possible rather than simply toeing the regulatory line.

⁴⁷ Commonwealth Department of Sustainability, Environment, Water, Population and Communities, *Air Quality Standards* <<http://www.environment.gov.au/atmosphere/airquality/standards.html>>.

In most jurisdictions the penalties for breach of pollution regulation do not adequately reflect impacts on human health that can result from air pollution. Notably, fines issued by the courts in Australia are often only for a fraction of the maximum amount possible. For such enforcement mechanisms to have a genuine deterrent effect the penalties imposed for non-compliance must be commensurate with the level of harm that may result. It is thus recommended that real consideration be given to increasing maximum penalties for pollution offences across state legislation. However, if penalties are to have a deterrent effect it is also necessary that prosecution is a real possibility and this will require the relevant environmental protection authorities to pursue the penalty option more than is currently the case.

Conclusion

Inclusion of health considerations from the earliest stage through the use of Health Impact Assessment and Best Management Practice assessment will help negate many of the weaknesses in the current regulatory system. It will ensure that health impacts (both single source and cumulative) are adequately taken into account when approving projects and setting consent conditions. More stringent and better articulated conditions, including requirements for real-time monitoring and immediate reporting will help negate the need for enforcement action for non-compliance at a later stage.

It is also 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.

The adoption of air quality standards based on the best available science and the best available technology and consistent with a precautionary approach is an essential part of air quality management. Such standards need to be both source and pollutant specific and should be designed to account for sensitive populations. At present, Australian standards do not reflect the weight of the accumulated evidence relating to adverse health impacts or the emissions reductions achievable. Both the adoption of a binding national standard for PM_{2.5} and the adoption of emissions and efficiency standards for woodheaters will offer significantly greater protection against the health impacts of particulate pollution.

Ensuring acceptable air quality in Australia necessitates a wide range of actions and measures involving the co-ordination of transport planning, infrastructure development and environmental management and regulation. In light of the scientific evidence linking air pollution with adverse health effects, regulatory reform should seek to strengthen both the pro-active and re-active components of air pollution laws in Australia.

References

Anderson, J. O., J. G. Thundiyil et al, 'Clearing the air: a review of the effects of particulate matter air pollution on human health' (2012) 8(2) *Journal of Medical Toxicology* 166

Commonwealth Department of Sustainability, Environment, Water, Population and Communities, *Air Quality Standards* <http://www.environment.gov.au/atmosphere/airquality/standards.html>

Epstein et al, 'Full Cost Accounting for the Life Cycle of Coal' (2011) 1219 *Annals of the New York Academy of Sciences* 73

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

Harris-Roxas, Ben & Elizabeth Harris, 'Differing forms, differing purposes: A typology of health impact assessment' (2011) 31(4) *Environmental Impact Assessment Review* 396

Higginbotham et al, 'Environmental Injustice and Air Pollution in Coal Affected Communities' (2010) 16 *Health and Place* 259

Katestone Environmental, 'NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining' (Study commissioned by NSW Office of Environment and Heritage, 2011)

Kjellstrom, Tord E, Anne Neller & Rod W Simpson, 'Air pollution and its health impacts: the changing panorama' (2002) 177(11) *Medical Journal of Australia* 604

New Zealand Ministry for Environment, *National Environmental Standards for Air Quality: Authorised Woodburners* <http://www.mfe.govt.nz/laws/standards/woodburners/index.html>

NSW Environment Protection Authority, *Hunter Valley Annual Air Quality 2012- Fine Particles* <http://www.environment.nsw.gov.au/resources/aqms/20130037HunterAir2012.pdf>

NSW Office of Environment and Heritage, *Why is woodsmoke a problem?* <<http://www.environment.nsw.gov.au/woodsmoke/index.htm>>

O'Reilly, Brendan, *A review into the response to the serious pollution incident at Orica Australia Pty. Ltd. ammonium nitrate plant at Walsh Point, Kooragang Island on August 8, 2011* <<http://www.nsw.gov.au/sites/default/files/Orica-review.pdf>>.

Planning Assessment Commission Review Report, Maules Creek Coal Project Planning Assessment (18/8/11) <<http://www.pac.nsw.gov.au/Projects/tabid/77/ctl/viewreview/mid/462/pac/134/view/readonly/myctl/rev/Default.aspx>>

Planning Assessment Commission Determination Report, Maules Creek Coal Project (24/8/12) <<http://www.pac.nsw.gov.au/Projects/tabid/77/ctl/viewreview/mid/462/pac/245/view/readonly/myctl/rev/Default.aspx>>

Pope, C. Arden, 3rd, Majid Ezzati & Douglas W Dockery, 'Fine-particulate air pollution and life expectancy in the United States' (2009) 360(4) *New England Journal of Medicine* 376

Reynolds, Christopher, *Public and Environmental Health Law* (The Federation Press, 2011)

Rickwood, Peter & David Knight 'The health impacts of local traffic pollution on primary school age children' (Paper presented at State of Australian Cities 2009 Conference Proceedings 24-27 2009, Perth)
<<http://soac.fbe.unsw.edu.au/2009/PDF/Rickwood%20Peter.pdf>>

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

Stieb et al, 'Ambient air pollution, birth weight and preterm birth: A systematic review and meta-analysis' (2012) 117 *Environmental Research* 100

Official statement of the American Thoracic Society, 'What constitutes an adverse health effect of air pollution?' (2000) 161 *American Journal of Respiratory & Critical Care Medicine* 665

World Health Organisation, *WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide: Global Update 2005, Summary of Risk Assessment* (2005) <http://www.who.int/phe/health_topics/outdoorair_aqg/en/>