

Submission to the NSW EPA on the Clean Air for NSW Consultation Paper

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Healthy planet, **healthy people.**

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Doctors for the Environment Australia (DEA) is an independent, self-funded, non-government organisation of medical doctors and students in all Australian States and Territories. Our members work across all specialties in community, hospital and private practices. We aim to improve health by educating all levels of society on the health risks - local, national and global - caused by damage to our natural environment. We are a public health voice in the sphere of environmental health with a primary focus on the health harms from pollution and climate change.

Preamble

DEA commends the NSW government and the NSW EPA on the Clean Air for NSW Consultation Paper and its proposals to improve air quality.

We agree with the proposition that although NSW has relatively clean air by global standards, there is still a burden of disease attributable to air pollution and considerable health benefits available by improving air quality. While improving the air in Sydney gives the greatest reduction in population exposure, there are strong equity principals for protecting the air quality of people in smaller communities, especially those communities which provide the electricity used by the entire state.

There are benefits from driving pollution levels lower even when they are within the NEPM standards, and an appropriate mechanism for this is the rigorous application of the polluter pays principal. The load-based licensing system for polluters within NSW has the capacity to provide real financial incentives to improve processes, to purchase better quality fuel, and to close underperforming plants. We ask you to note our [recent submission](#) on this.²

However, there are a number of issues that DEA wishes to raise and we propose some areas of priority when dealing with air pollution.

1. Coal-related Impacts

Power Plant Emission Reductions

As detailed in the DEA submission to the Senate Enquiry³ coal-fired generation is a substantial contributor to air pollution, at high levels for the communities near power stations, and increasingly recognised as a contributor to air problems for the major population in Sydney despite the power stations being located 105 km (Mt.Piper), 161 km (Bayswater and Liddell) and 89 km (Vales Point) from Parramatta.

The electricity sector will necessarily undergo transition due to carbon constraints. The NSW government has the option to leave this purely to market forces, which will optimise outcomes for the corporations involved in electricity production and distribution, or it can include health considerations in the transition plan and optimise outcomes for the benefit of the community by ensuring that the dirtiest plants causing the greatest health burden are closed early.

Load-based licensing (LBL) with adequate fees could be an important regulatory tool to include health considerations in decision making. Analysis by DEA points to a closure order of Mt Piper (worst in the state for SO₂ and NO_x), then Liddell and Bayswater (higher SO₂ than the Lake Macquarie generators), and finally Vales Point and Eraring.⁴

There is considerable difference in emissions intensity between the various coal-fired power stations in Australia. The amounts of these pollutants from each plant are reported annually to the National Pollutant Inventory (NPI) and are publicly available.⁵ Total emissions fluctuate with how hard the plant is being driven, so emissions (in Kg) should be divided by the amount of power (in GWh) produced to calculate the emission intensity. The emission intensities vary from year to year depending on how the plant is managed and the quality of the fuel burned. The following table shows the NPI declared emissions divided by the Australian Energy Market Operator (AEMO)-reported power production for each of 4 years, for each big coal-fired generator in NSW.⁶

Table 1 - Emissions intensity for major pollutants of the NSW coal fired generators. Kg per GWh.

Kg per GWh	2011-12	2012-13	2013-14	2014-15	Year commissioned and nameplate output
Bayswater					1986
SO ₂	4311	3785	3767	4396	GW 2.64
NO _x	2561	2245	2680	2916	
PM _{2.5}	19	31	8	14	
PM ₁₀	25	56	55	60	
CO ₂	992,000				
Liddell					1973
SO ₂	4280	4488	3581	3857	GW 2.0
NO _x	2388	2319	2445	2164	
PM _{2.5}	53	24	19	20	
PM ₁₀	94	44	63	61	
CO ₂	1,081,000				
Eraring					1984
SO ₂	2126	2030	2240	2033	GW 2.88
NO _x	1530	1381	1364	1406	
PM _{2.5}	21	18	18	31	
PM ₁₀	40	34	36	59	
CO ₂	999,000				
Vales Point					1966
SO ₂	2489	2125	2054	1730	GW 1.32
NO _x	2655	2922	3228	3027	After scale back
PM _{2.5}	17		4	3	
PM ₁₀	33	5	12	10	
CO ₂	1,032,000				
Mt Piper					1993
SO ₂	4734	4279	4768	5728	GW 1.4
NO _x	3051	2743	3073	3818	
PM _{2.5}	15	18	22	21	
PM ₁₀	29	35	43	41	
CO ₂	935,000				

DEA supports a polluter pays approach, rather than relying on setting emissions limits. The pollution fees provide an incentive for cleaner technology, higher quality fuel or for plant closure, while emissions limits do not create these incentives. An upper limit beyond which the operator is prosecuted should be kept, but only as a back stop.

The current fees under the LBL system are much too low to have the desired effect of improving air quality. Analysis by DEA has shown that the health externalities of coal-fired electricity in Australia would be matched by the LBL fee if it was 49 times higher than at present.

Further details are in the DEA submission to the LBL review.⁷

Regional planning

We were disappointed to find that the Draft Hunter Regional Plan for public consultation in 2016 made no mention of industrial transition away from both the mining and burning of coal. The regional plan should be an instrument to ensure that the skilled manufacturing jobs required for energy transformation are created in communities currently employed in the coal industry, where job insecurity and increasing casualisation of employment is eroding wellbeing.

Community information

Communities that host coal-fired power stations are providing the power used by the rest of the state. They deserve to know the extent to which this is affecting their air quality. The communities of Lithgow and Lake Macquarie currently do not have publicly accessible air quality measurements, despite Lithgow hosting 1.4 GW of generating capacity, and Lake Macquarie hosting 4.2 GW of coal fired power and a gas-fired plant. The air over Lake Macquarie viewed from the Watagan mountains often has a visible thick yellow band, but without real time access to EPA monitoring the community can only speculate on what effect this might be having on health. There is a clear equity and health case for providing information on air quality to these communities.

Manage dust emissions in the Hunter Rail Corridor

As shown in the clean air consultation paper, mining is by far the biggest contributor to particulate air pollution in the Greater Metropolitan Area. It has been steadily increasing, despite a system for 'best practice' dust management in mines, perhaps because there are no real independent enforcement powers. Bringing air pollution from mines and mineral transport operations into the LBL system will establish equity with all other industries.

The transport of coal through residential areas is a source of community exposure to particulate air pollution from the uncovered loads, from residual dust in empty wagons, and from locomotive exhaust. Measurements by community groups have shown spikes in particulates as trains pass at Beresfield, and even the flawed data collected by the Australian Rail Track Corporation at Metford shows increased particulates when trains pass the air monitor. Wagons with covered loads are used for other minerals transported on the same rail lines, so the technology is obviously available for covering. While the focus has been on the Hunter rail corridor, coal is also transported from Lithgow and the Illawarra, exposing substantial numbers of people in Sydney.

We recommend the adoption in NSW of the USA tier 3 standards for locomotives, the washing of empty wagons as they leave the coal loader, and the covering of loads for all bulk commodity transport.⁸

Blast Plumes

An air pollutant that has received inadequate attention to date is nitrogen dioxide in blast plumes. Perfect blasts do not produce nitrogen dioxide, but research by the CSIRO has shown that in practice two thirds of blasts produce variable amounts of this highly toxic gas.⁹ Nitrogen dioxide, visible as an orange cloud, has at times spread from mine sites without dispersing and affected people many km from the blast site. This has been documented at the Saraji mine in Queensland where on the 6th of March 2011 a number of workers 4.2 km from the blast site were affected by a blast plume and needed medical attention. More recently it occurred near Singleton where workers in the Mt Thorley mine were hospitalised after a plume drifted from the Warkworth mine 3 km away. This rare but serious event cannot be predicted and the only appropriate solution is to ensure adequate setback between open cut mines and residential areas. We propose an interim 5 km setback, until there is a systematic review of blast plume incidents in Australia and internationally. Current approvals for mines near the townships of Wollar and Bulga are for only a 2 km setback, putting people in these communities at risk.

2. Transport, Engine and Fuel Emissions

Vehicle Emissions

The World Resources Institute states that private cars account for less than one-third of trips in cities worldwide but are responsible for 73 per cent of urban air pollution and generate three times more greenhouse gas than public transport. They suggest a "3C" model of urban growth: connected, compact, and coordinated, where transit-oriented development strategies focus on adapting urban spaces to the scale of pedestrians and cyclists.¹⁰

While emission standards come under Commonwealth law, NSW must consider the implementation of state measures to reduce vehicular pollution.

For example, the lower rate of motor vehicle tax for hybrid and electric vehicles with CO₂ emissions up to 150 g per km is an excellent initiative from the NSW government.¹¹

Recognising that Australia is lagging badly behind in implementing vehicle emission standards, Euro 6 (passenger and light vehicles) and EuroV1 (heavy vehicles) should be the minimum standard for newly registered vehicles (as proposed for government contract vehicles). Testing of vehicles under real-world driving conditions should be a state responsibility and heavy fines for removing or tampering with particulate filters should be imposed. DEA proposes that, at the time of annual registration renewal, vehicle emissions should be assessed. High polluting vehicles need to be removed from the road.¹²

Diesel cars are more polluting than petrol cars and the health aspects of this pollution has been reviewed by the British Medical Journal¹³. A report from the International Council on Clean Transportation reveals that many European diesel cars, even with the higher Euro 6 standard, emit more NOx emissions than many trucks.¹⁴ Policies which discourage Australian motorists from diesel engines should be implemented.

In its submission to Working Towards a National Clean Air Agreement, the Australian Truck Industry Council points to the aging nature of the Australian truck fleet. Modernisation of the truck fleet in line with standards mandated by the EPA USA has the potential to greatly reduce greenhouse gases and improve air quality from this source.¹⁵

Shipping Emissions

The Clean Air for NSW consultation paper only partially addresses the issue of emissions from shipping. The paper states that the actions to address shipping emissions are outlined in the EPA's 'Diesel and Marine Emissions Management Strategy'. This strategy is now out-dated and is no longer able to be used as the guide to dealing with shipping emissions. The primary goals of the management strategy to improve the evidence base on shipping emissions and management options for NSW have been achieved.¹⁶ Furthermore, the EPA has lost jurisdiction over shipping emissions since the management plan was released.

Since the above management strategy was released further research outlines the extent of emissions from shipping and is available on the EPA website. Options for reducing emissions have been well outlined and it is now a matter of implementing one of the options. DEA recommends the intervention that will bring the greatest improvement in the health of the population, namely, all shipping to use low sulphur fuels within 300 km of port and provision made for ship to shore power when ships are at berth.

Emissions from shipping are only a small component of total PM_{2.5} emissions but are a significant source of sulphur emissions. According to Professor Geoff Morgan, the mortality benefit of low sulphur shipping fuels interventions to 2020, would be a gain of 920 life-years gained, over 20 years, if low sulphur fuels are used within 300 km of port¹⁷.

Switching to low sulphur fuels is in line with MARPOL regulations. We recommend that MARPOL regulations should be brought into effect immediately in ports in NSW. However, given that the NSW EPA and NSW government have lost jurisdiction over shipping emissions, the NSW government should be intensifying its advocacy with the Department of Infrastructure and Regional Development as well as at the COAG meetings on air quality.

It should also be noted that the Clean Air for NSW discussion paper mentions cruise shipping as an area of regulation. However, cruise ships are only a small

proportion of shipping emissions¹⁸. For example, in Port Jackson 53% of shipping is container and oil tankers and in Newcastle 82% of shipping are tugs or bulk carriers¹⁹. We recommend that all shipping needs to be included in the regulatory process.

3. Reducing Household Emissions –

Wood Smoke Reduction

Wood heaters are a substantial contributor to air pollution, accounting for up to 60% of PM_{2.5} in the Sydney region in Winter.²⁰ In a cold climate, such as Armidale NSW, they account for 85% of the particle pollution. Wood smoke contains a variety of particulates and other air pollutants, including carcinogens classified by the International Agency for Research on Cancer (IARC). The estimated annual costs of morbidity/mortality are estimated at \$2,000 per wood heater²¹. The average new wood heater emits as much particle pollution in one night as smoke from 5,000 cigarettes¹⁹.

The health effects of wood smoke pollution are similar to air pollution from other sources, with predominant effects on vulnerable populations such as children, those with asthma or other pre-existing conditions and the elderly²².

The current actions to control air pollution from wood heaters are inadequate, and current Australian standards do not meet world's best practice of 1g/kg of particles¹⁹. It was noted that the cost of implementing this target would be 1% of the cost of meeting the air quality targets of the NEPM, while representing 66% of the necessary abatement in PM₁₀ levels in Sydney. Such a significant source of air pollution should have a state-wide strategy and implementation, rather than it just being the responsibility to local councils. DEA supports the continued investigation into other measures to reduce wood smoke.

Phasing out wood heaters in urban areas is also supported by the NSW Chief Medical Officer Kerry Chant²³. The United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO) recommends phasing out current wood-burning heaters in developed countries to combat both air pollution and climate change²⁴. Phasing out wood heaters in urban areas would have significant health benefits through reduced air pollution.

We support a multi-pronged approach to improving appliance standards, better regulation and enforcement, consumer education and selected phasing out of wood heaters in urban areas to reduce wood smoke pollution, with incentives to switch to less polluting heating.

We recommend the approach adopted in the ACT, where heaters are not permitted in new developments unless it can be demonstrated that there are no unfavourable impacts on air quality.

4. Reducing Health Impacts of Hazard Reduction

Burning and Other Open Burning

DEA supports the proposed measures to reduce the health impacts of smoke from hazard reduction and open burning. Acknowledging the need for appropriate controlled burning in the light of the health hazards posed by bushfires themselves, more could still be done to reduce the impact of controlled burns. Indeed, a recent study of controlled burning in the Sydney area revealed significant effects on morbidity and mortality²⁵.

Improving collaboration across government agencies and with local communities is important as is improved capacity for accurate air quality monitoring and forecasting. Timely and accurate warnings and education for vulnerable groups such as asthmatics and those with other pulmonary and cardiac disease is vital. Furthermore, more research is needed on the efficacy of current health advice for individuals and communities experiencing smoke exposures. For example, advice is often to stay indoors, although indoor fine particulate levels may be as high as outdoors in some circumstances²⁶. It is also important to look at the bigger long-term picture and ensure that development on urban fringes bordering bushland is appropriate, with consideration given to appropriate fire-breaks so that the need for controlled burns is minimised.

In some rural areas, there may be difficulty in communities having access to the appropriate air quality monitoring technology in a timely fashion. We note that in the USA there is a 'national cache of smoke monitoring equipment that can be deployed to incidents to understand the magnitude of smoke impacts' – a resource which might be useful in the Australian situation.²⁷

5. Air Pollution Incident Response

DEA suggests there is a need for adequate monitoring that is able to respond quickly to air quality events. We agree that robust air pollution plume monitoring for major incidents needs to occur. DEA would like to see air quality alerts that are notified to the media as well as to emergency departments and through the general practitioner communication networks. This has occurred during a heatwave in Sydney where health alerts occurred in the media²⁸. This process needs to be formalised and structured for air quality and for heat waves, with responsibility and coordination between the EPA and the Department of Health.

6. Major Project Assessments

Currently when a major project is being assessed by the Department of Planning, it does not have to consider the new National Environment Protection Measures (NEPM) standards for air quality. The new standards were agreed to in December 2015 by the National Environment Protection Council (NEPC).

Consequently, as recently seen in the approval for the Wambo mine extension in the Hunter Valley, the new standards do not have to be incorporated into the proposal.

“At this stage the NEPM Advisory Reporting Goals for PM_{2.5} have not been adopted by the EPA for assessment of impacts from specific projects.”

“While all jurisdictions have agreed to this action, no States (including NSW) have prescribed a change to their air quality criteria to be used for the assessment of specific projects.” United Wambo Open Cut Coal Mine Project, Environmental Impact Statement.

It is not acceptable that these standards are not immediately implemented when considering new projects. They must be taken into account with every new major project assessment.

Recommendations

Reducing Industry Emissions

1. Priority needs to be given to closing down coal-fired power stations. The order of closure of coal-fired power stations should be based on their emissions intensity. Consequently, DEA recommends the following order of closure: Mt Piper, Liddell and Bayswater and finally Vales Point and Eraring.
2. DEA supports a ‘polluter pays’ approach. Consequently, the load-based licencing (LBL) system needs to be adjusted so that those industries with the highest emissions pay the highest price. To compensate for the health effects of emissions the LBL fee would need to be 49 times higher than present.
3. The mining and the transport of coal needs to be brought into the LBL system.
4. Monitoring of air quality is done at many sites in NSW however, there are significant gaps in the network. Air monitoring stations need to be placed in Lithgow and Lake Macquarie as a matter of urgency.
5. An adequate health alert system needs to be in place to alert the general population as well as the emergency services of possible and current air quality issues.

6. More attention needs to be given to Blast Plumes. Further research needs to occur to ascertain a safe setback from mines to residential areas. Until this research is available, DEA recommends a 5 km setback.

Reducing Transport, Engine and Fuel Emissions

7. Implement Euro 6 and Euro VI standards for newly registered vehicles.
8. Diesel vehicles need to be phased out, especially out of urban areas.
9. Policies should be put in place to modernise the ageing, diesel, heavy-vehicle fleet.
10. Low-sulphur fuels should be used by all shipping in NSW ports.
11. Ship-to-shore power should be made available for all shipping in NSW especially for new developments.
12. MARPOL regulations should be enforced in all NSW ports.
13. Vehicle emissions should be tested annually at the time of registration renewal.

Reducing Household Emissions

14. Phasing out of wood-fired heaters in urban areas.
15. Tightening regulation around emissions on existing wood-fired heaters.

Exposure and Impact Reduction

16. A robust alert system needs to be developed where Emergency Departments and General Practitioners are notified regarding poor air quality or other dangerous environmental concerns such as heatwaves.
17. DEA supports measures to reduce the health impacts of hazard reduction burning.

Other Matters

18. NEPM air quality standards need to be incorporated into all current and new major project assessments

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