

Submission on the Environment Protection (Air Quality) Policy 2016

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Healthy planet, healthy people.

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Doctors for the Environment Australia (DEA) is a non-profit, non politically-aligned, independent national organisation of medical doctors which advocates on health issues due to environmental factors. The organisation is aware that environmental exposures on a local, national, and global scale can have a strong influence on health, and that the most profound disease prevention strategy is to ensure a healthy environment.

DEA welcomes the opportunity to make this submission on the revised Policy; the submission is in response to the South Australian Environmental Protection Agency (EPA) draft (Air Quality Environmental Protection Policy (AQ EPP)). Whilst this is a state issue we recognise that national guidelines on air quality are relevant and we therefore take the opportunity to comment on the decisions reached at the recent Environment Ministers meeting.

Our comments are related particularly to the draft policy 1.1 Air quality legislation and policy review and consolidation

- reviewing and updating a range of emission levels of pollutants discharged to atmosphere,
- giving the EPA the means to declare that localised ambient air quality objectives apply to an area.

Recommendations

1. Strengthen air quality standards and review in a time frame of less than five years in accordance with current scientific evidence.
2. Transparent reporting of air quality standards, together with adequate resources for monitoring and action by the EPA.
3. Apply standards for PM₁₀ of 20µg/m³ annual and 40µg/m³ daily and PM_{2.5} of 8µg/m³ annual and 25µg/m³ daily.
4. Monitoring in relation to potential population risk rather than just population size and guidelines for protection of communities at risk.
5. Adopt the World Health Organization (WHO) or the United States Environmental Protection Agency (US EPA) air quality standards for sulphur dioxide. The US EPA standard is 75 ppb.
6. Increased public education about the hazards of air pollution and the benefits of more stringent air pollution standards.

Preamble

We draw your attention to previous submissions by DEA relating to air pollution in Australia and provide a background to some of the suggestions made in this submission.

- Submission on the Working Towards a National Clean Air Agreement discussion paper. April 2015
http://dea.org.au/images/uploads/submissions/Submission_to_the_National_Clean_Air_Agreement_04-15.pdf
- Submission to the Senate Committee on the Impacts on Health of Air Quality in Australia. March 2013
http://dea.org.au/images/uploads/submissions/Impacts_on_health_of_air_quality_in_Australia_Submission.v1_03-13.pdf
- Submission on the proposed variation to the Ambient Air Quality NEPM. October 2014
http://dea.org.au/images/uploads/submissions/AAQ_-_NEPM_Submission_10-14.pdf
- Submission to the Senate Inquiry into Public Transport. February 2014
http://dea.org.au/images/uploads/submissions/Public_Transport_Submission_02-14.pdf
- Submission on the Public Environmental Report for the Proposed Port Pirie Smelter Transformation. September 2013
http://dea.org.au/images/uploads/submissions/PER_Port_Pirie_Smelter_Transformation_Submission_09-13.pdf
- Submission to the Environment and Planning References Committee Inquiry into Environmental Design and Public Health (Victoria) 2011
http://dea.org.au/images/uploads/submissions/Env_Design_PH_Sub_Vic_11.07.2011.pdf
- DEA Policy Document: Air Pollution
http://dea.org.au/images/general/DEA_policy_air_pollution.pdf

Air Quality and health

The Global Burden of Disease report from WHO estimates that ambient air pollution is responsible for 3.7 million deaths worldwide (2012 estimate). Morbidity is difficult to quantify but it is recognised that the incidences of asthma, chronic lung disease, heart and other vascular disease, some neurological conditions, and some cancers are all influenced by air quality. The very young and the elderly are most impacted. Although Australia's air quality is better than in many countries DEA believes there is cause for concern. It is estimated there are approximately 3,000 deaths annually in Australia attributable to air pollution.

Harmful Air Pollutants

Particulate matter is generated from coal-fired power stations, transport, industry, mining, and burning of vegetation. Fine particulates $PM_{2.5}$ can travel far and are able to penetrate deep into the lungs and enter the bloodstream. The American Heart Association states that exposure to $PM_{2.5}$ in both the short and long term can trigger cardio-vascular disease mortality and morbidity and “reductions in PM levels are associated with decreases in cardiovascular mortality within a time frame as short as a few years”. PM_{10} particulates have been associated with a higher incidence of lung cancer. All particulates are implicated in adverse health outcomes including asthma, chronic lung disease, heart attack, stroke, low birth weight infants and increased rates of infant mortality.

Ground level ozone increases when chemicals such as the oxides of nitrogen emitted from industrial processes, transport and other fossil fuel combustion, react under the influence of sunlight. The US EPA has set 80 ppb of ozone exposure over 8 hours as the National Ambient Air Quality (USA) standard but recognises that lower levels may be injurious, particularly to children whose lungs are still developing. Ozone has been shown to react with the lining of our airways, thus breaking down the barrier to microbes, toxins and allergens, and leading to breathing difficulties, asthma and bronchitis. Ozone is generated largely in urbanised industrial high traffic areas but can travel a long way downwind and has also been shown to adversely affect plant growth.

Carbon monoxide is linked to premature death and worsening of cardiovascular disease, particularly in the elderly and those with pre-existing heart disease. It is produced by transport, industrial activity, coal mining and burning of waste.

Sulphur dioxide (SO_2) is an acute respiratory irritant and can exacerbate the symptoms of asthma and increase cardiovascular morbidity and mortality. Sources are coal fired power stations; refineries; metal extraction from ore; railway locomotives and shipping. The National Environmental Protection Council (NEPC) 2011 review of the Australian Ambient Air Quality Environment Protection Measure (AAQ NEPM) found that health effects are observed at current levels of SO_2 in Australian cities which are well below the NEPM standard.

Monitoring

The AAQ NEPM sets national benchmarks for air quality monitoring and action by the states. In South Australia the EPA is responsible for monitoring and reporting of air quality and is the regulator of air quality. We note that the draft AQ EPP consolidates the current Air Quality, Burning and Solid Fuel Heater Policies.

We support the recommendations of the review, in particular:

- Reviewing and updating a range of pollutants discharged into the atmosphere.
- Adding ground level criteria contained in other instruments which are employed by the EPA when assessing environmental authorisations or development authorisations.
- Giving the EPA the means to declare that localised ambient air quality objectives apply to an area.
- Providing that the sale and installation of wood heaters must be compliant with approved standards.
- Prohibiting the sale of firewood with greater than 20% moisture content.
- Requiring owner/operators of solid fuel heaters ensure that excessive smoke is not emitted to the air.

There is a recommendation that councils will have the power to manage burning in their areas. We submit that the EPA needs to provide oversight of these powers.

The Draft Policy

The draft addresses emission of pollutants from premises, localised ambient air quality objectives, burning offences and solid fuel heaters. In relation to these matters we submit that:

- Councils should be required to provide facilities at low cost to deal with green waste. The present situation is that many households, particularly in the Adelaide Hills, burn their green waste contributing to pollution in that air-shed.
- There should be public education concerning the health effects of air pollution from burning, transport and home heating.
- Given that there is no safe threshold for fine particulates, closer and more frequent monitoring should be conducted in at-risk areas such as schools and hospitals and crowded working environments. Mobile monitoring such as occurred under the SmokeWatch Adelaide Hills Pilot Study 2007 could be extended if resources are provided.
- In relation to wood-fired heaters and firewood moisture content DEA welcomes more stringent standards. In some cities there is a restriction or ban altogether on the use of wood or coal fired heaters. There ought to be more public education on the health hazards of these devices, closer monitoring of emissions during

their use and tighter control of their use. DEA notes the success of the Tasmanian policies on wood heaters.

Matters not Addressed in the Draft Policy

National guidelines

The AAQ NEPM sets national benchmarks for air quality monitoring and action by the states. At their recent meeting the Environment Ministers in Victoria and the ACT indicated they were setting an annual target for PM₁₀ of 20µg/m³ while NSW supported the less stringent target of 25µg/m³. South Australia appears to have supported 25µg/m³ but did not join ACT and Victoria. We believe that the SA government should announce their adherence to this target so as to provide support for national reform. There is no reason why all states cannot support this more stringent policy

We support the decision taken at the Minister's meeting to review PM₁₀ standards in 2018.

The Ministers agreed to new national air pollution standards for fine particles (PM_{2.5}) of an annual average concentration of 8 micrograms per cubic metre (µg/m³) and a 24 hour average of 25µg/m³. It was agreed that all jurisdictions will have to report against the new standards the same as they report against existing standards e.g. through the NEPC Annual Report. We support this strengthening of the regulations.

The Ministers aimed to move to standards for 7µg/m³ and 20µg/m³ respectively by 2025. DEA disagrees, reductions should be sooner, at regular intervals and based on accumulating scientific evidence.

Air quality monitoring and reporting should be improved nationally, with prioritisation based on public health risk rather than merely population size. This is an important issue to protect smaller mining and other small communities. We suggest that SA offer leadership on this issue.

Populations at Risk

DEA notes the proposal in the draft that the EPA "*can take a 'whole of air shed approach' to managing specific areas of concern and set air quality objectives for the area*". We urge that increased monitoring be a priority with some areas targeted.

At 1655 hrs on December 24 2015 the Air Quality Index for Le Fevre 2 is described as "good" but the level for fine particles is given as 36. As the Port Adelaide Environment Protection Group submitted to the Working

Towards a National Clean Agreement paper this area has 24 industries required to report emissions, including power stations, a cement works and a major heavy vehicle route as well as emissions from shipping which often have a high sulphur content. This area also houses some of the most socio-economically disadvantaged people in Australia.

Transport corridors, such as South Rd, the South Eastern Freeway, and Main North Rd are likely to have high levels of pollution and those living or working close to such corridors are at risk.

DEA welcomes the closure of Leigh Creek coal mining and the closure of the coal fired power stations at Pt Augusta in 2016 because coal mining and coal fired power stations remain a major source of air pollution in Australia. Data from the National Air Pollution Inventory showed a marked reduction in air pollution in Port Augusta in 2014 coinciding with a marked reduction in emissions from the coal fired power plants. Emissions from the Leigh Creek coal mine increased by 189% in the last years of its operation as dirtier coal was mined. We urge the state government to provide the policy settings to assist Pt Augusta to re-power with concentrated solar thermal (CST) power which would be in keeping with the Premier's stated ambition at COP21 in Paris on reducing green house gas emissions. The social benefits in employment and a healthy environment warrant such an approach.

Port Pirie air toxics remain a concern. As Professor Mark Taylor and others reported in the journal *Aeolian Research*, atmospheric emissions of arsenic, cadmium, sulphur dioxide and lead are dangerously high. Sulphur dioxide exceeded the national one hour standard on fifty occasions in 2012.

Recent (2014) 24hr levels of air-born metals were:

- Lead, 45 occasions above annual air quality standards
- Cadmium, 36 occasions above the standard
- Arsenic, 42 occasions above the standard.

The dangers of these substances are summarised here:

- a) Lead is particularly hazardous to unborn children and those under five. The National Health and Medical Research Council (NHMRC) recommends the adoption of a blood level upper limit for lead of 5µgm/dL. This guideline means up to 50% of such children in Port Pirie have an excessive blood level and may be more than twice as likely to have developmental disorders, including lower numeracy and literacy scores, than the national average.
- b) Arsenic is highly toxic, cumulative, and associated with skin lesions, peripheral nerve damage, gastro-intestinal symptoms, kidney

disease, heart disease and cancer. It too, has been linked to diminished cognitive development in children.

- c) Cadmium, another carcinogen, has harmful effects on kidneys, the skeletal system and respiratory system and even low levels are associated with learning difficulties in children.
- d) Sulphur dioxide emissions have severe respiratory system effects with exacerbations of asthma and chronic obstructive lung disease. In 2007-08 there were 3,774 hospital admissions per 100,000 people compared with the state average of 2036 per 100,000.

To quote Taylor et al., speaking of Port Pirie, *"We need enforceable legal mechanisms that enable the environmental protection agencies (EPAs) to not only regulate more effectively but to actually stop ongoing systematic pollution by forcing closure, even if only temporarily. This must be accompanied by a willingness within the EPAs to take such action, independent of manipulation by government or industry"*.

Climate Change and Air Quality

Climate change is expected to lead to hotter and drier conditions in southern Australia. The combination of higher temperatures, more frequent bushfires and more raised dust will impact adversely on ambient air quality at an air-shed scale. A CSIRO report in 2008 by M Cope and others predicted that hospital admissions related to ozone levels will increase under hotter climate conditions.

Summary

Globally air pollution is an increasingly important public health problem. In a high growth scenario the Australian Bureau of Statistics (ABS) predicts Australia's population could be approaching 40 million persons by mid century. How that growth is managed in terms of housing, transport, and industry will have an important bearing on air quality. A large dividend in health costs will be realised and green house gases mitigated if air pollution is minimised. A report published by WHO and the Climate and Clean Air Coalition in October 2015 concludes that a reduction of short-lived climate pollutants (particulates, ozone, and methane) can not only help slow global warming but save 3.5 million lives globally each year.

Addendum

Further comments on issues relevant to Air Quality

1. Emissions from vehicular engines

These make a significant contribution to air pollution in South Australia. Emission standards for these are set nationally, but Australia has lagged badly behind Europe and the United States. Full implementation of the Euro 5 standard and, in 2017, of the Euro 6 standard should be rigorously applied. It is not clear whether this is covered by environmental law or under the SA Road Traffic Act.

Diesel has more harmful emissions than petrol despite its perceived fuel economy. The International Agency for Research on Cancer has classified diesel as a Class 1 carcinogen. Besides particulates, nitrogen oxides, carbon monoxide, and sulphur dioxide, there are toxics such as benzene, acetaldehyde, and 1,3-butadiene which account for half of all cancers caused by air pollution according to the US EPA.

We refer you to the Truck Industry Council (TIC) submission to *'Working Towards a National Clean Air Agreement'* in which they state that the average age of the Australian truck fleet as of the end of 2014 was 13.92 years, compared with France 6.4 years, and North America 6.7 years. Older trucks have much worse emissions and generate more greenhouse gas. According to the TIC, *"air quality has been promulgated but its implementation in this case in terms of modernising the Australian truck fleet has failed"*.

The recent reckless and criminal behaviour of a major European manufacturer of diesel passenger vehicles makes it clear that standards must be enforced and penalties applied. This should be a joint responsibility of state and federal governments.

There are currently no emission standards for off-road diesel engines. NSW has in recent years undertaken a number of initiatives relating to off-road diesel engines and the NSW EPA is pushing for national off road diesel emission standards in line with US and EU standards. DEA SA strongly endorses such an approach.

2. Healthy Transport

DEA congratulates the South Australian Government on its Low Emission Vehicle Strategy which includes incentives for electric vehicles and provision of improved cycling and pedestrian pathways.

3. Town Planning

A combination of urban planning to reduce sprawl and promote walking and safe cycling, and good public transport can provide the co-benefits of a healthier environment and reduced greenhouse gases.

References and URLs

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American Heart Association: Circulation 2010 121 2331-2378 Scientific Statement NASA
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National Environment Protection Council Service Corporation Review of the NEPM July 2010
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http://www.epa.vic.gov.au/compliance-enforcement/comments/dualgas-docs/L_Denison_Expert_Report.pdf

Truck Industry Council Submission to "working towards a national clean air agreement"

NHMRC Statement and Information Paper on Impacts of Lead on Human Health
<http://www.nhmrc.gov.au/media/releases/2015/nhmrc-releases-statement-and-information-paper-impacts-lead-human-health>

Taylor Dong et al: <https://theconversation.com/lead-poisoning-of-port-pirie-children-a-long-history-of-looking-the-other-way8296>

World Health Organization (WHO) Exposure to Cadmium:
www.who.int/ipcs/assessment/public_health/cadmium/en/

Submission no 27 to the former Standing Council on Environment and Water "Consultation Regulation Impact Statement for Reducing Emissions from Wood Heaters" from SA EPA