Submission no:

REVIEW OF THE NATIONAL ENVIRONMENT PROTECTION (AMBIENT AIR QUALITY) MEASURE AIR QUALITY STANDARDS DISCUSSION PAPER

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The headings below have been extracted from the discussion paper. **Chapter 5: Issues to be considered in evaluation of NEPM standards** (page 140 of *AAQNEPM Review Air Quality Standards Discussion Paper*) provides further discussion on these questions.

ISSUES TO BE CONSIDERED

Q1. Is there sufficient new health evidence to support a revised standard and if so, for which pollutants?

Yes, there is sufficient evidence to support revised standards for PM2.5.

Q2. Does the current approach, which allows for a number of exceedences of the standard, meet the requirement for adequate protection or are there alternative methods that could provide more consistency in the level of health protection associated with complying with the NEPM standards?

No. The current approach does not meet the requirement for adequate protection.

The following was included in the NEPC's Summary of Submissions received in relation to the Draft Variation to the National Environment Protection (Ambient Air Quality) Measure for

Particles as PM2.5 and National Environment Protection Council's Responses to those Submissions (published June 2003, see p19):
"At the proposed (PM2.5) standard, very significant mortality effects of around 1000 premature deaths remain. " The NEPC's response was "Agreed".

Air Quality standards should not mislead people into believing air that meets the standard is "safe", when there is general agreement that, even when the PM2.5 standard is statisfied, very significant mortality effects of around 1000 premature deaths will remain.

As well as setting "standards" for air quality, the health effects of air pollution, including estimated numbers of premature deaths and costs of hospital admissions need to be publicised sufficiently so that the general public understands that air quality cannot be considered "safe", even when it meets the "standard".

Health costs should be based on the recommendations published by: Jalaludin, B., G. Salkeld, et al. (2009). A Methodology for Cost-Benefit Analysis of Ambient Air Pollution Health Impacts, Commonwealth Department of Environment, Water, Heritage and the Arts (available at: http://www.environment.gov.au/atmosphere/airquality/publications/cost-benefit-analysis.html).

Q3. Should changes be made to the reporting protocols that would lead to a greater transparency and better understanding of the causes of exceedences in jurisdictions, the potential risk to population health, and management approaches being undertaken to address these exceedences?

Yes, changes should be made to the reporting protocols that would lead to better understanding of the causes of exceedences, the risk to public health and the management processes being used to address the problem. However, for pollutants with no known threshold, this information is needed for all emissions, not just exceedences. The best available evidence indicates that increased annual exposure of 10ug/m3 PM2.5 increases mortality by about 10%. This implies that annually average exposure of 7.99 ug/m3, although not technically an "exceedence" will increase mortality by almost 8%.

In order to provide some incentive for further reductions in mortality rates by reducing air pollution exposure, the protocols need to report annual PM2.5 exposure, also list emissions according to sources, as well as estimated health effects and costs of mitigation.

For example in Sydney, the NSW DECC's Emissions Inventory shows that a total of 4503 tonnes of PM2.5 per year are emitted by Sydney's woodheaters, compared to a total of 797 tonnes for all passenger cars in the airshed. This implies that the average woodheater emits 96 times as much PM2.5 pollutiion as the average passenger car.

So, when a pollutant e.g. PM2.5 has no known safe level, as a first step to protecting community health, the reporting protocol should require jurisdictions to estimate the health effects, and also compare the costs of different mitigation strategies, e.g. the benefits per person of cycling or using public transport instead of driving, or converting the family wood heater to a non-polluting alternative.

Health costs should be based on the recommendations published by: Jalaludin, B., G. Salkeld, et al. (2009). A Methodology for Cost-Benefit Analysis of Ambient Air Pollution Health Impacts, Commonwealth Department of Environment, Water, Heritage and the Arts (available at: http://www.environment.gov.au/atmosphere/airquality/publications/cost-benefit-analysis.html).

Q4. Any other issues you wish to raise?

For pollutants with no known threshold, e.g. PM2.5, the recommended standard should be "as low as practical, with no location having annual averages greater than 8 ug/m3 (the previous advisory standard)".

It should be explained that "as low as practical" means that reductions in emissions are desirable whenever the savings in health costs from reducing emissions exceeds the cost of the reduction.

Currently, there is some uncertainly about the status of the PM2.5 standard. Since its introduction in 2003, many studies have shown that premature mortality is more strongly related to PM2.5 than PM10.

To avoid delays in protecting our health, the values of 8 ug/m3 (annual average) and 25 ug/m3 (daily average) should be made formal regulatory standards that should be satisfied as soon as possible in all jurisdictions.

Requirements to measure PM2.5 should be extended to include all areas with more than 10,000 people where the standard is likely to be exceeded. The costs could be offset by reduced monitoring in other areas where measurements indicate that the standard is likely to be satisfied.

Reporting protocols should also note that in colder areas where the dominant source of PM2.5 is woodsmoke, use of TEOMs should be avoided, unless some are co-located with the recommended reference gravimetric sampling device, enabling TEOM measurements to be corrected for loss of volatiles. If suitable correction equations can be derived from co-located instruments, and shown to have similar accuracy to co-located TEOMs, nephelometers (or other optical devices) could also be used to provide a cheaper option, no less accurate than a TEOM, avoiding the unsatisfactory situation of not recording PM2.5 measurements in areas where the standard is likely to be exceeded, and so failing to protect public health.

'Natural and exceptional events' such as bushfires should not be excluded from the compliance standards. The contention that 'natural' events are not amenable to management is erroneous. Human land management practices can either increase or decrease the risk of severe bushfires and dust storms .

Summary

Revised standards need to be set as soon as possible, using the best available evidence of the effects on our health. In Europe, the most health-hazardous air pollutant is PM2.5, which is estimated to cause a loss of 4.9 million life years, or 490,000 premature dealths.

The next worst pollutant is ozone, responsible for 21,000 premature deaths - see Leeuw, F.D. and J. Horálek, Assessment of the health impacts of exposure to PM2.5 at a European level. 2009, European Topic Centre on Air and Climate Change. http://air-climate.eionet.europa.eu/reports/ETCACC_TP_2009_1_European_PM2.5_HIA

Thus in Europe the health effects of PM2.5 are 20 times worse than ozone.

Even if the situation were only half as bad in Australia - i.e. PM2.5 cause only 10 times as many premature deaths as the next worst air pollutant, it would justify recommendations to devote 10 times as many resources to monitoring and reducing PM2.5 pollution as the next worst pollutant (ozone). The current policy is totally illogical and so unacceptable - fewer resources are currently devoted to monitoring and reducing PM2.5 than other, less hazardous, air pollutants.

This totally unsatisfactory situation should be addressed as a matter of urgency, by formalising the current recommended limits of 8 ug/m3 (annual average) and 25 ug/m3 (daily average) together with a requirement that all population centres of at least 10,000 monitor PM2.5 if the standard is likely to be exceeded.

Once the current unsatisfactory situation in relation to PM2.5 has been dealt with, a formal revision all air quality standards should proceed. Savings in health costs should be compared to

the cost of mitigation strategies. For pollutants with no known threshold, e.g. PM2.5 the new recommended standard should be "as low as practical, with no location having annual averages greater than a certain value, e.g. 8 ug/m3".

Health costs should be based on the recommendations published by: Jalaludin, B., G. Salkeld, et al. (2009). A Methodology for Cost-Benefit Analysis of Ambient Air Pollution Health Impacts, Commonwealth Department of Environment, Water, Heritage and the Arts (available at: http://www.environment.gov.au/atmosphere/airquality/publications/cost-benefit-analysis.html).