



# **NATIONAL ENVIRONMENT PROTECTION MEASURE FOR AMBIENT AIR QUALITY**

**Summary of submissions received by the  
National Environment Protection Council  
in relation to the draft National Environment  
Protection Measure and Impact Statement  
for Ambient Air Quality**

**and**

**National Environment Protection Council's  
responses to those submissions**

**26 June 1998**

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## 1. INTRODUCTION

This document provides a summary of public submissions to the draft National Environment Protection Measure (NEPM) and Impact Statement for Ambient Air Quality and the National Environment Protection Council's responses to those submissions.

At its meeting in June 1996, the National Environment Protection Council (Council) decided to make a NEPM for ambient air quality and directed that a draft NEPM and Impact Statement on ambient air quality be developed.

Council determined that the goal of this NEPM should be the protection of human health and well being. This entailed the establishment of ambient air quality standards, and monitoring and reporting protocols, for the following six pollutants;

1. carbon monoxide,
2. nitrogen dioxide,
3. photochemical oxidants,
4. sulfur dioxide,
5. lead, and
6. particles.

The Council's decision to commence development of a NEPM for ambient air quality was in direct response to community concerns about air quality as an environmental issue.

A draft NEPM and Impact Statement for Ambient Air Quality was released for public comment in November 1997 by the National Environment Protection Council. The availability of the draft NEPM was promoted in state and national newspapers. In accordance with the National Environment Protection Council Acts passed in each jurisdiction, the draft NEPM and Impact Statement for Ambient Air Quality was made available for public comment for a period of three months until 20 February 1998.

The submissions received were analysed and, having regard to these submissions, the revised NEPM and Impact Statement was amended where appropriate. The final NEPM and Impact Statement was tabled in the Commonwealth Parliament, following its adoption by Council at their meeting on 26 June 1998.

## **2. PUBLIC CONSULTATION**

### **2.1 Public Consultation Process**

Early in the development of this NEPM, a Non Government Organisation (NGO) Advisory Group, involving key industry, environment and professional bodies, was established. This Group met approximately on a quarterly basis to discuss policy and technical issues as the NEPM progressed. At the request of this Group, the NEPC Committee developed a 200 page Discussion Paper on the proposed draft NEPM and Impact Statement and released it to stakeholders. This Discussion Paper, in effect, provided stakeholders with a draft copy of the proposed draft NEPM and Impact Statement for comment prior to its formal release as a public document. A two months consultation period was provided on this Paper. Over 32 meetings with stakeholders were held in every jurisdiction. The addition of this consultation significantly increased the transparency of the NEPM development process.

A draft NEPM and Impact Statement was then developed using the information and comments which resulted from the Discussion Paper. This process added an extra six months in total to the NEPM development process.

To ensure all parties had time to consider the draft NEPM and Impact Statement, one extra month was included for consultation (beyond the two-month period required under the NEPC Act) on the formal draft NEPM and Impact Statement. To further enhance the transparency of the consultation process a 'Key Stakeholder Consultative Forum' was established with an independent Chair (Prof Ian Rae), to ensure that key stakeholders (industry, environmental groups etc) were provided additional opportunity to consider the issues and provide comments and information to the Project Team prior to the NEPM being finalised.

Significant efforts were made to ascertain the environmental, social and economic impacts of the NEPM on the community (including industry) during this process. The final NEPM and Impact Statement reflects these and other considerations such as regional environmental differences. The Summary and Response Document gives a detailed summary of the comments made on the draft NEPM and Impact Statement. In many cases the comments were acted upon and are reflected in the final NEPM and Impact Statement.

Intensive consultation on this NEPM was delivered through the following processes:

- on going consultation (meetings with government agency representatives, briefings, papers) involving all governments on the content of the draft NEPM;
- consultation with the NGO Advisory Group (key industry, environment and professional groups), including the release of consultants reports, during the NEPM development process involving face to face meetings, briefings etc;

- release of a Discussion Paper on the proposed draft NEPM and Impact Statement in June 1997 involving 2 months consultation with over 32 meetings held nationally with key stakeholder and the public, over 500 copies distributed;
- release of a formal draft NEPM and Impact Statement for three months public consultation involving over 50 meetings with the public, stakeholders and government agencies nationally – advertisement in all newspapers and direct mail to over 1000 interested parties and posting of the documents on the Internet with up to 2000 copies downloaded. Several hundred copies were also distributed by jurisdictions to local stakeholders and the public;
- consultation with industry and environmental groups by all jurisdictional governments on the NEPM proposals and implementation issues through a Key Stakeholders Consultative Forum which included major workshops held in Perth, Sydney and Melbourne hosted by key stakeholders and funded by the NEPC.
- targeted meetings with key government agencies and stakeholders by the Project Team and presentations at conferences/seminars; and

## **2.2 Public submissions on ambient air quality draft NEPM and Impact Statement**

Each of the 172 submissions were analysed and carefully considered. A number of changes to the detail of the NEPM and monitoring protocol were made as a result of the submissions. The final Impact Statement on the NEPM also reflects the comments made and additional information provided in the submissions.

A comprehensive formal response to these submissions is contained in the Summary and Response Paper. The final NEPM and Impact Statement also reflects the responses to the submissions made.

### **3. SUMMARY OF PUBLIC COMMENT AND NEPC RESPONSE**

This Chapter presents a summary of public comments so that stakeholders:

- have an understanding of the views that were presented to NEPC; and
- can trace their input into the development of this NEPM.

Many issues and comments were raised in more than one submission, and in different forms. Style and expressions differ from one submission to another, and thus issues are raised in different ways having different connotations, contexts and emphases. As it is not possible in this Summary to deal with all the subtleties emerging from such variations, an attempt has been made to group similar comments together. Similarly an attempt has been made, where possible, to provide a single response which captures the key issues raised in submissions.

Comments made in submissions have been assessed entirely on the cogency of points raised. No subjective weighting has been given to any submission for reasons of its origin or any other factor that would give cause to elevate the importance of one submission above another.

This Chapter does not seek to make judgements about the content or accuracy of statements, although different views about particular issues are contrasted. Some of the information presented was anecdotal and varied in its degree of accuracy. Nevertheless, NEPC believes that, while it is important to base the development of the Ambient Air Quality NEPM and Impact Statement on sound scientific and technical information, responses which may be less technically accurate also have a significant role to play. Such responses show the ways in which people interpret their experiences and may also highlight gaps in access to information or in knowledge.

The submissions are cited in the following manner and are given a unique number, for example, the reference (A 54), refers to a comment made by the Smogbusters Working Group during key stakeholder consultation.

A number of identical 'campaign' submissions were received, these submissions (submission numbers 9, 10, 11, 12, 14, 15, 16, 17, 18, 23, 25, 33, 34, 25, 40, 43, 46, 47, 49, 50, 53, 55, 56, 57, 58, 66, 67, 68, 77, 79, 89, 90, 91, 92, 112, 117, 120, 121, 122, 123, 124, 125, 126, 129, 131, 132, 133, 137, 138, 139, 143, 147, 149, 150, 151, 159, 163, 166, 167, 170), for ease of reference, these submission have been cited as '(campaign)', rather than repeating this full list of submission numbers in each case where the comments contained in those submissions is cited.



## Section 1: The Measure

### 2. Definitions (Clause 2)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>"Ambient" is not defined (75, 80, 82, 162)</li> <li>"low ambient air" should be defined. (162)</li> </ul>	<p>Ambient air means the external air environment; it excludes air inside buildings or structures. A definition is included in the final Measure.</p>
<ul style="list-style-type: none"> <li>The concentrations of gases and particulates in the NEPM refers to 'ground level' concentrations. Therefore in Part 1, Section 2 - a definition for "maximum ground level concentrations" should be included. (13)</li> </ul>	<p>No change required - the terminology 'ground level concentrations' was not used in the Measure.</p>
<ul style="list-style-type: none"> <li>The definition of 'particles as PM<sub>10</sub>' refers to 'aerodynamic mean diameter'. The word 'mean' should be deleted. (127)</li> </ul>	<p>The final Measure's definition is:  <b>"particles as PM<sub>10</sub></b> means particulate matter with an equivalent aerodynamic diameter of 10 micrometres or less".</p>
<ul style="list-style-type: none"> <li>The NEPM should clearly specify the types of materials coming within the definition of "Particles". (7)</li> </ul>	<p>All particles up to the cut-off of 10 µm are covered by the Measure.</p>
<ul style="list-style-type: none"> <li>"ppm" is not defined. (75)</li> </ul>	<p><b>"ppm"</b> means parts per million by volume and is defined in the Measure under S2(3).</p>
<ul style="list-style-type: none"> <li>Delete the definition for "monitoring station". (87)</li> </ul>	<p>This definition is required to distinguish between 'monitoring station', 'performance monitoring station' and 'trend station'.</p>
<ul style="list-style-type: none"> <li>"Region" and "sub-region" are not defined. The issue of the size, nature and definition of a region is a key issue. The current phrasing of para. 18 implies that the goals detailed in Schedule 2 relate to regional air quality and that the stated number of exceedences are allowed on a region by region basis. It appears that it is the regional level at which compliance is to be determined. If this is the intent it should be highlighted earlier in the document. Equally, if the "region" is the discrete unit at which performance is assessed, clear definition of a "region" is required. (75)</li> </ul> <p>Other proposed definitions for region were:</p> <ul style="list-style-type: none"> <li>"region" means an area within a boundary</li> </ul>	<p><b>"Region"</b> means an area within a boundary surrounding population centres as determined by the relevant participating jurisdictions.</p> <p><b>"Sub-region"</b> means a populated area within a region whose air quality differs from other areas in the region due to the topography, meteorology and sources of pollutants. These definitions are included in the final Measure.</p> <p>A fundamental consideration in defining a region is the population. However, it is not possible to assign a specific cut-off (eg 25,000), other factors to be considered include the regions geography, meteorology, sources/nature of pollutant.</p> <p>It should be noted that while the equation in Clause 14(1) utilises a population of 25,000 as a threshold in identifying the number of</p>

## 2. Definitions (Clause 2)

COMMENT	RESPONSE
surrounding contiguous residential properties and which contains a population of more than 25,000 persons. (114)	performance monitoring stations, this clause does not necessarily mean that regions with populations under 25,000 will be exempt from the Measure.

## 3. Application (Clause 3)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• Clause (3) of the draft NEPM states that it is "intended" that participating jurisdictions establish monitoring procedures within 3 years of commencement. This seems an inadequate requirement on jurisdictions given the legal standing of the NEPM. (48)</li> </ul>	<p>Clause 3 of the Measure was revised. It now reads:</p> <p style="text-align: center;"><i>Participating jurisdictions must establish monitoring procedures, and commence assessment and reporting in accordance with the Protocol in this Measure, within 3 years after its commencement.</i></p>
<ul style="list-style-type: none"> <li>• Support for compliance/enforcement provisions within the NEPM. (6, 36, 83, 105 ,134, 135, 142, 148)</li> <li>• Specific issues raised included the following:               <ul style="list-style-type: none"> <li>- There is no provision for compliance. Self regulation does not work. Reporting of exceedences is one thing - there needs to be legislation requiring government action if standards are exceeded. (134)</li> <li>- The finalised NEPM must be enshrined in Commonwealth legislation that is binding on the jurisdictions to ensure that all participating jurisdictions comply with the protocols. (142)</li> </ul> </li> </ul>	<p>The <i>NEPC Act</i> does not provide any provisions for enforcement. The NEPC is seen as an example of ‘cooperative federalism’ and as such compliance is expected to be achieved through a cooperative approach. In keeping with the <i>NEPC Act</i> responsibility for compliance lies with each jurisdiction.</p> <p>The mandatory component of the Measure is the requirement for jurisdictions to assess and report on their compliance with the standards. The monitoring, assessment and reporting by jurisdictions is to be conducted in a manner prescribed by the Measure.</p> <p>There are no mandatory requirements on how the jurisdictions implement the standards in the management of their air sheds, for example, strategies and controls for the management of point sources. This is considered to be best left to jurisdictions who have the local knowledge and experience of their particular air sheds.</p>

#### 4. Desired environmental outcome (Clause 5)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The desired environmental outcome of the NEPM must be:               <ul style="list-style-type: none"> <li>- ambient air standards that will protect human health;</li> <li>- a reduction in pollutant levels and reduced health care costs;</li> <li>- environmental protection that is equivalent for all Australians; and</li> <li>- preservation of ecological integrity and visual amenity. (142)</li> </ul> </li> <li>• Support for the inclusion of ecological protection in addition to the current NEPM requirement for human health and well being. (36, 75, 128, 142, 144, 148)</li> <li>• The notion of 'environmental protection' is being misused as this infers that some value has been put on protecting the environment for the environment's sake, while this document deals solely with human health. (31)</li> <li>• The inclusion of the qualifier "adequate", in the outcome, appears intended to justify an approach to setting air quality standards which places cost/benefit neutrality before protection of health. (36)</li> <li>• Recommend that the desired environmental outcome state clearly that environmental protection will be equivalent for all Australians and that the impact on the natural environment must be assessed and mitigated. (36)</li> </ul>	<p>The standards have been developed to provide adequate protection for human health and wellbeing. In determining these standards environmental, social and economic impacts had to be considered. Therefore cost neutrality was not an absolute necessity.</p> <p>Equivalent protection is an objective of the NEPC Act and was a major consideration when developing the standards. "Equivalent protection" for all Australians is achieved by the NEPM to the extent that it delivers Australia's first national standards for air quality. This is in stark contrast to the previous situation (pre-NEPM) where standards changed from jurisdiction to jurisdiction. The jurisdiction monitoring plans will also play an important role in furthering the objective of achieving equivalent protection.</p> <p>The pursuit of "equivalent protection" on an individual by individual basis is an ideal which cannot be practically achieved. It should be recognised that some individuals will always be better off than others due to the inherent differences in the health of individuals. It follows that in establishing a standard for the general population the most susceptible sub-group will not enjoy the same relative safety margin (ie. level of protection) as a more resistant sub-group. While increasing the stringency of the standard will increase the safety margin for the susceptible sub-groups it will also increase the protection for the less sensitive groups – the end result is that "equivalent protection" in the literal sense is still not achieved.</p> <p>The only way to achieve "equivalent protection" is by ensuring zero emission from both anthropogenic and natural sources or by setting a separate standard for each individual - neither of these options have any practical merit.</p>

#### 4. Desired environmental outcome (Clause 5)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The NEPM must uphold international consumer rights. The main priority of the NEPM must be the protection of human health and the environment with special consideration to children and susceptible individuals. (142)</li> </ul>	<p>In identifying the standards for the Measure specific consideration was given to susceptible individuals and children.</p>

#### 5. National Environment Protection Goal (Clause 6)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The timeframe for attainment is an implementation issue and should not be specified in the NEPM. (87, 104)</li> <li>Support for the proposed 10-year timeframe. (93, 161)</li> <li>Suggested alternatives are to not adopt a timeframe in the Measure and allow the States to develop individual Action Plans to meet the Standards, or to adopt a longer timeframe for compliance with the standards and allowable exceedences progressively reduced. (115)</li> <li>Alternative timeframes suggested included: <ul style="list-style-type: none"> <li>- 15 or 20 years; (87)</li> <li>- less than 10 years but no specific alternative suggested; (63, 135)</li> <li>- should be implemented 60 days after agreement; (142)</li> <li>- immediately (on agreement). (27, 36, 128, 144, 148)</li> </ul> </li> </ul>	<p>The NEPC Act allows for goals to be set in Measures. The goal of the Measure is to meet the standards (identified in Schedule 2) within 10 years of commencement.</p> <p>It is believed that it is fundamentally important to set a medium-term goal for achieving the standards set out in the Measure. The standards adopted have been designed with the practicality of achieving compliance within 10 year in mind, and set realistic achievable targets for the next decade.</p> <p>A timeframe of 10 years was selected to reflect the time required for jurisdictions to address a number of essential factors including:</p> <ul style="list-style-type: none"> <li>- the need to invest in new monitoring infrastructure;</li> <li>- to enable the survey and modification of existing monitoring practices (eg. measurement methodologies, location of monitors, accreditation, etc.);</li> <li>- the time required to develop, implement and see results from changes in jurisdictional air quality management plans.</li> <li>- the investment cycles and vehicle turnover cycles that are pertinent to control options under consideration.</li> </ul> <p>The 10 year timeframe is also relevant to the monitoring protocol which supports the standards.</p> <p>Recognising the need for the public to be kept informed of the progress in complying with the</p>

## 5. National Environment Protection Goal (Clause 6)

COMMENT	RESPONSE
	proposed standards, the Measure requires that all jurisdictions begin to report on the extent of their compliance with the NEPM standards within 3 years (see Clause 3).
<ul style="list-style-type: none"> <li>Available information indicates that, for much of Australia, the proposed NEPM guide levels are achieved. This suggests the "goal" merely reinforces the status quo and is no impetus for change, raising the issue of whether the issues of real concern are dealt with in the proposed NEPM. (75)</li> </ul>	<p>The purpose of the NEPM is to establish ambient air quality levels that provide Australians with a benchmark for assessing whether the air they breathed was healthy. It is not intended that the NEPM will deliver or attempt to achieve <i>de minimus</i> levels of ambient air pollution. However, as sufficient new information becomes available the NEPM standards will be reviewed and modified as appropriate.</p> <p>The NEPM delivers Australia's first national air quality standards and requires that each jurisdiction monitor and report on their compliance against the NEPM standards.</p> <p>Importantly the NEPM requires that jurisdictional monitoring networks collect and analyse data in a consistent manner allowing comparisons to be made between different airsheds.</p>

## 6. National environment protection standards (Clause 8)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>At present it is unclear what level of obligation is imposed on jurisdictions to achieve compliance with the proposed standards. At this stage it would appear that the only obligation is to monitor and report on regional air quality against the standards. Industry is unsure of the extent to which an "improvement program" is mandatory, and what flexibility is incorporated. Until this is clarified, it is recommended that the standards in the Measure be termed 'guidelines'. (100)</li> <li>Support for goals or guidelines rather than standards. (101, 169)</li> <li>Confusion over the legal meaning of the Measure. It is apparent from the general</li> </ul>	<p>The <i>NEPC Act</i> (s.6(1)) provides clear definitions for the terms standard, goal and guideline, which are reproduced below:</p> <ul style="list-style-type: none"> <li>a national environment protection <b>standard</b> “means a standard that consists of quantifiable characteristics of the environment against which environmental quality can be assessed”.</li> <li>a national environment protection <b>guideline</b> means “ a guideline that gives guidance on possible means for achieving desired environmental outcomes”.</li> <li>a national environment protection <b>goal</b> means a goal “(a) that relates to desired environmental outcomes; and (b) that</li> </ul>

## 6. National environment protection standards (Clause 8)

COMMENT	RESPONSE
<p>tenor of the impact statement that the standards are not intended to be mandatory. This intent is confused by the instrument being described as a standard which the Intergovernmental Agreement on the Environment clearly requires to be mandatory. This situation should be corrected by describing the air quality levels as goals and the measure as a guideline. (102)</p> <ul style="list-style-type: none"> <li>• Essential that the draft standards are indeed implemented as standards not merely as guidelines. (105)</li> <li>• It is not clear whether the standards would be compulsory or voluntary. (169)</li> <li>• The general adoption of all the proposed standards as guidelines, at least until such time as the scientific background to the measure is far more substantial. (106)</li> <li>• The draft NEPM should be revised to reflect its intended non-mandatory nature by restyling the NEPM as guidelines. The goal should be revised to reflect quantifiable characteristics that the protocol can be directed at. (114)</li> <li>• As in the UK, standards proposed should be accompanied by an encouragement to reduce levels below the standards when this is economically feasible. (164)</li> <li>• The word "standard" should be changed to "guideline" given the intention of the NT Department of Lands, Planning and Environment to adopt the NEPMs as environmental Protection Objectives under the proposed Waste Management and Pollution Control Bill (1996). (154)</li> </ul>	<p><i>guides the formulation of strategies for the management of human activities that may effect the environment”.</i></p> <p>These definitions under the <i>Act</i> are not necessarily equivalent to ‘common usage’ of the terms ‘standard’ and ‘guideline’ (they are consistent with the IGAE). A NEPC guideline “gives guidance on possible means for achieving ... outcomes” unlike a NEPC standard it does not include a quantitative aspect (ie numbers to be met). As such, given the intent of the Ambient Air Measure it was considered inappropriate to merely provide guidelines. The greater purpose of the Measure is to provide the public with a common national measure of what constitutes safe air (ie. standards) this can not be done without specific numbers.</p> <p>It should be noted that not all Measures under NEPC would require the use of standards, for example, the NPI Measure.</p> <p>NEPC standards are used in the form of ‘benchmarks’ for comparison with existing ambient air quality. Experience with NHMRC goals and ANZECC guidelines indicate that they are unlikely to deliver consistency in air quality measurement throughout the country. No other mechanism is available to ensure that all jurisdictions adopt the same benchmark.</p> <p>Standards should always be viewed as maximum levels allowable to ensure the protection of human health. The standards should not be seen as targets to ‘pollute up to’ and economically feasible opportunities for improving ambient air quality above and beyond the standards should be adopted.</p> <p>Under the NEPM it is a mandatory requirement that jurisdictions report against their compliance with the NEPM standards.</p>
<ul style="list-style-type: none"> <li>• With regard to the emission standards, recommends that all standards are in line with those set in overseas countries. The majority of trucks made for the Australian</li> </ul>	<p>NEPM standards will not require additional modification to vehicles.</p> <p>Emission standards for new vehicles are covered by Federal legislation under the <i>Motor</i></p>

## 6. National environment protection standards (Clause 8)

COMMENT	RESPONSE
<p>market are manufactured overseas, with emission levels set in accordance with US or European environmental standards. If emission standards are more stringent in Australia, it will be a major cost for overseas manufacturers to make the necessary modifications. This will add to the costs faced by Australian operators and ultimately by Australian consumers. As a result, while supporting the standards included in the draft NEPM, recommends that these standards are broadly similar to those in place in the US or Europe. (152)</p>	<p><i>Vehicles Standard Act, 1989</i> which incorporated the Australian Design Rules.</p> <p>The ADRs for trucks are aligned with US, European or Japanese standards and are almost contemporary. These standards are under review. Australia is moving to international harmonisation of these standards under the United Nations Economic Commission for Europe (UN ECE.)</p>
<ul style="list-style-type: none"> <li>• It is vital that the NEPM emphasises the fact that Schedule 2 limits are not intended for adoption as source limits. (75)</li> <li>• The proposal to control point sources with a national standard is neither cost effective nor in proportion to the significance of the problem. (114)</li> </ul>	<p>As noted in the Executive Summary, p17 of the impact statement, “the NEPC Act deliberately leaves the implementation of these standards to each jurisdiction to allow for local knowledge and systems to be applied in developing appropriate air management strategies”.</p> <p>The standards apply only at the designated performance monitoring stations. They are not intended as source control limits, but as ambient air quality targets.</p>
<ul style="list-style-type: none"> <li>• There is considerable doubt as to whether the proposed standards are sufficient to achieve the desired environmental outcome of the measure of a quality that allows for adequate protection of human health and well being. (105)</li> </ul>	<p>Without evidence to the contrary it is expected that the standards will provide adequate protection of human health and well being.</p>

## 7. Monitoring – General comments

COMMENT	RESPONSE
<p>A number of submissions raised concerns about the extent to which Performance Monitoring Stations will address peak exposure levels. Indicative comments included:</p> <ul style="list-style-type: none"> <li>• Measurement of average exposure levels provides no reliable estimate of peak (near-source) impacts. Consequently, it is likely that the protection of many Australians</li> </ul>	<p>Ambient air quality standards for the protection of human health, rely on data on toxicology, controlled exposure studies, and epidemiology. Epidemiology relates observed effects to air quality monitoring data. Air quality data are normally based on monitoring stations sited to give an average representation of general air quality and of population exposure. These are normally sited away from the influence of specific sources such as major</p>

## 7. Monitoring – General comments

COMMENT	RESPONSE
<p>living close to sources of pollutant emissions will not be directly addressed by this NEPM. To this extent the NEPM fails to meet the first part of the object of the Act [equivalent protection]. (21, 80)</p> <ul style="list-style-type: none"> <li>• Concern that the siting of monitors would be such that they would only measure average pollution and not address the elevated concentrations, near sources of pollution, where most of the exceedences occur. While it is acknowledged that consideration of peak exposures affecting a small proportion of the population is not the intent, it is expected that exposures in highly populated regional areas should not be ignored. [Consensus] (94)</li> <li>• Monitoring should include the worst areas (such as near major roads) as well as 'average' areas, and reports should be made concerning both average exposure and individual areas which breach the standards. (71)</li> </ul>	<p>roads and other major sources.</p> <p>Assessment of performance against the ambient standards can be viewed as a measure of the success of implementation strategies. To provide comparable assessment of performance between regions and jurisdictions, monitoring networks need to reflect this approach, and this is the overall basis for the protocol.</p> <p>Assessing performance according to the protocol is not intended to address monitoring needs associated with source impact management programs. Responsibility for developing such programs remain the responsibility of jurisdictions. There will clearly need to be other management programs to deal with specific source impact issues in different regions.</p> <p>See also discussion on “equivalent protection”, section 31 of this document.</p>
<ul style="list-style-type: none"> <li>• Population Exposure Assessment needs to incorporate 24 hour exposure that employs models of daily intra-urban population movement. (62)</li> </ul>	<p>The Measure requires that jurisdictions locate performance monitoring stations so that they represent the air quality likely to be experienced by the general population (Clause 13(2)) and requires that the extent to which populations are covered by each station be identified (Clause 17(2)(a)).</p> <p>The extent to which population exposure assessments are used will be at the discretion of individual jurisdictions.</p>



<p>Concern that the cost of performance monitoring will be passed on to industry were raised in a number of submissions, including:</p> <ul style="list-style-type: none"> <li>• Industry should not fund the exposure monitoring for the purpose of the Measure which go beyond demonstrating compliance. (101)</li> <li>• It is of concern to industry that the cost of monitoring these measures may be passed onto industry as part of licence conditions especially if continuous daily monitoring or monitoring networks are necessary to assess performance. (102)</li> <li>• It would be entirely inappropriate for industry to carry any costs associated with monitoring for compliance with the NEPM which is primarily focussed on public health issues. (107)</li> </ul>	<p>The direct costs from the NEPM will be met by jurisdictions and result from their obligations to monitor and report against the NEPM goal.</p> <p>The extent to which jurisdictions change their air quality management programs to meet the NEPM goal will vary but any costs to industry would only flow from decisions by jurisdictions to implement new controls.</p>
<ul style="list-style-type: none"> <li>• The essence of this NEPM will be consistency of monitoring. Unless a very detailed study of the air flow around and in the immediate vicinity of the sampling point is carried out, the results might be inconsistent. (65)</li> </ul>	<p>To provide consistency in monitoring, the Measure includes monitoring and reporting protocols. The protocols cover a range of technical issues including siting, sampling, measurement, quality control and validation.</p> <p>See also discussions under “Peer Review Committee”, Section 26 of this document</p>
<ul style="list-style-type: none"> <li>• It is hoped that residential population centres receive adequate monitoring under the necessary monitoring strategy. (83)</li> </ul>	<p>The primary objective of the monitoring is to provide data for each pollutant that are as representative as possible of residential exposure of the general population.</p>
<ul style="list-style-type: none"> <li>• Include a requirement for personal monitoring studies to be carried out in order to assist the assessment of the significance of performance against standards. Use the data in the review of these standards as well as in setting any other future ambient air standards. (87)</li> </ul>	<p>Personal monitoring studies are not covered under the scope of this Measure.</p> <p>In responding to the independent inquiry into “Urban Air Pollution In Australia” the Commonwealth has allocated resources under the National Heritage Trust to promote research into key areas relevant to air quality.</p>
<ul style="list-style-type: none"> <li>• Urge that the performance of "performance monitoring" be reviewed at least annually and necessary infrastructure re-configured where appropriate to ensure delivery of effective levels of monitoring. (6)</li> </ul>	<p>Each jurisdiction must give a report to Council each year that must include assessment of performance against the standards and goal. Jurisdictional monitoring plans will be assessed by the PRC and approved by all jurisdictions.</p>
<ul style="list-style-type: none"> <li>• Detailed long-term time-series data must</li> </ul>	<p>Each jurisdiction must develop a monitoring</p>

<p>be the aim; not a listing of exceedences of a goal or goals.</p> <ul style="list-style-type: none"> <li>– such a data set is essential for establishing and interpreting pollutant trends.</li> <li>– simultaneous measurement data for the constellation of pollutant concentrations and meteorology is essential at each monitoring site. The availability of simultaneous data is essential to Observation Direct Modelling interpretations.</li> <li>– the maximum appropriate time interval for recording measured air quality data is 10 minutes.</li> <li>– meteorological measurements at each air quality monitoring site, and more extensively across each airshed, are essential for classification of pollution events and to establish the windfields. (160)</li> </ul>	<p>plan and provide a report to Council each year. The development of a consistent reporting format will be a central task of the Peer Review Committee. The issues raised in this comment will be considered in devising the reporting format. Clause 15 of the Measure also notes the importance of trend stations to develop long-term time-series data.</p>
<ul style="list-style-type: none"> <li>• The siting of networks must be based on the characteristics of each airshed. these can be established by a protocol for determining the number of stations and their location. This protocol should be based on: <ul style="list-style-type: none"> <li>– prognostic network design;</li> <li>– evaluation of the coverage achieved by monitoring network stations existing in the airshed; and</li> <li>– Space-State and cluster analysis within the Observation Directed Modelling framework.</li> </ul> </li> <li>• distinguishing general changes to an airshed from those due to nearfield emissions. (160)</li> </ul>	<p>Technical issues relating to the siting and operation of monitors under the Measure will be addressed by the Peer Review Committee (PRC) in developing its advice for NEPC Committee (see Section 26 of this document).</p> <p>Clause 10(2) requires that each jurisdiction submit its monitoring plans to Council. Plans will initially be assessed by the PRC in providing its advice to NEPC Committee.</p>
<ul style="list-style-type: none"> <li>• A satisfactory level of data quality requires: <ul style="list-style-type: none"> <li>– data audit integral with data capture together with security for data editing</li> <li>– minimal amounts of instrument system downtime</li> <li>– interstate cross referencing of monitoring station calibrations to avoid systematic differences/errors occurring across</li> </ul> </li> </ul>	<p>The accreditation process under the NEPM is aimed at ensuring a consistently high standard of monitoring and will ensure that the air quality data obtained at performance monitoring stations are comparable across all jurisdictions.</p>

jurisdictions. (160)	
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### 8. Methods of measuring concentrations of pollutants (Clause 11)

COMMENT	RESPONSE
<p style="text-align: center;"><b>Clause 11(b)</b></p> <ul style="list-style-type: none"> <li>• Clause 11(b) "measured by other methods approved by Council" should be changed to read "interpolated by other methods approved by Council". (75)</li> <li>• The use of methods other than standard monitoring is allowed only where monitoring is not practical because of a region's size. This is more restrictive than as described on p.56. It is suggested that the words "because of a region's size" be omitted from clause 11, allowing the use of alternatives where monitoring is not practical for any reason. (103, 146)</li> </ul>	<p>The text of Clause 11(b) now reads</p> <p><i>“(b) is to be assessed means that provide information equivalent to measurements which would otherwise occur at a performance monitoring station.</i></p> <p><i>Note: These methods could include, for example, the use of emission inventories, windfield and dispersion modelling, and comparisons with other regions.”</i></p>
<ul style="list-style-type: none"> <li>• Where modelling is used as a surrogate, it is necessary to estimate the exceedence frequency likely to be equivalent to the allowed number of days per year of the exceedence (which allows anything between 1 - 24 hours per day). In Victoria, 9 hours per year has been used as equivalent to the allowed 3 days per year for SO<sub>2</sub> and NO<sub>2</sub>. A different equivalence would be required for different pollutants and point and area sources. As the NEPM standards are likely to be used in State plume calculation procedures, it is desirable for these details to be decided and standardised throughout Australia as soon as possible. (103, 140, 146)</li> </ul>	<p>This issue will be referred to the PRC, and considered by jurisdictions in developing their monitoring plans.</p>
<ul style="list-style-type: none"> <li>• The measurement method options are unsuitable as they are too broad ranging to predict the actual consequences of the proposed Measure. (101, 169)</li> </ul>	<p>It is not clear if the authors are referring to the instrumentation or its siting or network configuration. Measurement will be conducted in accordance with accepted standards to ensure consistency and comparability.</p>

### 9. Accreditation of performance monitoring (Clause 12)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Strongly opposes any requirement for NATA accreditation of ambient air quality monitoring. Accreditation is a costly process, which is not the most effective means of improving data quality. (99)</li> </ul>	<p>The accreditation process under the NEPM is aimed at ensuring a consistently high standard of monitoring. It ensures that the air quality data obtained at NEPM performance monitoring stations are comparable across all jurisdictions.</p> <p>Clause 12(2) allows for the use of alternatives to NATA accreditation.</p>

### 10. Location of performance monitoring stations (Clause 13)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The emphasis on the pollutant receptor rather than the pollutant source is welcomed and should be reflected in the placement of monitoring sites and their sampling inlets. (107)</li> <li>The siting of monitoring stations for the purposes of this NEPM must be such that they represent the air quality to which the population is generally exposed. (136)</li> <li>The emphasis on and location of performance monitoring stations goes a long way towards reducing concerns expressed in an earlier submission. (93)</li> <li>The location of stations is critical. Agree with the concept of properly sited performance monitoring stations. (87)</li> </ul>	<p>This support for the approaches adopted in the Measure is appreciated.</p>
<ul style="list-style-type: none"> <li>The revised draft does not provide any advice or instructions for state environmental authorities concerning their responsibility to monitor and manage locations best described as "peak". (71)</li> </ul>	<p>It is not the intent of the Measure to require measurement of peak exposure (see 'Monitoring - general', Section 7 of this document).</p>

### 11. Number of performance monitoring stations (Clause 14)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Recommend that Darwin and Alice Springs not be the only airsheds in NT. In particular, urge that mining towns at particular risk of pollution be monitored</li> </ul>	<p>Assessing performance according to the protocol is not intended to address monitoring needs associated with source impact management programs. Responsibility for</p>

**11. Number of performance monitoring stations (Clause 14)**

COMMENT	RESPONSE
<p>and required to report on compliance. As a start, Nhulunbuy, Jabiru, Tennant Creek and the communities in the vicinity of MacArthur River should be considered as potential airsheds. (82)</p>	<p>developing such programs remain the responsibility of jurisdictions. There will clearly need to be other management programs to deal with specific source impact issues in different regions. The Measure does not preclude monitoring in regions with populations less than 25,000 if the jurisdiction believes that such monitoring is necessary.</p>
<ul style="list-style-type: none"> <li>• The number of performance monitoring stations recommended is far too low, enabling poorly funded or slack jurisdictions the right not to carry out complete or worthwhile monitoring programs. (63)</li> <li>• NEPM justification for removing stations at odds with need for more stations in SE Queensland. (36)</li> </ul>	<p>Additional stations may be required where pollutant levels are influenced by local characteristics such as topography, weather or emission sources. Each jurisdiction is required to submit monitoring plans to Council.</p>
<ul style="list-style-type: none"> <li>• For clarity, the reference to the undefined stations should be deleted. Recommend that in clause 14 and 15, change 'stations' to 'performance monitoring station'. (87)</li> </ul>	<p>Clauses 14 and 15 have been redrafted to refer to 'performance monitoring station'.</p>
<ul style="list-style-type: none"> <li>• Performance monitoring stations should be established in several locations within an area to ensure more accurate recording of 'ambient air quality'. This would allow data collected from several performance monitoring stations to be pooled, providing an average figure and individual data sets from specific stations to be analysed in order to locate areas where exceedences are occurring. (162)</li> </ul>	<p>Additional stations may be required where pollutant levels are influenced by local characteristics such as topography, weather or emission sources.</p> <p>All monitoring plans will be submitted to Council following assessment by the PRC (experts panel). See Section 26 of this document.</p>

**12. Trend stations (Clause 15)**

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The issue of trend stations is confusing. Both the purpose of the trend stations and the difference between trend and performance monitoring stations needs to be clearly defined. (75)</li> </ul>	<p>Those monitoring stations used by the jurisdictions to monitor ambient air quality for the purpose of reporting on compliance with the NEPM standards will be designated “<b>performance monitoring stations</b>”. A “<b>trend station</b>” is a performance monitoring station that will be operated in the same</p>

## 12. Trend stations (Clause 15)

COMMENT	RESPONSE
	location for one or more decades.

## 13. Monitoring methods (Clause 16)

COMMENT	RESPONSE
<ul style="list-style-type: none"><li>There is little discussion of alternative monitoring methods or surrogates for monitoring. The applicability of DOAS and nephelometer measurement techniques for monitoring against concentration-based standards needs to be established by correlation and peak-to-mean studies. (103, 146)</li></ul>	<p>Alternative monitoring methods and surrogate methods are allowed by Clause 16 subject to meeting certain criteria.</p> <p>The NEPC Committee will use the PRC to advise on technical matters relating to monitoring and reporting.</p>
<ul style="list-style-type: none"><li>Are the jurisdictions monitoring these pollutants accurately? (54)</li></ul>	<p>Jurisdictions will be required to use Australian Standard methods or internationally recognised methods. This together with the requirement for an accreditation process will ensure a consistent high standard of monitoring. It ensures that the air quality data obtained at NEPM performance monitoring stations are comparable across all jurisdictions.</p>

## 14. Precision of the standards (Clause 17)

COMMENT	RESPONSE
<ul style="list-style-type: none"><li>The issue relating to precision and accuracy does not take into account the potential errors associated with the use of surrogate techniques such as emissions inventories and dispersion modelling. The errors associated with these techniques are difficult to define in terms of standard deviation and generally are closely correlated to the quality of input data and the knowledge and experience of the individual undertaking the analysis. Perhaps a typical error in terms of % should be adopted for the surrogate techniques. (75)</li></ul>	<p>It is recommended that the NEPC Committee ask the PRC to address this issue further.</p> <p>Note the Measure no longer requires contains a clause defining the precision of the standards. This issue will be addressed by the Peer Review Committee as necessary.</p>

<ul style="list-style-type: none"> <li>The three digit precision of the one-hour NO<sub>2</sub> standard is anomalous and either the level should be rounded or an exception stated in clause 17 of the NEPM. (103, 146)</li> </ul>	<p>This standard has been amended to 0.12 ppm.</p>
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**15. Assessment of performance against standards and goal (Clause 17) (Clause 18 in draft NEPM)**

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>In clause 18 (4) change the "error" to "increase in the error". (87)</li> <li>The demonstration of compliance is confusing. (101)</li> <li>The requirement that to meet the standard, the test results must be lower than the standard less the error of the test method is unduly harsh and unusual. (115)</li> </ul>	<p>These provisions have been simplified in the final Measure. The equivalent requirements are contained in Clause 17.</p> <p>The requirement that results must be assessed as 'not demonstrated' if the result plus the error of the test method exceeds the standard has been removed from the Measure.</p>

**16. Reporting (Clause 18, Clause 19 in draft NEPM)**

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Clause 19 (3) states that circumstances which lead to exceedences "may" be reported. It is recommended that this should be a mandatory requirement. (48)</li> </ul>	<p>Clause 18(4) now states that such circumstances "must be reported to the extent that such information can be determined".</p>
<ul style="list-style-type: none"> <li>NEPM make an effort to offer a clear document that calls for mandatory reporting and gives directives for standards and protocols. (128, 144)</li> <li>Regulatory mechanisms be developed to ensure all States comply with annual reporting and protocol. (128, 144)</li> </ul>	<p>All jurisdiction are committed to reporting in accordance with the Measure.</p> <p>As noted in Clause 18(1):</p> <p><i>"Each participating jurisdiction must submit a report on their compliance with the Measure in an approved form to Council..."</i></p>
<ul style="list-style-type: none"> <li>Recommend that NEPC and/or jurisdictions compile the monitoring data into an easily understandable form and make it available to the public <b>free of charge</b> (in both hardcopy and over the internet. (36, 61, 80, 82, 98, 105, 135, 142, 162)</li> <li>Clause 19 of the draft NEPM be amended to make more explicit the obligation on both the Council and jurisdictions to</li> </ul>	<p>The annual reports on compliance with the NEPM will be publicly available, free and widely distributed. (Section 23 &amp; 24 of <i>NEPC Act</i>.)</p> <p>Monitoring information may also be distributed by individual jurisdictions either through internet sites, publications or by the provision of monitoring data for inclusion on the National Pollutant Inventory web site.</p>

**16. Reporting (Clause 18, Clause 19 in draft NEPM)**

COMMENT	RESPONSE
<p>distribute annual monitoring reports as widely as possible [through EPAs, internet, mass media etc]. (36)</p> <p>Other options proposed for the distribution of the reports included:</p> <ul style="list-style-type: none"> <li>– The NEPM must ensure that NEPC and the jurisdictions distribute all monitoring data including annual monitoring reports as widely as possible eg via EPAs, Internet, print and electronic media, public libraries, respondents to NEPC workshops and discussion papers. (142)</li> <li>– Must include recognition of Community Right to Know. (105, 142)</li> <li>– Community support, input and awareness of the pollutant regulation process is essential to the attainment of the stated goal of the draft air NEPM, the protection of community health from air-borne pollutants. (162)</li> <li>– There needs to be more instantaneous reporting of data collected. The additional cost associated with running a real time web site (similar to the Aust Bureau of Meteorology) would be off-set by the additional benefits to the public in assessing actual air quality. (63)</li> </ul>	<p>Providing instantaneous data is beyond the scope of the Measure. As monitoring systems are developed, jurisdictions may be able to supply such data.</p>
<ul style="list-style-type: none"> <li>• Reporting should take into account the combination of pollutants in the atmosphere and their combined effects on health (cocktail effects). (54)</li> </ul>	<p>The consideration of synergistic effects does not relate to the monitoring and reporting against the NEPM standards.</p> <p>Synergism may be a relevant issue to consider when identifying the reason for adverse health events – this is beyond the scope of the NEPM.</p>
<ul style="list-style-type: none"> <li>• The NEPM should require reporting on peak sources in addition to ambient air pollution (54, 61, 80, 82, 127, 134, 135, 148)</li> <li>• The NEPM should <b>not</b> report on peak data. (87, 136)</li> <li>• The data should indicate trends, compliance with standards and any</li> </ul>	<p>The NEPM does not require monitoring at peak sources. Only data from performance monitoring stations must be reported for compliance with the NEPM.</p> <p>The extent to which reporting on peak source emissions occurs is an issue for the respective jurisdictions.</p> <p>It should be noted that NEPC has committed</p>



## 16. Reporting (Clause 18, Clause 19 in draft NEPM)

COMMENT	RESPONSE
<p>breaches. (80, 82, 98)</p> <ul style="list-style-type: none"> <li>Health data should be collected and correlated with air pollution episodes, peak stations etc, in order to contribute to Australia's knowledge of the acute and chronic effects of air pollution. (54, 61, 83)</li> <li>The draft NEPM and impact statement inadequately addresses the issue of exposure to high pollutant concentrations. This is of particular concern with regard to airborne particles and carbon monoxide which are highest near roads, not at locations proposed to be representative of the general airshed. (62)</li> <li>Disappointed that the NEPM is silent on the statistics of pollution that are to be reported, other than regarding exceedences of the specified thresholds. As indicated in the report of the National Inquiry into Urban Air Pollution (eg p.207), lower-level statistics such as median values are extremely useful. Indeed, to rely solely on numbers of exceedences can (and has) created a false sense of security, for the reasons explained in that report. (127)</li> </ul>	<p>to a number of “future actions” (see the Introduction chapter to the final impact statement) which will address a number of monitoring issues which go beyond the immediate scope of the NEPM. For example, it will address the need for monitoring of 10 minute sulfur dioxide and particles at PM<sub>2.5</sub>.</p> <p>The improved monitoring data gathered under this Measure will also allow improved research into the relationships between air quality and health outcomes. The annual reports will include a range of information, most importantly a summary of trends and the relationship between measured air quality and the national standards set by the Measure.</p>
<ul style="list-style-type: none"> <li>By adopting standards that are not based on an expert health evaluation, but rather on the possibility of attainment (as with SO<sub>2</sub> &amp; O<sub>3</sub>), there is a concern that the reporting of compliance inadvertently will lead the community to believe that the level of health protection from ambient air quality is better than the scientific health data would support. Thus, it is suggested that there is a potential for the community to be misled by the reports of compliance provided by jurisdictions. (48)</li> </ul>	<p>The standards were developed with due consideration of social and economic factors in addition to the health impacts as required by the <i>NEPC Act</i>.</p> <p>Public education material will be developed to explain what the NEPM does and how it affects air quality.</p>
<ul style="list-style-type: none"> <li>Why is the method of overall assessment of performance for regions with more than two performance monitoring stations not specified, or the layout of jurisdictions' reports? (170, 171)</li> </ul>	<p>It is not felt that it is necessary to specify the format of jurisdictional reports at this stage. NEPC members will work together to develop a consistent and informative reporting format for the Air Measure and for inclusion in the</p>

## 16. Reporting (Clause 18, Clause 19 in draft NEPM)

COMMENT	RESPONSE
	NEPC annual reports.
<ul style="list-style-type: none"> <li>Why does the draft Measure not stipulate that reports are to be tabled in Parliaments? (170)</li> </ul>	<p>Requirements to table NEPC annual reports are included in each jurisdictions' NEPC Act. Repeating these requirements in the Measure is considered unnecessary.</p>

## 17. Pollutants covered by Measure (Schedule 1)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Support for the inclusion of air toxics and other pollutants as sufficient information and monitoring capacity is developed. (45, 54, 135)</li> <li>Given the limited scope of the present draft NEPM, the outcome will fail to achieve its objective of "the adequate protection of human health and well-being". Hazardous pollutants with known carcinogenic effects, eg benzene, toluene and other hydrocarbons have been ignored. (61)</li> <li>US EPA requires monitoring of 189 hazardous substances that are known to cause adverse health effects. Monitoring and reporting of these pollutants should also be adopted by Australia. (142)</li> <li>The NEPM should include toxic chemicals that are used for the treatment of water in cooling systems, (ie. chromates, tributyl tin, ethylene glycol, organobromides, organochlorides, anti-scaling chemicals, etc). (69, 78, 86)</li> <li>Certain pollutants that are currently accepted to be of far greater significance than compounds such as lead and carbon monoxide (eg. VOC species such as benzene and 1,3 butadiene) are not dealt with in the NEPM. While accepting that there may be Insufficient background information to allow a suitable guide level to be established at present, feel that the NEPM should include a target for investigating "newer" pollutants such as PM<sub>2.5</sub> and VOCs. (75)</li> </ul>	<p>In setting the scope for the NEPM it was agreed that it should address the six core pollutants internationally recognised as being the main indicators of air quality and which also have a major influence upon human health.</p> <p>These six core pollutants were also chosen on the basis that sufficient existing information was available to set standards without the need for detailed research.</p> <p>Air toxics and other pollutants may be included as a future NEPM or amendment to this Measure in the future.</p>

### 17. Pollutants covered by Measure (Schedule 1)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of specific additional pollutants were proposed including:               <ul style="list-style-type: none"> <li>- Benzene (39, 45, 54, 61, 63, 108, 135)</li> <li>- Toluene (45, 54, 61, 63)</li> <li>- Xylene (45)</li> <li>- Kerosene (153)</li> <li>- PAHs (86, 142)</li> <li>- VOCs (86, 142)</li> <li>- Aluminium (30)</li> <li>- Dioxins (135)</li> <li>- 1,3-butadiene (75)</li> <li>- heavy metals other than lead (86)</li> <li>- biological pollutants (86)</li> </ul> </li> </ul>	

### 18. Standards and goal (Schedule 2)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• All of the standards should be defined in a consistent manner in terms of SI units. (75)</li> </ul>	<p>The use of 'ppm' has been maintained for the measurement of the gaseous pollutants so as to avoid having to correct for variations in temperature. This is entirely consistent with the Australian Standards.</p>
<ul style="list-style-type: none"> <li>• The draft NEPM and impact statement does not go far enough to protect the air we breath. The NEPC must take a harder line on air pollution issues and do more to influence government policies. (153)</li> <li>• Support for the adoption of US EPA NAAQS standards for one or more of the NEPM pollutants. (88, 145, 101)</li> <li>• There is no consistent rationale for the choice of the proposed standards. Some appear to be set well below any observed adverse effect level, while some are not. (6, 135)</li> <li>• In relation to 'standards shopping':               <ul style="list-style-type: none"> <li>- do not compare the NEPM levels against NHMRC or WHO Europe guidelines as these were developed based solely on health effect without consideration of the</li> </ul> </li> </ul>	<p>The standards in the Measure reflect a range of considerations including health and environmental impacts and practicability and cost issues. The Measure represents a significant step forward by introducing the first national air quality standards.</p> <p>Each pollutant was considered individually given that the health effects, exposure levels, thresholds (identified, apparent, no identified thresholds) health costs, economic costs, community costs, epidemiology studies and chamber studies vary considerably.</p> <p>Consideration was also given to relevant international approaches to standard setting. This information was then applied to the Australian context eg. environmental, economic and social, as required under the NEPC Act. Accordingly, it was considered appropriate that the rationale for setting each</p>

### 18. Standards and goal (Schedule 2)

COMMENT	RESPONSE
<p>economic or social impact</p> <ul style="list-style-type: none"> <li>- in the absence of better scientific information, the US EPA NAAQS should be used for comparison as they are the only national standards we are aware of that has a similar level of legal mandate. (88, 145)</li> </ul>	<p>standard reflect the ‘uniqueness’ of each pollutant.</p>
<ul style="list-style-type: none"> <li>• It would be better to have a range of standards such as the National Air Quality objectives from Environment Canada. These are:               <ul style="list-style-type: none"> <li>- <b>Desirable:</b> are considered to be sufficient low that no impact should result from exposure.</li> <li>- <b>Acceptable:</b> provides adequate protection.</li> <li>- <b>Tolerable:</b> air quality is poor and the health of the general population is threatened and immediate control action is warranted. (111)</li> </ul> </li> </ul>	<p>The Canadian approach was not considered appropriate for providing adequate direction to jurisdictions in achieving the health protection sought.</p>

### 19. Australian Standards methods for pollutant monitoring (Schedule 3)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The proposed standard for particles will require changes to the type of measuring devices currently in use (Inspirable particle) validation in respect of decreased measuring standard (refer to AS2985-1987). (51)</li> </ul>	<p>The NEPM applies to ambient air and is not expected to cover occupational health and safety standards.</p>
<ul style="list-style-type: none"> <li>• Standard AS 4013 be amended as and when deemed necessary to provide for the tightening of emission standards and to provide for the control of old wood heaters. (29)</li> </ul>	<p>In situations where the Australian Standard is not appropriate, the Measure allows for the adoption of appropriate international standards or methods.</p>

**Part 2: NEPM Process and Generic Issues**

**20. NEPM development process – Air NEPM**

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• Concerns about the inadequacies of the Air NEPM development process included that it:               <ul style="list-style-type: none"> <li>- lacked transparency; (73, 98, 101, 108, 127, 136)</li> <li>- used an unreasonably tight timeframe; (36, 73, 75, 80, 94, 98, 136)</li> <li>- was inadequately resourced/funded; (73, 136)</li> <li>- ran the six consultancies simultaneously rather than sequentially; the consequence being that some contributions were made without access to supposedly earlier ones due to time overruns; (6, 62, 73, 136)</li> <li>- lacked scientific rigour; (73) and</li> <li>- major concerns that the process of developing the Measure has not complied with the NEPC legislation. (100, 114)</li> </ul> </li> <li>• Comments critical of the Air NEPM development process included:               <ul style="list-style-type: none"> <li>- Process has lacked sufficient transparency and NGO participation. (101)</li> <li>- Process should follow far more closely the transparent, cooperative and scientifically based approach intended by the IGAE. (73)</li> <li>- Most of the problems encountered could have been avoided by including a more realistic timeframe for the development of the NEPM. (73, 136)</li> <li>- The development of this NEPM has been a rushed and unsatisfactory affair, with insufficient time for adequate reflection or public comment. (80)</li> <li>- Because of external pressures, there was limited time allowed for preparation of technical reports which adversely impacted on quality. (36)</li> </ul> </li> </ul>	<p>In 1994 the NEPC Act indicated that Ambient Air Quality would be considered. This provided an opportunity for interested parties to make their views known to jurisdictions at an early stage. The formal development of this NEPM began in June 1996 and deliberately chose the six “criteria” pollutants because of the large body of Government/academic/industry data available and the recognition that these pollutants were important from a health, community, economic and perspective.</p> <p>Two years elapsed between the initiation of the process and the final decision on this NEPM. The original timetable was shorter and was expanded to allow appropriate consideration of all aspects of the NEPM.</p> <p>Approximately \$1 million has been allocated in direct funding to this NEPM. In addition, jurisdictions contributed resources in the form of data collection/generation, seconding of officers, consultation processes and policy input. Industry and community/conservation groups contributed significant resources in the form of additional data and comments and reviewing of material etc.</p> <p>Given the fact that the bulk of the data used for this NEPM was already available this budget was considered to be adequate. It is arguable whether extra resources would have resulted in a more robust set of data on which to base decisions. The NEPM review process will address this issue for future development of NEPMs.</p> <p>Intense consultation on this NEPM was delivered through the following processes:</p> <ul style="list-style-type: none"> <li>• NGO Advisory Group;</li> <li>• Key Stakeholders Consultative Forum;</li> <li>• Release of a Discussion Paper in June 1997 and key stakeholder/public meetings in</li> </ul>

## 20. NEPM development process – Air NEPM

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>- The process was too rushed (94, 115)</li> <li>- Rushed process led to documentation and development of arguments which in some instances was inaccurate and the logic not transparent. (94)</li> <li>- Failure to adequately engage stakeholders in defining the scope of the proposed NEPM. (73, 87, 115)</li> <li>- Supportive of the need for further consultation to give more stakeholder ownership. (104)</li> <li>- AIP are concerned that the spirit of the consultation protocol agreed between industry, community NGOs and NEPC SC was not followed. During the critical stage of assessing the consultants' reports and drafting the NEPM and the impact statement, there was no discussion of the content or the alternative possibilities of either document. Even at the stage where the documents were drafted and circulated to jurisdictions for comment, secrecy provisions were attached to the extent where effective consultation could not take place. The secrecy component of the NEPM development process needs to be overcome. (87, 115)</li> <li>- The consultation process throughout this NEPM has been the poorest effort we have encountered over the 7 years our involvement with air quality issues. (128, 144)</li> <li>- The failings in the process have caused considerable distrust amongst the key stakeholders about the final decisions. (98)</li> <li>• Following the public consultation phase the revised draft NEPM should be recirculated to stakeholders for further consideration. (87)</li> <li>• The Australian Chamber of Manufacturers (136) made a number of comments relating to this issues including:</li> </ul>	<p>every jurisdiction (2 months consultation);</p> <ul style="list-style-type: none"> <li>• Release of a formal draft NEPM and impact statement for Public consultation and meetings in every jurisdiction – advertisement in all newspapers and direct mail and posting on Internet (3 month consultation);</li> <li>• Consultation by individual jurisdictions on the NEPM with key stakeholders; and</li> <li>• Project Team meetings with key stakeholders and attendance at conferences/seminars.</li> </ul> <p>The release of two draft versions for public comment as well as the range of other avenues for stakeholders to input views to the process goes well beyond the requirements of the NEPC Acts for Measure development. The process adopted is considered to have offered more than adequate opportunity for stakeholders to input to the development of the Measure.</p>

## 20. NEPM development process – Air NEPM

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>- It appears external political pressures may have led to a minimalist approach being taken to consultation. Only the consultation legally required by the NEPC Act was undertaken, and key parts of the consultation have been inadequate.</li> <li>- While processes have improved recently, the NEPM is built on potentially flawed foundations, which ultimately may seriously impact on the outcomes of the NEPM.</li> <li>- A total of \$0.5 million was originally set aside for the Air NEPM project. This amount is a tiny fraction of that set aside for comparable processes overseas. This lack of funds has proved to be a major barrier to achieving satisfactory background technical reports and a satisfactory outcome. While resources have increased, given the multi-billion dollar costs expected to be incurred through implementation of the proposed NEPM, an expenditure by Government in the range of \$50 - \$200 million on the NEPM would be consistent within a nominal 10% of the total costs to the community.</li> </ul>	
<ul style="list-style-type: none"> <li>• It concerns me that the draft, as published, omits such critical considerations as the details of station siting and data reporting, leaving them to a process which is not transparent, and has too little technical expertise. (127)</li> </ul>	<p>The PRC will be an experts committee drawing from jurisdictions and the NGO sector. Furthermore, it is expected that the PRC will be utilising working groups so that additional expertise outside the PRC can be drawn into the process as appropriate.</p> <p>Also see Section 26 of this document which addresses the comments/responses relating to the Peer Review Committee.</p>
<ul style="list-style-type: none"> <li>• Overall, the development and implementation of the NEPM is a step in the right direction, and in particular will assist in harmonising standards between states. (75)</li> </ul>	<p>Support for the Measure is appreciated.</p>

## 21. NEPM development process – Future NEPMs

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• With regard to the 'Quality of the Process', we recommend that the essentials of a "best practice" NEPM development include:               <ul style="list-style-type: none"> <li>- provide adequate time for consultation</li> <li>- provide clear objectives, scopes and cost/benefit analyses</li> <li>- full disclosure and review of scope of work for consultants</li> <li>- underpin with sound science appropriately referenced with full acceptance and application of risk-based assessments for all NEPMs</li> <li>- transparent and agreed process for the selection of the peer review panels</li> <li>- provide better process transparency through appropriate and regular consultations, particularly with key stakeholders</li> <li>- full disclosure and review of the technical reports themselves</li> <li>- full disclosure and review of all substantive peer review comments</li> <li>- fund the process in proportion to the potential costs of implementation. (88, 145)</li> </ul> </li> <li>• Submission 87 raised similar issues to those attributed to 88 above. In addition, they requested that following the receipt of public comments and the incorporation of changes to the NEPM, circulate a consultation draft for NGO information before preparing the confidential NEPM for NEPC consideration. (87)</li> <li>• Industry and other stakeholders should have the opportunity to be involved in the development or modification of Measures from the point of inception. (169)</li> <li>• In future a final step should be included which involves working with the States</li> </ul>	<p>The NEPC Service Corporation is conducting a review of the NEPM development process. All comments received on the NPI and the Air NEPM will be considered in NEPC's deliberations on this matter.</p> <p>These comments are appreciated and will assist to improve future NEPM development processes.</p> <p>A closer working relationship between the jurisdictions, industry and the broader community to develop more accurate assessments of the costs and benefits of Measure proposals would be of benefit to all parties. A more co-operative approach to developing such assessments early in the process would be especially beneficial to future Measures.</p> <p>Early involvement in the Measure development process is supported, and NEPC is in a much better position to make those early contacts with stakeholder groups following the first few Measure development processes.</p>



## 21. NEPM development process – Future NEPMs

COMMENT	RESPONSE
and, where appropriate, with relevant industries to assess and accurately cost the various options. (115)	

## 22. Health assessment

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>It was plainly and predictably impossible for health risks to be assessed, management options and the other consultancies to be carried out, until the health effects consultancy and TRP had completed their work. This timing effect has resulted in the conclusions being of a much lower standard than the raw data and information actually generated by the consultants and TRPs. (73)</li> <li>The health review which was one of the first reports required in the interdependent process, was not completed in time for input to the subsequent reports. This resulted in unreasonable and unrealistic assumptions being made in the exposure assessment. (136)</li> </ul>	<p>The exposure assessment methodology used is valid.</p> <p>A significant level of information was available to consultants to undertake their consultancies.</p> <p>Any shortcomings in the exposure assessment are ultimately not a result of delays in the health review. The problems encountered were a result of limitations in the monitoring data (lack of sufficient volume of data, and variability in the representativeness of the data which was provided).</p> <p>It would be more accurate to suggest that the failure to develop a detailed quantitative exposure assessment provides clear justification for the implementation of the NEPM; since the NEPM will ensure appropriate comparable data is available from performance monitoring stations in all jurisdictions, enabling future reviews of the NEPM standards to include consideration of more refined exposure assessments.</p>
<ul style="list-style-type: none"> <li>Concerned that the standards are less rigorous than those recommended by the expert consultant to this process, Dr Streeton. (36, 135, 162)</li> <li>It is recommended that the proposed air quality standards contained in Dr Streeton's report be adopted for each pollutant. Where this advice is not adopted, contrary medical or technical evidence must be provided for consideration and consultation. (36, 80, 82, 98, 105, 128, 144, 148)</li> </ul>	<p>The health expert's views were a major consideration when evaluating options for standards for each pollutant. However, under Section 15(b) of the NEPC Act, the environmental, economic and social impact of the Measure must also be considered. The Health consultant and TRP were tasked with reviewing the health impacts of the pollutants in isolation – without consideration of other factors (eg. economic and social impacts, etc).</p>
<ul style="list-style-type: none"> <li>TRP is highly critical of Health consultant's report which contains completely false</li> </ul>	<p>There were some criticism from the TRP of the consultant's report, particularly with</p>

## 22. Health assessment

COMMENT	RESPONSE
statements. (73)	respect to the omission of some specific references and the absence of relative weightings between studies. However, the final recommendations (as identified in the impact statement) from the TRP did not differ significantly from those of the consultant.

## 23. Exposure assessment

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• MIM believes that the Exposure assessment is invalid. MIM submits that the NEPC should take into account additional comments on the exposure assessment and the estimated health benefits. (114)</li> <li>• There is a lack of transparency in the exposure assessment. (158)</li> <li>• Validation procedures for modelling should be included, ie some monitoring investigations should be carried out in those data sparse regions to lend greater credibility to the exposure assessment modelling and its assumptions. (158)</li> </ul>	<p>It is expected that there will be some dispute about data and its interpretation and this is not unusual in technical matters particularly those involving complex modelling.</p> <p>The methodology used in this consultancy and the results extracted from the data were reviewed by a TRP. NEPC took the TRP's views and those of the consultant into account when developing the standards. The impact statement identifies where the results of the consultancy and TRP review were equivocal.</p>
<ul style="list-style-type: none"> <li>• Population exposure estimates for ozone and nitrogen dioxide vary substantially from other published reports and this appears to be because monitoring data from different time periods have been used in the assessments. This highlights the fragility of the assessments when dealing with exceedences which only occur infrequently. [Non-consensus] (94)</li> </ul>	<p>For the exposure assessment the preference was to use epidemiological results to determine concentration-response curves, however, this data was only available in the cases of sulfur dioxide and particles. For the other pollutants, clinical or laboratory investigations were used.</p> <p>It is not possible to respond to the comment that "population exposure estimates for ozone and nitrogen dioxide vary substantially from other published reports" as these reports were not cited in the submission [94].</p> <p>It is agreed that in some instances the availability of baseline data is lacking. Again this would not appear to be justification for delaying making the NEPM but instead argues the need for the Air NEPM and other</p>

### 23. Exposure assessment

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The methods for calculating person events needs to be clarified. (158)</li> </ul>	<p>measures so that consistent, comparable data is collected and reported in all jurisdictions.</p> <p>Method:</p> <ol style="list-style-type: none"> <li>The starting data for each measurement station were three annual cumulative frequency distributions that link the concentration of a particular pollutant with the number of occurrences. These were averaged to produce a table linking concentration with number of events per year. One such table was produced for each monitoring station in the study region.</li> <li>Each region is grided into 1 km x 1 km squares, and the population in each square determined.</li> <li>Calculations were done by choosing a concentration of interest, then estimating the number of events per year for each grid square. The squares containing a measurement station used the value from the measurement station. The events per year in other grid squares were interpolated using an interpolation method that used all the stations within a region of interest, but also took into account the distance to a station (one-on-R-squared interpolation).</li> <li>The <i>Persons-exposed</i> were calculated by multiplying the population and the number of events for each grid square and adding them up. This was called Repetitious Exposure Assessment.</li> <li>The <i>Persons-affected</i> were calculated by performing one-on-R-squared interpolation of the annual maximum concentrations at each monitoring station. This produced a map of the expected worst case concentration for each location in the study region; which was then compared with the concentration of interest. Where the predicted worst case concentration exceeded the chosen concentration, then that grid cell was considered to have “people affected” (that is, affected at least</li> </ol>

### 23. Exposure assessment

COMMENT	RESPONSE
	<p>once a year by such a concentration). The population in all such affected grid cells was summed to produce a measure of persons affected.</p> <p>6. The average number of events per year was determined by summing the events per year for each grid square, and averaging them.</p>

### 24. Risk assessment

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Problems with underlying concepts and methodology have resulted in a Measure which fails to achieve the NEPM objective of "equivalent protection", and which does not address the principles of sustainable development. Equivalent protection can be properly achieved only through the use of risk assessment methodologies. The impact statement appears to have initially recognised the scientific validity of a risk-based approach by commissioning a Health Risk Evaluation Study. However, it was unable to be used because of poor initial study design, and inadequate timing and funding. By following a NOAEL, the Measure effectively imposes a zero-risk criterion for each parameter. If the current proposed standards are not reassessed on a risk basis, it is recommended that there should be a second level specified as a "limit" value, based on equivalent risk. (100)</li> <li>By not carrying out scientific risk assessments equivalent to the procedures recommended by the USA National Research Council of the National Academy of the Sciences and by not obtaining from the States the implementation actions necessary to achieve the standards, this obligation of the NEPC Act has not been addressed. (114)</li> </ul>	<p>"Equivalent protection" is addressed under discussion of the draft clause 5 (see Section 4, above).</p> <p>In developing the standards every attempt was made to deliver a detailed risk assessment for the proposed standards. In evaluating the consultancies, it was ultimately decided that there was insufficient data to support the use of a risk assessment in the impact statement. However, the failure to deliver a risk assessment does not undermine the validity of the standards, given that:</p> <ul style="list-style-type: none"> <li>(i) a proven hazard exists for each of the pollutants;</li> <li>(ii) exposure pathways can be identified for each of the pollutants; and</li> <li>(iii) given 'risk' is a function of exposure and hazard, each of the pollutants will present a risk to the community. The fact that the level of the risk cannot be quantified is not sufficient to preclude the identification of standards particularly given the IGAE's support for the "precautionary principle"</li> <li>(iv) pollutants with no threshold, such as particles, are reported as having a consistent risk of 1% increase in daily mortality for every 10 µg/m<sup>3</sup> increase in daily PM<sub>10</sub> concentrations.</li> </ul> <p>There is no requirement that NEPMs adopt any particular methodology in developing</p>

## 24. Risk assessment

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>No analysis of risk evaluation appears in the impact statement. Until such time as the NEPC conducts a reasonable risk assessment, NEPC should not make a PM<sub>10</sub> standard which is inconsistent with the Queensland EPP. (102)</li> <li>Recommend a thorough evaluation of the risk management or minimisation approach for the Air NEPM should be conducted as conducted as required under the NEPC Act (1994). (88, 145)</li> <li>The use of probabilistic risk assessment is inconsistent with that being developed in the carcinogenic risk assessment of soil contaminants by the NHMRC. (158)</li> <li>Recommends that NEPC should conduct an open review of risk assessment methodologies to determine the most appropriate methodologies to determine the most appropriate approach for Australia. (100)</li> <li>The failure to apply a risk-based approach has resulted in inconsistencies and unsatisfactory outcomes for stakeholders. The standards should be re-examined based on risk assessment. (169)</li> </ul>	<p>standards.</p> <p>NEPC has committed to “establish a taskforce to investigate a risk assessment approach to guide the application of standards, to report within 3 years” (see “Future Action” in the Introduction chapter to the final impact statement).</p>
<ul style="list-style-type: none"> <li>The Health Risk Assessment consultants said that the conclusions developed by the health consultant are largely incomplete, and so they had to "make assumptions that can be used for an initial attempt to develop risk estimates". It is unreasonable to expect society in general or industry in particular to devote significant resources to meet any standard based on such shaky grounds. (73)</li> </ul>	<p>Section 3 of the IGAE requires that amongst other issues, consideration be given to the precautionary principle and that the polluter pays (to quote the IGAE: “those who generate pollution and waste should bear the cost of containment, avoidance, or abatement”).</p> <p>The proposed standards are not inconsistent with those made in recent times by the WHO, UK and EC.</p>

## 25. Peer review / Technical Review Panels (TRPs)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Restrictions placed on the free flow of information at all stages of the process was</li> </ul>	<p>For practical purposes rough drafts of consultancy reports etc were not made publicly available. Once these reports were</p>

## 25. Peer review / Technical Review Panels (TRPs)

COMMENT	RESPONSE
<p>a serious barrier to effective consultation, eg:</p> <ul style="list-style-type: none"> <li>- TRP members were required not to distribute copies of reports to others for technical review and discussion;</li> <li>- comments made by TRP members have not been made public. Comparable processes in the USA, for example, would involve open discussion of these technical issues;</li> <li>- authors of technical reports were instructed they were under contract to NEPC SC and required not to discuss technical issues during the consultation phase of the project; and</li> <li>- authors of technical reports were instructed not to speak at technical workshops.</li> </ul> <p>These restrictions have seriously affected the ability of stakeholders to understand the technical work undertaken and be able to comment on the work in a meaningful way. This has created a high level of negative feeling about the process and heightened concerns about technical issues. (136)</p>	<p>reviewed by Technical Review Panels (TRPs) and subsequently finalised they were released to the NEPM advisory group and were made available to interested parties on request.</p> <p>A detailed discussion paper, which included a 'notional' NEPM and all available information pertinent to this NEPM, was released in June 1997 for discussion and comments and additional data were sought from key stakeholders. The formal draft NEPM &amp; impact statement was subsequently released in November 1997 having taken into account the views of stakeholders.</p> <p>When developing the Terms of Reference for the TRPs it was considered appropriate that their report not be made public so as to allow full and frank discussion of relevant issues. The TRP members accepted this as a condition of their appointment. It was considered inappropriate to reverse this decision. Where the TRP comments had a direct effect on the standard setting process reference was made to this in the impact statement. This approach will be reviewed as part of the NEPM Review Process and it is expected that consideration will be given to releasing TRP review comments for future NEPMs.</p>

## 26. Peer Review Committee (PRC) – Jurisdictional Monitoring Plans

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The PRC should be identified in the text of the NEPM. (36, 80, 82, 87, 128, 144)</li> </ul>	<p>While the PRC is not mentioned in the Measure, it was established at the same time as the making of the Measure by a resolution of NEPC. The PRC will play a crucial role in providing expert advice on monitoring issues.</p> <p>Chapter 1 of the final impact statement addresses this issue further.</p>
<ul style="list-style-type: none"> <li>• NGO (industry and community group) participation should be included in the PRC. (36, 82, 87)</li> <li>• There is inadequate representation on the</li> </ul>	<p>The jurisdictions are committed to including 4 experts nominated by NGO groups on the PRC (comprising 2 industry representatives and 2 from community interest groups).</p>

## 26. Peer Review Committee (PRC) – Jurisdictional Monitoring Plans

COMMENT	RESPONSE
<p>proposed PRC. (101, 169)</p> <ul style="list-style-type: none"> <li>That the PRC be expanded to include at least one technical CSIRO nominee. (62)</li> </ul>	<p>The PRC will also include expert representatives from each of the jurisdictions and representative from local government.</p> <p>The CSIRO and the Bureau of Meteorology are both Commonwealth government instrumentalities. It will be up to the Commonwealth to determine its representatives on the committee.</p>
<ul style="list-style-type: none"> <li>Recommend that the terms of reference of the PRC be widened to provide them with the ability to commission studies. (62)</li> </ul>	<p>The PRC will not be able to initiate its own research agenda or commission studies in its own right. In the event that the PRC identified new issues which go beyond those previously identified by Council, the PRC will be required to seek authorisation from the Committee before pursuing these issues further.</p>
<ul style="list-style-type: none"> <li>I am incensed that the impact statement (p.54) claims that "Since ambient monitoring experience is largely found in the member government's [sic] jurisdictions it was not practicable to establish an external technical review panel". This sounds very much like the words of the member governments, who just might be a little biased. In reality, there is plenty of technical expertise in ambient air monitoring outside the member governments, many of which have emaciated or eliminated their scientific expertise. It is ridiculous to argue that we should trust the governments because they know best. (127)</li> </ul>	<p>As discussed above, the PRC will play a technical review role.</p>
<ul style="list-style-type: none"> <li>Also note that a Monitoring Committee has already been set up to advise NEPC. Apparently membership is confined to staff from the EPAs or equivalent from each jurisdiction. There are no community members on this committee, and the terms of reference for the committee have not been published. Such a closed process that is dealing with the vital task of monitoring is already causing mistrust within the community. (80)</li> </ul>	<p>The NEPC agreed to establish a PRC in making the Measure.</p> <p>The Monitoring Working Group, comprising jurisdictional representatives, was established as part of the process of developing the NEPM. Decisions relating to the establishment and approval of the NEPM monitoring networks will only occur after input from the PRC.</p>

## 27. Key stakeholders consultative forum

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Support the formation of the key stakeholders forum but the timeframe (1 month) available to them is too short. (87)</li> <li>Urge the NEPC to participate in any forums that the Key Stakeholders Consultative Forum Steering Committee runs, in order to ensure a belated transparency in decision making. (98)</li> </ul>	<p>NEPC was represented at all three meetings of the Stakeholders Consultative Forum.</p> <p>These meeting were held after the final public consultation phase (which ended 20 February 1998) and effectively meant that stakeholders had a almost 9 months to comment on drafts of the Measure and impact statement since their first release as discussion papers in June 1997.</p>

## 28. Exceedences

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The rational expression for maximum allowable number of exceedences is in terms of number of events. For instance, the four hour average ozone concentration should be permitted to be exceeded twice in a year, and not up to several times on any one day. Recommend that standards be expressed in terms of rolling averages, with the maximum permissible exceedence expressed in an equivalent number of events throughout the year, so as to more effectively represent the exposure of a population to a pollutant. (99)</li> </ul>	<p>The Measure (Column 5 of Schedule 2) requires reporting of exceedences in terms of the maximum number of allowed exceedences per year (eg. 1 day per year for ozone).</p> <p>The 4 and 8 hour averaging periods are based on 1 hour rolling averages (see note 3 to Schedule 2 of the Measure).</p>
<ul style="list-style-type: none"> <li>As indicated in the report of the National Inquiry into Urban Air Pollution (eg. p.207), lower-level statistics such as median values are extremely useful. Indeed, to rely solely on numbers of exceedences can (and has) created a false sense of security, for the reasons explained in that report. (127)</li> </ul>	<p>Clause 18 identifies the reporting requirements of the Measure. Further reporting of monitoring data by individual jurisdictions will take place as appropriate (see discussion on reporting above).</p>
<ul style="list-style-type: none"> <li>The NEPM should make no allowance for exceedences. (36, 128, 142, 144)</li> </ul>	<p>The inclusion of exceedence has been made to make allowances for the occurrence of extreme meteorological events.</p>
<ul style="list-style-type: none"> <li>We note that exceedences are counted primarily on a monitoring station basis, with provision for compliance assessment to be generalised to regional basis. In</li> </ul>	<p>Exceedences will be assessed against monitoring data from performance monitoring stations.</p> <p>This has been clarified in the revised text in</p>



## 28. Exceedences

COMMENT	RESPONSE
<p>some parts of the impact statement this is unclear and the statement "Assessment of performance is on a station by station basis at performance monitoring stations" does not appear to be supported in the Measure. (146)</p>	<p>Part 4 of the final Measure.</p>

## 29. Impact Statement (IS) – quality issues

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• MIM concerned lack of rigour and due diligence in addressing the considerations of mandated by the NEPC Act in preparing a draft NEPM and impact statement. It is has been obvious from the outset that insufficient consulting expertise and expert review were available to the Project Team. The lack of due diligence has resulted in draft proposals for sulphur dioxide, lead and particulate matter which when tested against the criteria of the NEPC Act are inappropriate.</li> </ul> <p>If implemented the Air NEPM would severely compromise the international competitiveness of MIM's operations, the export earnings that those operations generate and the job security of MIM's employees.</p> <p>The NEPC should disregard the impact statement in its deliberations on a NEPM, and</p> <ol style="list-style-type: none"> <li>a) conduct new studies directed at the mandatory consideration and a new impact statement; or</li> <li>b) make a NEPM by way of a guideline, goal or protocol. (114)</li> </ol> <ul style="list-style-type: none"> <li>• The poor scientific basis is not of sufficient quality to support the recommendations. Categorically cannot support the conclusions of the draft NEPM. (73)</li> <li>• The draft ignores key local information such as the extensive CSIRO/ANSTO</li> </ul>	<p>Each consultant was chosen through a competitive tendering process.</p> <p>Data was sourced through consultancies, direct approaches to industry, NGO groups, advisory bodies, technical review panels, government agencies, professional bodies, consultative forums, key stakeholder meetings, advertised public meetings and through written submissions. It was recognised that even with this large body of data there were still some information gaps and uncertainty on some technical matters. All the data available for use in the Measure development process was reviewed by the Project team at each iteration of the process.</p> <p>During the Discussion Paper and formal Draft NEPM and impact statement consultation phases stakeholders were asked to comment on areas where they believed data was not properly considered. Where such comments were made the data was subsequently reviewed and incorporated where appropriate. Any uncertainty in regard to available data was highlighted in the impact statement. While acknowledging such uncertainties it was considered they were not of such serious consequence that they would preclude reasonable decisions being made on the setting of air quality standards.</p> <p>The impact statement and discussion papers reflected and documented the information available to the NEPC. These documents were put into the public domain with stakeholders specifically requested to review,</p>

## 29. Impact Statement (IS) – quality issues

COMMENT	RESPONSE
<p>aerosol project on fine particulates in NSW. This is a high quality project, probably the most comprehensive fine particle database ever generated in Australia, and it is astonishing that it continues to be ignored. (73)</p>	<p>correct and add to that information base. The final impact statement reflects the range and quality of information made available to the NEPC by stakeholders as well as that developed by consultants.</p> <p>CSIRO/ANSTO studies and a range of other Australian studies were considered during the development of the Measure.</p>
<ul style="list-style-type: none"> <li>• The completeness of the impact statement is in question since some of the consultancy studies were not available on time. Of particular concern is that "the outcomes of the health risk evaluation have not been used in the development of the draft NEPM and impact statement".</li> <li>• The impact statement also admits that the pollutants can adversely affect human health in combination as well as individually but that for ambient air quality standards (as this NEPM is) they have been assessed separately only. This has implications for the adequacy of the standards chosen. (135)</li> </ul>	<p>These issues are addressed under comments on "Health Assessment" and "Exposure Assessment"</p>
<ul style="list-style-type: none"> <li>• More work to be done to secure best practice. (6)</li> </ul>	<p>This is an implementation issue which all jurisdictions are aware of and pursuing.</p>
<ul style="list-style-type: none"> <li>• Generally, regarding the impact statement, there seems to be a lack of perspective in the presentation of the problem. It would help to convey to the public some idea of the magnitude of problem and the importance of the NEPM if your document: <ul style="list-style-type: none"> <li>- acknowledged that Australia's urban air quality is better than that of most other countries</li> <li>- noted that significant progress has already been made in cleaning up the atmosphere over the last 40 years, especially in relation to point sources of SO<sub>2</sub> and lead</li> <li>-stated that atmospheric events play an important role in determining whether, on</li> </ul> </li> </ul>	<p>The final impact statement improves substantially upon the draft impact statement both in terms of presentation and additional information provided through stakeholder input. The impact statement also refers to other sources of information on air quality.</p>

## 29. Impact Statement (IS) – quality issues

COMMENT	RESPONSE
<p>any given day, air quality in Australian cities is satisfactory or not. (118)</p> <ul style="list-style-type: none"> <li>The paper does not include any graphical representation of trends in air quality over recent years. In most state EPAs annual reports, such graphs show consistent improvement in almost all measures. This throws serious doubt on the need for new interventions, but this type of analysis and conclusion is inexplicably absent from the current draft. (73)</li> </ul>	
<ul style="list-style-type: none"> <li>Suggests there should be a break down in the impact statement of the phrases such as 'diesel engines' and 'motor vehicles', showing the emissions from articulated trucks, rigid trucks, Light Commercial vehicles (petrol and diesel) and passenger vehicles (petrol and diesel). (152)</li> </ul>	<p>A detailed analysis of the comparative environmental performance of these vehicles was not considered useful in the impact statement.</p>

## 30. Indoor air quality

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Greater consideration of indoor air quality issues is required. (4, 6, 7, 54, 73, 136)</li> <li>Particularly areas of concern were: <ul style="list-style-type: none"> <li>Tobacco smoke (4, 7)</li> <li>Air conditioners (7)</li> <li>Cost/benefit issues concerning regulation of indoor vs outdoor air quality (136)</li> <li>indoor air quality effects on health (73)</li> </ul> </li> </ul>	<p>This Measure sets ambient air quality standards. Indoor air quality issues were not considered as part of the development of this Measure. Indoor air quality issues may be considered as part of a future Measure.</p>

## 31. Equivalent protection

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>ACF is concerned that the draft measure does not set out a framework necessary to delivery nationally applied and enforceable air quality standards that will achieve equivalent protection of human health and well being. (105)</li> <li>The proposed NEPM takes no account of</li> </ul>	<p>Equivalent protection is an “objects clause” of the NEPC ACT. This NEPM is intended to go some way to providing similar protection in all jurisdictions. However, it cannot be expected to provide complete protection for people living near major roads or point sources, or for people travelling on major roads. Other NEPMs, to be developed in the future, would</p>

### 31. Equivalent protection

COMMENT	RESPONSE
<p>high exposures of particular groups of commuters to unacceptable levels of air pollution (pedestrians, cyclists, taxi drivers, bus drivers, courier vans etc). (54)</p>	<p>be expected to consolidate the gains made in equivalent protection from this NEPM.</p>

### 32. Regional environmental differences (REDs)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The highly convective atmospheric conditions; the hot dry climate; the huge distances to markets' and, the social and economic structures which are supported by the Mount Isa operations are by common sense and by every law of the Commonwealth of Australia characteristics which make the regional environment of Mount Isa different to regional environments of many other parts of Australia. Strong point sources emissions are relatively few in Australia. For strong point sources the nature of the health risks and cost effective environmental management actions depend on site specific circumstances and not notional average Australian conditions. Where the balance of considerations for an environmental management practice lies requires complex site specific analysis of the type being undertaken by the Queensland Government Panel Study if regional environmental differences are to be properly considered. (114)</li> <li>Concerned that the draft measure contains neither the framework nor unambiguous commitment by the NEPC to ensure that the air quality standards are indeed applied nationally so as to ensure that this objective is achieved. Of particular concern is the potential for the concept of REDs to be used as a justification for not applying or meeting air quality standards uniformly in all regions of Australia.</li> </ul>	<p>As noted in the final impact statement (section 4.6), the <i>NEPC Act</i> makes it clear that the term regional environmental differences is not intended to encompass regional economic and social differences. Furthermore, REDs are not a relevant consideration for the setting of ambient air standards; this is not to say that REDs will not be relevant for other NEPMs.</p> <p>Transcript from the impact statement follows:</p> <p><i>"In making any Measure, the National Environment Protection Council must have regard to, inter alia, "any regional environmental differences in Australia" (section 15(g) of the National Environment Protection Council Act 1994 (Commonwealth) and the equivalent provisions in the corresponding Acts of other participating jurisdictions). In addition, section 17(b)(v) of the Act requires that the impact statement to be prepared with the draft Measure to include "a statement of the manner in which any regional environmental differences in Australia have been addressed in the development of the proposed Measure".</i></p> <p><i>While the NEPC Acts do not provide any explicit definition of the term "regional environmental differences", its meaning is nonetheless made clear. The legislation, and sections 15 and 17 in particular, provides a clear indication that the term is not intended to encompass regional economic and social differences.</i></p> <p><i>The term "regional environmental</i></p>

### 32. Regional environmental differences (REDs)

COMMENT	RESPONSE
<p>In the draft measure leaves open the possibility that some regions, such as mining towns or other industrial centres, may be exempted from the national standards on the grounds of REDs. (82, 105, 128, 144)</p> <ul style="list-style-type: none"> <li>Higher levels of pollution should not be allowed on the grounds of regional industrial or economic differences as is being argued by some segments of industry. (80, 98, 134)</li> <li>Specific airsheds can consistently lead to poor air quality in certain locations or regions. For instance, modelling of airshed movement in the Sydney basin has shown that the western and south-western regions are more vulnerable to prolonged photochemical smog events. This issue of regional differences is only touched in the report and yet in the case of outer Sydney it would affect over 1M people. It is likely that there would be other examples in other parts of the country. (135)</li> <li>Recently claims have been advanced by some segments of industry for "regional environmental differences" in air quality. Environmental differences are allowed in the NEPMs if, and only if, there is something unique about a region's natural environment that may affect how air quality standards can be applied. It does not refer to differences in the built environment, or to economic or social regional differences. Where there are economic or social regional differences, the polluting source has ten years to achieve healthy air. Recommend that the NEPC forbid REDs that are not based on a unique natural environment or that are put forward to protect economic interests. (80)</li> <li>NEPM takes account of regional environment differences, however it does not similarly take account of regional</li> </ul>	<p><i>differences" is included in the provisions identified above in recognition of the fact that fundamental environmental characteristics of different regions may be very different, and that to apply simplistic uniform standards would not further the desired outcome of equivalent protection espoused in the legislation. For example, the issue of salinity in water bodies would provide a clear need for regional environmental differences to be taken into account in developing a NEPM standards and goals for water quality.</i></p> <p><i>For ambient air quality, there are no clear cut differences in the natural state of the atmosphere that could meaningfully be reflected in different ambient air quality standards for the protection of human health. While atmospheric conditions can change rapidly and dramatically across Australia, this provides a challenge for air quality management strategies but cannot, in any practical sense, be reflected in standards. In determining appropriate standards for the protection of human health, available evidence suggests that the variation in physiological response to pollutants within any population is likely to be significantly greater than any potential variation in impact due to meteorological or other differences across Australia.</i></p> <p><i>Air quality objectives have been applied uniformly in several overseas jurisdictions that have far more diversity in climate than does Australia. Primary Air Quality Standards legislated in the United States of America apply in all States of the country, from hot-humid Florida, hot-dry Utah, to arctic/sub-arctic Alaska. They do not make allowances for regional climatic differences and neither does the European Union in determining its air quality objectives from Mediterranean Italy to subarctic Sweden.</i></p> <p><i>Visual amenity, where the special scenic value</i></p>

### 32. Regional environmental differences (REDs)

COMMENT	RESPONSE
<p>economic or social differences. While not suggesting that all communities are not entitled to air of equal quality, we think it is valid to give some consideration to regional economic differences, particularly in the early years of the NEPM and any implementation process that follows. (107)</p> <ul style="list-style-type: none"> <li>Do not believe that NEPC has paid sufficient attention to regional environmental differences and the consideration of whether the proposed Measure is the most effective means of achieving the desired environmental outcome. (72)</li> <li>NEPM approach to REDs is illogical. To assert that there are no clear cut differences in the natural state of the atmosphere fails to properly acknowledge the scientific fact that the atmosphere has not been in a natural state for many hundreds of years. Sugar mills are generally in areas of significant thermal turbulence and also experience sea breeze conditions which contribute randomly to levels of particles. (102)</li> </ul>	<p><i>of an area or its use for astronomical observations depends on a high level of air clarity is an associated environmental benefit ensuing from application of health based air quality standards. Such visibility is not required to be addressed in the NEPM and the issue of protection of 'areas of special significance' does not arise.</i></p> <p><i>On the other hand it has been suggested that sub-regional differences or mesoclimates may be important. Where these are found to be significant in protecting human health, the impacts are most practically addressed through implementation programs developed by jurisdictions."</i></p>

### 33. Alternatives to the Measure

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The alternative to the NEPM in which all jurisdictions enter into an agreement to adopt ambient air standards should be given further consideration. This alternative is dismissed by the impact statement because "it offers no advantage over NEPMs". While it is agreed that neither approach imposes legal obligations on jurisdictions, there is a difference in how the two approaches would be "perceived" by the wider community. An agreement to adopt ambient air quality standards would be seen as more formal and binding than the NEPM. As such</li> </ul>	<p>Although the form of this alternative "agreement" is not defined it is unreasonable to expect that an "agreement to adopt ambient air quality standards would be seen as more formal and binding than the NEPM" as is claimed.</p> <p>The NEPM is a legally binding instrument which will require that jurisdictions report on their compliance against the standards. As such the NEPM has far greater impetus for compliance than an "agreement".</p> <p>Arguably at this point the 'wider community' will accept nothing less than a legal binding</p>

### 33. Alternatives to the Measure

COMMENT	RESPONSE
<p>jurisdictions would be more motivated to comply with those standards. (97)</p>	<p>instrument such as the NEPM for the protection of ambient air quality.</p>
<ul style="list-style-type: none"> <li>• Strong reservations with the use of command and control" measures to manage ambient air quality. Believe that market based measures (specifically emissions trading) will be a much more effective tool to manage emissions in specific 'airsheds' and that this will result in a more flexible and lower cost solution to the Australian community. (155)</li> <li>• The load based licensing scheme which is being introduced by the NSW EPA is worthy of further consideration as it is effectively a precursor to an emissions trading scheme. (155)</li> <li>• The AHHA believe that the draft NEPM should rely on technical advances in emission controls and community education as the means for reducing wood smoke in urban Australia. (37)</li> <li>• Energy use minimisation is a tool for reducing CO emissions. (2)</li> <li>• The NEPM should go beyond vehicle centred technical solutions to include the impact of travel behaviour change and integrated land planning use. Resolving urban air quality problems can be achieved by managing the urban vehicle fleet and without unnecessarily imposing costs or restrictions on non-urban activities. There needs to be greater recognition that air quality can be improved by an appropriate balance within the transport system and non-transport responses. (161)</li> <li>• Coal fired power stations and overland transmission power lines are being constructed. Why? There is a cleaner and more economic method of transmitting power by gas pipelines. (38)</li> <li>• As well as pollution prevention and cleaner production, firm legislation is needed to</li> </ul>	<p>The Measure sets ambient air quality standards, and provides a framework for monitoring compliance with those standards. It does not in any way prescribe or limit the use of individual air shed or source control mechanisms.</p> <p>While these comments are useful for jurisdictions to consider in the development of airshed management plans, they are not relevant to the content of the ambient air quality Measure.</p>

### 33. Alternatives to the Measure

COMMENT	RESPONSE
<p>assign responsibilities and force compliance, with the emissions of individual operators monitored to address all localised and distributed pollutants. (148)</p> <ul style="list-style-type: none"> <li>• ACF urges that a compliance framework (including but not necessarily involving cross-compliance funding legal sanctions or other) be developed as part of the NEPM. (105)</li> </ul>	

### 34. Community education

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The AHHA sees industry and government community education programs, as to the best way to operate wood heaters, as being very cost effective and an important component of ongoing control measures. (37)</li> <li>• The public should be educated to be:               <ol style="list-style-type: none"> <li>a) clearly aware of the importance of using good quality wood;</li> <li>b) discouraged from trying to achieve overnight burn;</li> <li>c) discouraged from the use of old heaters;</li> <li>d) encourage the upgrade of old brick fireplaces with either a slow combustion or heat-circulating insert;</li> <li>e) discourage the construction of new brick fireplaces without either a slow combustion or heat-circulating insert. (41)</li> </ol> </li> <li>• It is suggested that a task group be appointed consisting of a representative of the EPA of each state and that group prepare a leaflet on: the importance of clean air; the correct use of wood heaters; comparative costs involved in various types of home heating. Also, the banning of lighting of all fireplaces on days of high air pollution should be introduced. (29)</li> </ul>	<p>These comments relate to possible implementation mechanisms to assist in assist in achieving the Measure's air quality standards.</p> <p>While these comments are useful for jurisdictions to consider in the development of airshed management plans, they are not relevant to the content of the ambient air quality Measure.</p> <p>Most jurisdictions have already run community education campaigns on the correct use of wood heaters (including, NSW, Qld, Tas, WA).</p> <p>Clearly there is also a significant onus on the industry to educate its customers on the correct use of its product.</p>



### 34. Community education

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Community education should be undertaken with respect to the following:               <ul style="list-style-type: none"> <li>- correct heater operation;</li> <li>- education on materials burnt in home heaters. (142)</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>The public awareness of the major air pollution concerns is minimal (if pollution is not visible or does not smell). The lack of transparency, from all government agencies re air pollution problems, to the general public is appalling. (108)</li> </ul>	<p>Following the implementation of the NEPM it is expected that the annual reports on compliance, promotional material and other associated information (including NEPC's National Pollutant Inventory) will go a long way to resolving this issue.</p>

### 35. Consistency with section 3 of IGAE

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The desired environmental outcome is not in accordance with the principles of ESD. (75)</li> <li>The economic principles within ecologically sustainable development appear to have been ignored when setting the measure (particles as PM10). (102)</li> <li>Recommend the incorporation of the mandatory requirements of the NEPC Act and IGAE into the Air NEPM and the associated impact statement. (88, 145)</li> <li>Support for the precautionary principle in setting standards for the NEPM. (36, 80, 82 and campaign letters)</li> <li>When dealing with uncertainty, recommend that scientific uncertainty for air quality assessments should not be dealt with by defaulting automatically to a precautionary approach. (88, 145)</li> </ul>	<p>The Air Quality NEPM has been developed in accordance with the <i>NEPC Act 1994</i>, in particular, section 15(a) which requires that the Council must have regard to section 3 of the Intergovernmental Agreement on the Environment (IGAE) which relates to ESD.</p> <p>Section 3.1 of the IGAE requires “that the development and implementation of environmental policy and programs by all levels of Government should be guided by the following considerations”, which include:</p> <ul style="list-style-type: none"> <li>“the effective integration of economic and environmental considerations in decision-making processes, in order to improve well being and to benefit future generations”;</li> <li>“parties further agree that, in order to promote the above approach, the principles set out below should inform policy making and program implementation”;</li> <li>the precautionary principle;</li> <li>the conservation of biological diversity and ecological integrity; and</li> <li>the polluter pays principle.</li> </ul>
<ul style="list-style-type: none"> <li>Comments made by stakeholders should be incorporated into the Measure, and the process used to finalise the development of the Air Quality NEPM should follow far more closely the transparent, cooperative</li> </ul>	<p>The Measure was redrafted following consideration of comments resulting from the public consultation phase and subsequent negotiations with the jurisdictions.</p>

**35. Consistency with section 3 of IGAE**

COMMENT	RESPONSE
<p>and scientifically based approach intended by the IGAE.</p> <p>Key to achieving this will be:</p> <ul style="list-style-type: none"> <li>-establishing the agreed understanding of the medical fraternity on the relationship between the ambient concentration levels of the key pollutants and health costs to society, including accommodation of the role of indoor air quality effects. Then using this as the basis of decisions on appropriate future air quality standards, rather than worst case and non-peer reviewed impact estimates;</li> <li>- establishing realistic and agreed estimates of the future air quality and quantifying the degree to which each pollutant level will not be contained by existing management strategies. Then using this as the basis of evaluating what air quality improvements need to be achieved:</li> <li>- establishing estimates of the specific emission reductions which will need to be achieved for the new standards to be met; and</li> <li>- establishing estimates of the cost of achieving these emission reductions which are realistic and relevant to the Australian situation.</li> </ul> <p>To the degree that this cannot be fully accomplished, it may well be necessary to proceed with an interim Air NEPM, with programmes put in place to resolve outstanding information requirements and the finalisation of the NEPM at a later date. (73)</p>	<p>The development of the Measure and impact statement was consistent with the requirements of the NEPC Act which includes under Section 15 that the Measure be consistent with the IGAE. (See related comments under “NEPM development process – Air NEPM”, and sections relating to the Health, exposure and risk assessment sections, above).</p> <p>NEPC believes that there is sufficient justification for making the NEPM documented in the impact statement, and that in accordance with the precautionary principle the absence of full scientific certainty should not be used as a reason for postponing this Measure.</p>
<ul style="list-style-type: none"> <li>• The proposed uniform standards will not produce a level playing field for investment decisions:</li> <li>- as weather conditions vary widely across Australia, different levels of control will be required to achieve the same ground level concentrations;</li> <li>- relatively higher costs will be imposed at</li> </ul>	<p>The Measure will deliver a level playing field to the extent that all jurisdictions will be required to meet the same ambient standards.</p> <p>Furthermore the identification of these national standards and accompanying 10 year goal provides industry with a vastly improved level of certainty and security for planning investment decisions.</p>

### 35. Consistency with section 3 of IGAE

COMMENT	RESPONSE
<p>regional locations where only a single parameter is involved;</p> <ul style="list-style-type: none"> <li>- air quality issues may dominate environmental impact assessment regardless of their relative environmental importance;</li> <li>- the costs-benefit analysis clearly showed that the proposed sulphur dioxide standard is not justified, and will impose investment distortions; and</li> <li>- the particulate standard is inappropriate both in level and particle size, and existing natural levels in some regional locations will distort investment decisions in those areas.</li> <li>- This provides further justification for review of the Measure using a consistent risk-based (or does-response) framework and full benefit-cost analysis. (100)</li> </ul>	<p>The costs of control which were attributed to the NEPM in the draft impact statement are expected to be overestimates as some companies, such as MIM have already announced that an 80% reduction can be expected in emissions under existing programs and plans.</p> <p>A revised impact assessment is documented in the final impact statement, incorporating further information made available to NEPC following the release of the draft Measure.</p>

### 36. Cost/benefit

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• It does not appear equitable or fair that Industry is required to take the burden of costs of implementing the measure. (102)</li> <li>• Disrupting industry has high costs to all of society and has a relatively lower impact on air quality. (155)</li> </ul>	<p>Costs to be borne by industry will only be known in detail when jurisdictional air quality management strategies are developed and implemented. However, in accordance with the polluter pays principle, it is equitable that industry pays for air quality management to the extent that it is a contributor to any air quality problems.</p>
<ul style="list-style-type: none"> <li>• Examination of the effects on industry's international competitiveness is a mandatory consideration pursuant to section 15(a) of the NEPC Act. This should be reasonably examined and this association consulted before any decision involving such massive cost pressures is made. (102)</li> </ul>	<p>This Measure will not impact upon the international competitiveness of Australian firms. The comparison of international standards and objectives for ambient environmental quality in the Impact Statement clearly show that the Standards in the proposed Measure are comparable with existing objectives in place in many of the economies with which Australian firms compete at an international level. Furthermore, many Australian States and Territories already apply similar ambient</p>

### 36. Cost/benefit

COMMENT	RESPONSE
	<p>environmental quality objectives through existing policy or regulatory frameworks within the individual jurisdictions.</p> <p>The Measure's goal of achieving the proposed standards within a ten year time frame has also been set taking into account the need to take a long term approach to strategies for improvements in ambient air quality (where improvements are necessary). This allows for the natural progression to improved technologies and processes for cleaner production to be the key basis for improvements in performance, minimising costs to industry and the community and will ensure that there are no adverse impacts on the competitiveness of individual firms in both the domestic and international markets.</p>
<ul style="list-style-type: none"> <li>FCAI believes that the case for more stringent standards should be made in the context of actual personal exposure characteristics and statistics and only on the basis of positive cost/benefit relationships. FCAI is of the view that such a case has yet to be made. (44)</li> </ul>	<p>There is a well established relationship between exposure to pollutants in ambient air and health outcomes. This area of study is being further developed with a number of studies currently underway. The monitoring information gathered under the Measure will also improve the state of knowledge on these issues. NEPC is firmly of the view that there is sufficient evidence to justify the setting of the Measure's standards for human health protection now.</p>
<ul style="list-style-type: none"> <li>The NEPM should consider only public health and protection of the environment, not the cost of compliance. (142)</li> </ul>	<p>The NEPC Acts require consideration of a range of issues in the development of a Measure, including the costs and benefits of adopting the proposed Measure.</p>
<ul style="list-style-type: none"> <li>Needs more input on health effects to aged persons, who often tend to have more health problems than young people. This could be a hidden cost in the forecasts of medical costs. (130)</li> </ul>	<p>The susceptibility of the elderly was an important consideration in developing the Measure's standards. These standards aim to protect the elderly and other susceptible sub-groups of the population.</p>
<ul style="list-style-type: none"> <li>Of necessity, the cost-benefit analysis is fairly limited in scope. However, many aspects of the cost-benefit analysis reveal a lack of depth and in some cases technical inaccuracies occur. Whilst the analysis is probably of sufficient accuracy and detail</li> </ul>	<p>Following the receipt of further information subsequent to the development of the draft impact statement, a final impact statement has been produced. The final impact statement incorporates a range of additional information received, including comments on the draft measure and impact statement.</p>

### 36. Cost/benefit

COMMENT	RESPONSE
<p>to assist in the selection of the appropriate limit values, it is not sufficiently accurate to allow quantification of the actual cost-benefits associated with the proposed NEPM. (75)</p> <ul style="list-style-type: none"> <li>• The costs of the proposed NEPM are far in excess of the anticipated savings due to improved public health. (99)</li> <li>• The assumptions and procedures used in the purported estimates of costs and benefits in the impact statement are illogical and unreasonable. (114)</li> <li>• Cost-benefit analysis inadequately developed. Apparently no further work would be done for this study, but it is a key element in the decision making process. Concerns about incomplete treatment of population exposure, health costs and control costs were expressed widely. [Consensus] (94)</li> </ul>	<p>The final impact statement provides a more informative, balanced and accurate assessment of the anticipated impacts of the Measure.</p> <p>The final impact statement was considered by NEPC as part of its decision to make the Measure.</p>
<ul style="list-style-type: none"> <li>• Any renewed media attention because of an inability to meet unnecessarily low ambient air lead standards will significantly depress property values, adding further to the stress levels of inhabitants. The introduction of a new ambient standard (in the absence of other measures to actually lower ambient lead levels) will not help to address the equity issue in many urban areas. (24)</li> </ul>	<p>The lead standard is an important component of an overall program to manage possible sources of lead exposure. NEPC believes the standard for lead is appropriate.</p>

### 37. Implementation issues

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• Concerned that the implementation and enforcement of standards by the States not lead to a dilution of the aims of the NEPM. (6)</li> </ul>	<p>All jurisdictions will work towards achieving the goals of the Measure and are required to provide annual reports on progress towards those targets.</p>
<ul style="list-style-type: none"> <li>• Local government will have a significant role in the implementation, especially through town planning, transport, controls over industrial areas etc. There need to be</li> </ul>	<p>The Measure sets ambient air quality standards, and provides a framework for monitoring compliance with those standards. It does not in any way prescribe or limit the use of individual air shed or source control</p>

### 37. Implementation issues

COMMENT	RESPONSE
<p>sufficient resources provided to local government to facilitate effective implementation of air quality protection measures. (54)</p> <ul style="list-style-type: none"> <li>• Since local jurisdictions will be acting to correct these emissions, some community grass roots and local Council funding must occur: to get the message across, and funding to address some of the problems involved in the poorer areas to address the emissions. (83)</li> <li>• There needs to be a clear commitment from the Commonwealth to the States and Territories, industry and the general community that it will share the costs of achieving the standards. (161)</li> </ul>	<p>mechanisms or the funding arrangements for management strategies adopted.</p> <p>Air management plans and strategies, including funding arrangements and the allocation of responsibilities for particular tasks is the role of each individual jurisdiction. The Measure can not make any comment on these issues.</p>
<ul style="list-style-type: none"> <li>• The timeframe for attainment is an implementation issue and should not be specified in the NEPM (87)</li> </ul>	<p>NEPC believes that it is appropriate to set a timetable as an integral component of the goals of the Measure.</p>
<ul style="list-style-type: none"> <li>• A comprehensive impact statement needs to be prepared that addresses not only environmental and health matters but also the social and economic issues. (161)</li> </ul>	<p>Environmental, health, economic and social issues are all considered in the impact statement. The final impact statement provides an improved analysis of these issues.</p>
<ul style="list-style-type: none"> <li>• General support for the principle but concern about its implementation. The standards will be used, and in fact are already being used by regulatory bodies on a project basis. The understanding is that this was not the intention of the NEPM, but it is unrealistic to think that once the standards have been promulgated they won't be used in contexts other than those defined in the NEPM. They are currently being applied to 'worst-case' scenarios. [Consensus] (94)</li> </ul>	<p>It is not intended that the Standards will be used as site-specific performance criteria. Objectives for individual sites will be developed by the responsible environment protection agency or department in each jurisdiction on a case by case basis. These site objectives will take into account a range of factors including the type of facility, the availability of emissions reduction strategies, the demographics (particularly the location of residential areas) and meteorology of the area, other sources of emissions in the area, and the existing air quality of that area.</p>
<ul style="list-style-type: none"> <li>• Provisions should be made in the NEPM for the review of any of the standards should relevant scientific developments on the pollutant arise. (97)</li> <li>• Flexibility in adjusting current, and developing additional, standards must be</li> </ul>	<p>Under the <i>NEPC Act</i> Council has the power to review a Measure at any time. NEPC recognises the need for reviews of the various pollutant standards and issues beyond the current Measure (eg. need for a PM<sub>2.5</sub> standard). Commitments for such reviews are contained in the "Future Action" statement in</p>

### 37. Implementation issues

COMMENT	RESPONSE
<p>an in built feature of the NEPM. (142)</p>	<p>the Introduction chapter to the final impact statement.</p>
<ul style="list-style-type: none"> <li>I can see no benefit in the empty gesture of banning open fireplaces in new homes this will not achieve any measurable decrease in pollution, but rather a draconian measure to deny our families of traditional enjoyment passed on through the generations. This is a broad reaching Federal Government proposal with a detrimental impact on South Australian employment. (74)</li> </ul>	<p>The Measure does not impose a ban on open fireplaces nor does it prescribe any other form of action for meeting the standards this is left to jurisdictional discretion.</p> <p>The Measure is not a Federal Government initiative but a national approach shared by all nine jurisdictions.</p> <p>The impact statement correctly acknowledges that open fireplaces/wood heaters have a significant impact on air quality in some situations. Most jurisdictions have been pursuing initiatives to reduce this source of pollution independent of the Measure.</p>

### 38. General comments

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The NEPM should recognise, that while the majority of the population may not be exposed to unacceptable pollution levels, a significant minority will be regularly exposed to unacceptable pollution levels. (campaign letters)</li> </ul>	<p>The Measure recognises this fact by setting consistent standards which will apply throughout the country. Particular sites/areas of concern will be subject to airshed management plans or strategies developed by the responsible jurisdiction.</p>
<ul style="list-style-type: none"> <li>There is quite compelling evidence that, in terms of the cost of saving a life, environmental regulations are by far the most expensive and inefficient means of improving community health. There is no reference in the discussion paper to such critical issues which would lead to quite different conclusions from those in the draft. (73)</li> </ul>	<p>To generalise, it is not unreasonable to say that environmental regulation can indeed be an expensive and inefficient means of improving community health. However, it is equally true that governments can not always rely on all sectors of industry and individual members of the public to always act in the communities' best interests. There is clearly a need for both regulatory and non-regulatory approaches for the management of the environment and human health.</p> <p>The objective is not just to improve community health in a general sense but to improve health and well-being resulting from exposure to the six core atmospheric pollutants identified in this Measure. The NEPM is a cost effective means of achieving this objective.</p>

### 38. General comments

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The quality of the technical work supporting this standard is of such poor quality that NEPC should not make the Measure in its current form. Believe that three options are available:               <ol style="list-style-type: none"> <li>1. Delay a decision until NEPC can be confident that the standards are based on a rigorous risk assessment based on the Australian context and the benefits and costs are accurately assessed.</li> <li>2. Adopt the Measure with the numbers as guidelines rather than standards and then carry out the work described in (1) and revise the Measure to include the numbers as standards.</li> <li>3. Adopt the Measure with a set of 'no pain' numbers and then carry out the work described in (1) and then revise the Measure to include the numbers as standards. (72)</li> </ol> </li> </ul>	<p>This was not the general feedback from the extensive public consultations held over 9 months around the Nation. There was very strong support for the Measure to be made and for it to include standards.</p>
<ul style="list-style-type: none"> <li>• The Society wishes to commend the Commonwealth and the States and Territories in their efforts to achieve National uniformity in air quality standards. (94)</li> <li>• Overall support for the NEPM because it is in Australia's interest to have sensible, uniform air quality standards across the nation. We all deserve to benefit equally from a responsible society's efforts in regulating emissions to achieve something approaching current best practice. (6, 135)</li> <li>• Since our submission on the discussion paper (July 1997), we have noted a significant improvement in the public consultation process, in the draft NEPM and the impact statement. Congratulates NEPC in preparing a draft Measure which is now precise, eloquent and simple. The current draft represents a reasonable balance between meeting community expectations and the electricity supply industry's need to minimise costs while</li> </ul>	<p>Support for the Measure and the development processes used is appreciated.</p>



### 38. General comments

COMMENT	RESPONSE
<p>further reducing air emissions. (93)</p> <ul style="list-style-type: none"> <li>• Support for the proposed standards and impact statement. (28)</li> <li>• Commend the NEPC for its initiative and the Drafting Committee for producing a comprehensive document of high quality. (78)</li> </ul>	
<ul style="list-style-type: none"> <li>• Any NEPM for ambient air quality should be consistent with the National Greenhouse Response Strategy and National Sustainable Energy Policy. Restrictive and inflexible air quality regulations will become a barrier to entry for alternative generation technologies such as cogeneration, biomass and waste generation which offer substantial greenhouse gas and energy efficiency benefits. (155)</li> </ul>	<p>This Measure does not prescribe any regulatory or other management approaches, and will not conflict with the National Greenhouse Response Strategy or the National Sustainable Energy Policy.</p> <p>Individual jurisdictions retain responsibility for the air quality management within their boundaries. The NEPM imposes no barrier to the pursuit of alternative generation technologies.</p>
<ul style="list-style-type: none"> <li>• The paper lacks detailed analysis of the continuing impact of current air quality improvement strategies. There needs to be clear future projections based on transparent methodology reflecting the consensus view of experts. (73)</li> <li>• Australia has been characterised as having a low to moderate urban air pollution concern in relative terms. Nowhere in Australia has it been demonstrated that, compared with other countries which are at a similar stage of industrial and economic development, the urban airshed quality is either inferior or worsening; in terms of any Class 1 indicator. (44)</li> <li>• Given the complexity of the issues covered the development of a "users' guide" or "explanatory notes" is warranted. (75)</li> <li>• Comprehension and acceptability of the measure would be much improved if it were to include some practical illustration of what the proposed standards actually represent in terms of the most common origins of each pollutant under</li> </ul>	<p>The final impact statement includes an improved analysis and overview of air quality issues. NEPC will also produce promotional and explanatory material following the making of the Measure.</p> <p>Additional information on the relative quality of Australian air quality is contained in the report of the independent inquiry into "Urban Air Pollution in Australia" conducted by the Australian Academy of Technological Sciences and Engineering.</p>

### 38. General comments

COMMENT	RESPONSE
<p>consideration. Such examples would give an idea of the pollutant release which would occur from an hour's burning of a typical domestic open fire; a typical diesel truck idling for 5 mins; etc. (26)</p>	
<ul style="list-style-type: none"><li>Point source monitoring should be conducted, but resultant figures dealt with separately and excluded from the figures used for comparison with other regions. New and existing point sources of pollution should be monitored at 'breathing zone' level so that a large proportion of Australians will have the air they daily breathe assessed. (61)</li></ul>	<p>This is outside the scope of a Measure for ambient air quality. However, the environment protection agencies or departments of all States and Territories can and do require point source monitoring where such monitoring is considered appropriate.</p>

## Section 2: Technical Comments on the Proposed Standards

The standards are covered in the following order:

- A. Carbon monoxide p. 56
- B. Nitrogen dioxide p. 60
- C. Ozone p. 65
- D. Sulfur dioxide p. 69
- E. Lead p. 75
- F. Particles p. 80

### A. CARBON MONOXIDE

#### A1. Proposed standard (CO)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of submissions <b>supported</b> the proposed standard:               <ul style="list-style-type: none"> <li>- Standard is acceptable/appropriate (21, 44, 52, 87, 94)</li> <li>- The standard for CO appears to be un-controversial, particularly since "performance" monitoring will not pick up hot-spots such as on-road, in car parks nor indoors. (6)</li> <li>- Supports the proposed standard for levels of ambient CO, provided it is consistent with levels in equipment source countries. (152)</li> </ul> </li> </ul>	<p>This support is appreciated.</p>
<ul style="list-style-type: none"> <li>• Standard is too loose. (97)</li> </ul>	<p>As the standard is based on the LOAEL, it is difficult to justify a more stringent standard. The 8 hour standard is the NEPM is equivalent to US standards and more stringent than EU, WHO and Japan.</p>
<ul style="list-style-type: none"> <li>• The standard for COHb should be &lt;0.2% per 1 hour. (142)</li> </ul>	<p>Section 8.4.2 and table 8.4, of the final impact statement shows the proposed NEPM CO standard will ensure the COHb is less than 2% (calculated to be 1.44%) after 8 hours to protect for foetal effects. Although the level after one hour would be well below 0.2% (theoretically, as the relationship is approximately linear at low levels of CO) the background level may be about 0.2%.</p>
<ul style="list-style-type: none"> <li>• A number of submission were supportive of the introduction of a shorter term</li> </ul>	<p>One-hour goals are being met even in most hot spots and local traffic management is an</p>

<p>standard for CO:</p> <ul style="list-style-type: none"> <li>- support a short term one hour standard. (153)</li> <li>- a 1 hour limit should be included, as an 8 hour limit does not provide adequate protection for short term events, such as peak hour traffic. (113)</li> <li>• People living around and in high traffic areas, or near high industrial areas can also be affected by CO. These hotspots are not taken into account when testing for this gas. (111)</li> <li>• The standard does not provide adequate protection for short term events, such as peak hour traffic. (113)</li> </ul>	<p>implementation issue. One-hour averages will still be measured as a trend function.</p> <p>As a result, a one-hour standard is not considered necessary.</p>
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### A2. Exceedences (CO)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• Allow more exceedences (suggest 7). (81)</li> <li>• The allowed exceedences is unduly restrictive. (115)</li> </ul>	<p>This suggestion is not considered necessary or appropriate.</p>

### A3. Impact Statement (CO)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The sentence on p 76 "Healthy persons are unlikely to be affected by ambient levels of CO" is highly relevant and should be included in the summary section on p17. (87)</li> </ul>	<p>The final impact statement has been restructured and it was not possible to repeat this information in the much shorter new summary sections.</p>
<ul style="list-style-type: none"> <li>• The standard must take into account the source of the CO, when it exceeds those levels. Documented evidence which has been researched and acknowledged through correct scientific methodology must accompany any proposed change. (51)</li> </ul>	<p>The impact statement describes sources of CO and provides evidence of effects.</p>
<ul style="list-style-type: none"> <li>• P80 Impacts of potential standard: The first part of this section gives the impression that the exposure estimates are all guesswork. To imply a figure of 50 million 'person events' and then reduce it by 90% with no explanation, and to use</li> </ul>	<p>This was an attempt to provide a more realistic estimate of peak population exposure. The data was measured at a peak monitoring station that might have been affected by street canyons (tall buildings on both sides of an unventilated busy street in the CBD) causing</p>

<p>this for benefit calculations is not scientifically defensible. (87)</p> <ul style="list-style-type: none"> <li>• The logic of the argument in the first paragraph is completely unclear, especially the reasons for the progression from 50 to 5 million person events figure (87)</li> </ul>	<p>high concentration in a subregion, but not necessarily over the entire region. This result demonstrates one weakness of previous air quality monitoring practices which will be improved by implementation of the Measure.</p>
<ul style="list-style-type: none"> <li>• P73 section 8.6: Personal exposure data is needed to verify the theoretical calculations. The supporting Exposure Assessment document states that "large ranges of indoor to outdoor concentration ratios are reported" and uses an indoor/outdoor ratio of 1, but before any money is spent on meeting any standard, this needs to be validated by extensive personal monitoring.</li> <li>• AIP accepts that this situation is unlikely to arise. (87)</li> </ul>	<p>Ideally this information would have been available to compare with predictions. However, as with many new proposals the data is simply not available until the proposal is implemented. CO is stable and not easily degraded and hence levels outdoors will equilibrate indoors.</p>
<ul style="list-style-type: none"> <li>• P81: The paragraph beginning "It is expected that in protecting the sensitive population ...." should be deleted, because it is directly contradicted by the statements on p 75 which outline the major uncertainty about these effects. (87)</li> </ul>	<p>There is not necessarily a contradiction as p75 talks about "healthy non-smokers", not "sensitive populations" (COPD etc).</p>
<ul style="list-style-type: none"> <li>• The mortality costs are likely to be overestimated by at least 100%. (87)</li> </ul>	<p>There are no mortality costs listed for CO, only an example of how work days lost and hospital admissions might be calculated in areas of high exposure.</p>
<ul style="list-style-type: none"> <li>• Similarly, the exposure estimates could prove to be a significant overestimate if they were to be validated by personal monitoring. There is consequently no sound basis for the estimate of benefit to cost ratio, and it is highly likely that the ratio is in fact less than one. (87)</li> <li>• P83 Conclusion: The major uncertainties about the exposure assessment and health cost impacts need to be addressed before any sensible conclusions and policy actions could be derived. The \$30 million estimate is not based on any understandable argument. (87)</li> </ul>	<p>The exposure estimates might also prove to be an underestimate when personal exposure to vehicular traffic, during journeys to work or school and other exposure to pollutants in the home or workplace are taken into account.</p> <p>Where these uncertainties existed they were highlighted and taken into account where possible in the final impact statement.</p>

<ul style="list-style-type: none"> <li>• Standard is already being met except for</li> </ul>	<p>This fact is noted in the final impact statement.</p>
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hotspots. (111)	
<ul style="list-style-type: none"> <li>• impact statement not clear/invalid. (51, 87, 130)</li> </ul>	Every effort was made to clarify issues and to recognise and take account of any uncertainties in developing the final impact statement.

#### A4. Other issues (CO)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• Concerned about localised fumes and emissions emanating from residential wood-burning heaters. (8)</li> <li>• The functioning catalytic converter cleans up the emission of carbon monoxide but cat technology is 12 yrs old. What percentage of '86 converters are still 100% effective? How dangerous to health is the tailpipe dust from a disintegrating catalytic converter, and isn't there a deadly compound produced when CO reacts with stainless steel? (59)</li> </ul>	<p>These are implementation issues which cannot be dealt with by the Measure.</p> <p>Implementation issues are the responsibility of the relevant jurisdiction, for example, in NSW motor vehicle inspection and maintenance program are being established to assist in these matters.</p>

## B. Nitrogen dioxide

### B1. Proposed standard (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of submissions <b>supported</b> the proposed standard:               <ul style="list-style-type: none"> <li>- is appropriate (52);</li> <li>- a suitable compromise. (32); and</li> <li>- supports the standard set with regard to NO<sub>2</sub>, provided it does not conflict with the standards applying in equivalent countries. (152)</li> </ul> </li> </ul>	<p>This support is appreciated.</p>
<ul style="list-style-type: none"> <li>• A number of submissions argued the proposed standard was <b>too stringent</b>:               <ul style="list-style-type: none"> <li>- Should use the NHMRC as the standard for NO<sub>2</sub>. In recommending a 1 hr average NO<sub>2</sub> standard of 0.125 ppm, below the health standard recommended by the NHMRC, an additional significant cost is imposed on society which does not appear justified on health grounds. Although exposure frequency may be high between 0.125 ppm and 0.16 ppm, section 9.9.1 states that health levels above 0.125 ppm are relatively minor and generally symptoms are reversible. Costs of reduction are high. (110)</li> <li>- What evidence is there for lowering the NO<sub>2</sub> standard. (51)</li> <li>- Cannot see justification for 0.125 ppm and suggest that 0.15 ppm would be equally satisfactory. (113)</li> <li>- Do not believe there is a case for a more stringent standard regarding NO<sub>2</sub>. Proposed 1 hr standard is twice as stringent as Californian ‘goal’. Health effects of NO<sub>2</sub> ‘remain equivocal’. (44)</li> <li>- The proposed standard is not scientifically robust. There is insufficient evidence from short term studies to provide an hourly guidelines for NO<sub>2</sub> less than 1 ppm, a standard of 0.25 ppm would be sufficient to protect human health. (96, 172)</li> </ul> </li> </ul>	<p>New health data has become available since the NHMRC objective for NO<sub>2</sub> was set 15 years ago.</p> <p>The health and TRP reviews considered the standard should be 0.10-0.15 and 0.12 ppm respectively to protect asthmatics, children and people with respiratory disorders.</p> <p>The exposure assessment indicates that significant benefits are expected in moving from current ambient standards to the NEPM standard.</p> <p>As detailed in chapter 9 of the final impact statement, costs for any needed reductions are not expected to be high. Current management strategies are expected to deliver lower NO<sub>2</sub> in most airsheds within the 10 year timeframe.</p> <p>The Californian objective (0.25 ppm) was taken into account in proposing the standard (Table 9.7) so was the WHO objective (0.11 ppm) which is more stringent than the NEPM standard.</p>

## B. Nitrogen dioxide

### B1. Proposed standard (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of submissions argued the proposed standard should be <b>tightened</b>:</li> <li>- The one hour average of 0.125 ppm is not stringent enough. The WHO standard of 0.10 - 0.11 ppm should be implemented to protect the maximum number of the population, and very sensitive individuals. (153)</li> <li>- The only reason given for recommending 0.125 is that "the health risks associated with such exposures are expected to be relatively minor". This is despite the fact that clear benefits - more person events averted and increased health savings – of a standard around 0.10 ppm which aligns more closely with the WHO objectives (97)</li> <li>- The standard for NO<sub>x</sub> should be 1 ppb per 1 hr. (142)</li> </ul>	<p>The selection of this standard was made after considering the recommendations of the Health Consultant and TRP and after giving due consideration to economic and social factors.</p> <p>The TRP considered a standard of 0.12 ppm NO<sub>2</sub> averaged over 1 hr would ensure adequate protection of the most vulnerable subgroups in the population.</p>
<p><b>24 hr or other standard</b></p> <ul style="list-style-type: none"> <li>• A 24 hour standard was more useful. A 24 hour criterion has proven to be more difficult to meet in Melbourne, yet is absent from the NEPM. (6, 94)</li> <li>• The evidence for a 1 hr standard for NO<sub>2</sub> is weak. A 1 year standard is irrelevant for human health in Australia. (6, 62)</li> </ul>	<p>The health review did not recommend a 24 hr standard. The 1 hr and annual standards are considered to provide adequate protection.</p> <p>The annual standard is based on epidemiological associations between chronic NO<sub>2</sub> exposure and respiratory symptoms in children.</p>

### B2. Exceedences (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• More than one day for allowable exceedences of NO<sub>2</sub> should be allowed. (81)</li> <li>• The allowed exceedences is unduly restrictive. (115)</li> </ul>	<p>Without appropriate justification for more exceedences (not provided) the proposed one exceedence per year is reasonable.</p>



### B3. Impact Statement (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The conclusions do not reflect the gross uncertainty in the health aspects. The draft should include the statement that the figures quoted are the worst possible scenario, and that it is equally possible that there is no health impact from current nitrogen dioxide exposures in Australia. (73)</li> </ul>	<p>The claim that figures in the impact statement represent the “worst possible scenario” is rejected.</p> <p>The impact statement (see chapter 9) acknowledges that there does not appear to be a simple linear relationship between NO<sub>2</sub> exposure and adverse health outcomes. The proposed standard is designed to ensure adequate protection for the most vulnerable sub groups in the population.</p>
<ul style="list-style-type: none"> <li>We note that the document only presents costs for Sydney - this should be expanded to include cost estimates for Australia. (110)</li> </ul>	<p>Sydney costs were used as current motor vehicle strategies are expected to deliver lower ambient NO<sub>2</sub> levels, with industry reductions only likely to be necessary for the MAQS area. Information for other areas was not available.</p>
<ul style="list-style-type: none"> <li>The impact statement did not include enough information on production of such as: the effect that increased speed of a vehicle; the chemical reaction equation; the conversion between NO<sub>x</sub> and NO<sub>2</sub> (153)</li> </ul>	<p>Information on these issues is available. These factors are not regarded as being of such importance as to result in a change of the report's conclusion.</p>
<ul style="list-style-type: none"> <li>Seeks clarification on the source of the NO<sub>2</sub> figure that has been attributed to motor vehicles (p. 85), and the diesel figure (p. 62), in the impact statement. Suggests there should be a break down in the impact statement of NO<sub>2</sub> by type of vehicle. (152)</li> </ul>	<p>Information is available in airshed inventories on relative contributions of different vehicle types. While this is important for jurisdictions in determining control strategies, it does not impact upon the selection of standards.</p>
<ul style="list-style-type: none"> <li>The impact statement is not easy to understand and requires more information on possible health problems arising from higher populations. (130)</li> </ul>	<p>Australia’s population is expected to increase slightly during the next 10 years and this was taken into account in the analysis.</p>
<ul style="list-style-type: none"> <li>Page 96 gives the impression of large potential for NO<sub>2</sub> reductions, without discussing how much this potential has already been realised. (103, 146)</li> </ul>	<p>There is significant potential for further reduction in NO<sub>x</sub> emissions. Opportunities for reduction will vary in each area and should be considered through the development of airshed management plans.</p>
<ul style="list-style-type: none"> <li>Options such as low NO<sub>2</sub> burners and trim control should be explored as a priority as they have the potential to reduce NO<sub>2</sub> emissions by 30 to 55% in coal burning power. (103, 146)</li> </ul>	<p>New power stations in NSW have had low NO<sub>x</sub> burners installed for the passed two decades. Industry initiatives for minimising emissions would be welcomed by the jurisdictions.</p>

### B3. Impact Statement (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Challenges the assertion that widespread development of cogeneration will cause NO<sub>x</sub> problems. Questions the effectiveness of relying on "end of pipe" technologies for pollution control, given the development of emission control technology such as low NO<sub>x</sub> burners. End of pipe technologies are inconsistent with Best Practice for Waste Management and do not result in "lowest cost" emission reduction. Focus should be on and minimum standards for all and market based measures such as an emissions trading system would enable trading between mobile and stationary sources. (155)</li> <li>The significant cost implications for industry need to be considered before these measures can be recommended. (140)</li> </ul>	<p>Jurisdictions will consider the impact on air quality of existing and proposed emission sources.</p> <p>The best information available regarding easily available emissions reduction technologies was used in determining estimated costs. Lower costs may be achievable using cleaner production approaches, and such approaches would be strongly supported by all jurisdictions.</p> <p>The NEPM does not impose any specific reduction strategies or control technologies on jurisdictions. As noted above and in the impact statement, the management of individual airsheds is strictly at the discretion of the relevant jurisdiction.</p>
<ul style="list-style-type: none"> <li>The impact statement did not consider the cost to the community if natural gas is excluded from the market place because of NO<sub>x</sub> guidelines which do not deliver improved health effects. (96, 172)</li> </ul>	<p>It was not considered necessary to provide an estimate of the costs of a NO<sub>x</sub> management strategy which has not been seriously contemplated by NEPC or its member jurisdictions. Banning the sale of natural gas is not a management strategy which would be considered in order to achieve air quality improvements.</p>

### B4. Other issues (NO<sub>2</sub>)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>NO<sub>2</sub> is a major contributor to photochemical smog. (135)</li> </ul>	<p>Agree that NO<sub>2</sub> is a key ingredient of smog, and in some air-sheds, NO<sub>x</sub> reduction will be a core component of photochemical smog management programs.</p>
<ul style="list-style-type: none"> <li>NO<sub>2</sub> levels correlate significantly with ambient temperature levels. NO<sub>x</sub> contributes to acid rain. (111)</li> </ul>	<p>NO<sub>2</sub> generally increases with temperature because the reaction of NO to NO<sub>2</sub> is promoted by sunlight. Acid rain is not considered to be a significant issue in most parts of Australia (see SO<sub>2</sub>).</p>
<ul style="list-style-type: none"> <li>Have the areas of: toxicity of the substance; concentration (in the breathing zone); manner of use; length of time in</li> </ul>	<p>The draft NEPM covers ambient air, not workplace air quality. The issues raised were taken into account, although for the general</p>

#### B4. Other issues (NO<sub>2</sub>)

COMMENT	RESPONSE
<p>exposure (TWA); controls in place; special susceptibilities on the part of the employees been taken into account? (51)</p>	<p>population, not for employees.</p>
<ul style="list-style-type: none"> <li>Why single out NO<sub>2</sub> (as distinct from NO<sub>x</sub>?) (59)</li> </ul>	<p>Other forms of NO<sub>x</sub> such as NO are less common or of less health concern than NO<sub>2</sub>.</p>
<ul style="list-style-type: none"> <li>A number of submissions raised indoor air quality as a specific concern for NO<sub>2</sub>:               <ul style="list-style-type: none"> <li>Concern that the ambient goal would be adopted as an indoor goal, thus having significant economic consequences associated with gas heating and cooking. (94).</li> <li>There is not sufficient basis to recommend 0.03 ppm as a 1 year outdoor standard, and it should be applied as an indoor standard only. (113)</li> </ul> </li> </ul>	<p>The draft NEPM covers ambient air, not indoor air quality. Ambient air is defined in the Measure as:</p> <p><i>“ambient air means the external air environment, it does not include the air environment inside buildings or structures.”</i></p>
<p><b>Review period</b></p> <ul style="list-style-type: none"> <li>Suggest a review of NO<sub>2</sub> standards in 5 years to check on stability of data. (64)</li> </ul>	<p>The final impact statement notes that NEPC has agreed to a “Future Action” (as documented in the Introduction chapter to the final impact statement) to commence a review of the Measure in 2005, with earlier reviews planned for sulfur dioxide, particles and ozone.</p>
<ul style="list-style-type: none"> <li>Ongoing testing to maintain vehicle emissions is critical. (52)</li> </ul>	<p>This proposal is outside the scope of the Measure but could be adopted by jurisdictions as a component of an air shed management strategy. NSW has recently announced such a scheme.</p>

### C. PHOTOCHEMICAL OXIDANTS (Ozone)

#### C1. Proposed standard (ozone)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of submissions <b>supported</b> the proposed standard:</li> <li>- The proposed standard for O<sub>3</sub> is acceptable, however the achievement against the stricter standard recommended by the Health Technical Review Panel should also be reported. (65)</li> <li>- Supports the standard proposed by the NEPM, provided it does not conflict with the levels set in other countries. (152)</li> </ul>	<p>This support is appreciated.</p> <p>The NEPM can only require reporting against those standards specifically identified in Schedule 2. However, the public reporting of monitoring data will enable comparison of the measured levels with other possible standards.</p>
<ul style="list-style-type: none"> <li>• A number of submissions argued for <b>more stringent</b> standards:</li> <li>- Support the recommendations of the Health and Technical Review panels that standards for Ozone be 0.08 ppm, 1 hour and 0.06, 8 hour average. (campaign letters, 6, 20, 21, 32, 54, 61, 64, 71, 97, 98, 108, 135)</li> <li>- The Inquiry into Urban Air Pollution in Australia, 1997 reported "Photochemical smog (ozone) and particulates are the most serious of the urban air pollutants". Yet it is precisely for these two most serious of all urban air pollutants that the recommendations of the Health Review Study and the Technical Review Panels have been ignored. (71)</li> <li>- The proposed standards are a dilution of the scientific health data and they would not be likely to "represent the aspiration of the Australian people for environmental quality". (48)</li> <li>- In view of the observed relationships between ozone and mortality in Brisbane, the standards proposed by health and TRP themselves seem barely adequate to protect our health. The goal of the air NEPM is protection of human health and wellbeing' This goal cannot even hope to be achieved if we don't even try and aim</li> </ul>	<p>Each standard is determined after considering the range of health, social, technical and economic factors for that pollutant.</p> <p>The recommendations the Health and Technical Review panels for ozone were seen as being impracticable within the 10 year timeframe of the NEPM after consideration of social and economic factors.</p> <p>However, current information assessed in the final impact statement indicated that the 1 hour standard will protect the majority of the population.</p> <p>As noted in the final impact statement, NEPC has committed to commencing a review of the ozone standards by 2003 (see "Future Action" in the Introduction chapter of the final impact statement).</p> <p>Depending on the health, technical, social and economic information available at that time the standards may then be revised.</p> <p>Chapter 10 of the final impact statement summarises the current state of knowledge on options for reducing ozone for the community. Until detailed analyses have been completed, appropriate control programs can only be developed in general. The development of specific air shed management plans is the responsibility of the relevant jurisdiction.</p> <p>No data were provided to support a standard</p>

**C. PHOTOCHEMICAL OXIDANTS (Ozone)**

**C1. Proposed standard (ozone)**

COMMENT	RESPONSE
<p>for standards agreed by all parties as necessary for health. (71)</p> <ul style="list-style-type: none"> <li>- If the tighter standards are not technically and economically achievable within the ten year timeframe then perhaps a set of phased-in standards over a longer timeframe should be considered. (97)</li> <li>- Compared with the NO<sub>2</sub> standard, the 1 hr standard for O<sub>3</sub> is not stringent. (62)</li> <li>- The 1 hr standard for O<sub>3</sub> cannot be shown to be protective of healthy young adults in the outdoor exposure context, and a reduction in the 1 hr standard to 0.08 will be necessary over the next 5-10 years. Recommend a progress review in 5 years. (64).</li> <li>- The standard for O<sub>3</sub> should be 5 ppb (0.005 ppm), 1 hr. (142)</li> <li>- Not a big issue in Northern Territory but Support a stringent national measure for ozone. (82)</li> </ul>	<p>significantly below the health and TRP recommendations.</p>
<p><b>Relax the standard</b></p> <ul style="list-style-type: none"> <li>• In the US, EPA has introduced a NAAQS for ozone at 0.08 ppm averaged over eight hours (two exceedences per 3 years). (44)</li> </ul>	<p>The US objective was taken into account in developing this standard. As noted above, there will be a review of the ozone standard in 5 years.</p>
<p><b>Set an 8 hr standard</b></p> <ul style="list-style-type: none"> <li>• The proposed 4 hr standard comes from NHMRC guidelines that have never been justified. The evidence is primarily for 6-8 hour exposures, not 4 hours. Recommend that the existing 4 hr criterion be changed to an 8 hr. (6, 62)</li> <li>• A 4 hr averaging period for O<sub>3</sub> does not necessarily describe the community exposure patterns over the course of a summer's day. (64)</li> </ul>	<p>Health studies cover a broad range of time exposures including 1 hour, 3 hour, 6 hour and 24 hour periods.</p> <p>Days with high 8 hour ozone levels also have high 4 hour ozone levels.</p> <p>Ozone exposure data (Beer &amp; Walsh, 97) shows that the proposed 4 hour ozone standard of 0.08 ppm is equivalent to between 0.06 and 0.07 ppm as an 8 hour standard.</p>

**C2. Exceedences (ozone)**

COMMENT	RESPONSE
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### C2. Exceedences (ozone)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>For ozone, the target of one exceedence day per year per monitoring station should be increased to perhaps 6 days. (81)</li> <li>It may not be essential to control emissions to the extent where there were no exceedences. For example, for ozone exceedences, effort to improve prediction, so that those at risk can take appropriate action and so that temporary, discretionary emission reduction strategies can be encouraged. (94)</li> <li>The allowed exceedences is unduly restrictive. (115)</li> </ul>	<p>Appropriate allowance for extreme meteorological conditions was considered in proposing the standard for ozone. However this needs to be balanced against potential health impacts. Six exceedences is considered excessive and is not justified.</p> <p>Jurisdictions will consider issues such as smog prediction and warnings and short term avoidance measures as they develop air quality management plans. Many jurisdictions have such systems in place already, however warnings of poor air quality are not a replacement for air quality improvements that will meet the Measure’s goal of protecting human health.</p>

### C3. Impact statement (ozone)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Options need to be put to the community on the actions that need to occur to bring ozone to medically acceptable levels. After all it is the community which has the right to determine what is ‘reasonably’ achievable and what is not. (80, 98)</li> </ul>	<p>Chapter 10 of the impact statement summarises the current state of knowledge on options for reducing ozone for the community. Until detailed analyses have been completed, appropriate control programs can only be developed in general.</p>
<p><b>Controls/implementation</b></p> <ul style="list-style-type: none"> <li>Understands that each participating jurisdiction is required to formulate management plans. Would like to see that these plans do not entirely focus on reducing emissions from a single point source (eg. Power stations as NO<sub>x</sub> source) but treat all industries equitably. (95)</li> </ul>	<p>The management plans being developed will focus on the range of sources of air pollutants. Jurisdictions are taking increasingly sophisticated approaches to the management of diffuse and mobile sources of air pollution.</p>
<ul style="list-style-type: none"> <li>Population exposure estimates for ozone and NO<sub>2</sub> vary substantially from other published reports and this appears to be because monitoring data from different time periods have been used in the assessments. This highlights the fragility of the assessments when dealing with exceedences which occur infrequently. (94)</li> </ul>	<p>This is the first time such detailed estimates have been made. Other published reports did not have the access to the vast amount of data available to the project team. Hence comparison with other studies needs to be done with some caution.</p>

### C3. Impact statement (ozone)

COMMENT	RESPONSE
<ul style="list-style-type: none"><li>There is not enough information on possible ozone problems with a higher population in Australia. Australia is reported to be suffering from increased incidences of asthma, bronchitis, hayfever, allergies etc. The real cost to the health system must be quite high. (130)</li></ul>	The population of Australia and its cities will increase slightly over the next 10 years. This was taken into account. Ozone is only one of the many factors that may contribute to respiratory difficulties. The impact statement estimated the benefits of reducing health impacts by reducing peak ozone concentrations.
<ul style="list-style-type: none"><li>There is no comparison of all the cities in terms of the normal data on "days over the limit". No one seems to be able to confirm or deny the claim that Perth has more than Sydney or Melbourne. (20)</li></ul>	Perth has lower levels in its smog events which are less frequent than Melbourne or Sydney. This can be seen in Table 10.7 in the final impact statement which shows that peak levels (over 0.08 and 0.10 ppm, 1 hr) in Perth are lower and less frequent than those in Melbourne and Sydney.

### C4. Other issues (ozone)

COMMENT	RESPONSE
<ul style="list-style-type: none"><li>NEPC legislation allows States to adopt stricter standards. NSW has adopted the WHO goal of 0.08 ppm (averaged over one hour), and this should be acknowledged. (134)</li></ul>	This is acknowledged in Table 10.5 of the final impact statement.
<ul style="list-style-type: none"><li>A chemical equation showing how ozone is produced would have been helpful. (153)</li></ul>	The series of reactions that produce ozone are not easily summarised. A description is provided in chapter 10 of the final impact statement.

### D. Sulfur dioxide (SO<sub>2</sub>)

#### D1. Proposed standard (sulfur dioxide)

COMMENT	RESPONSE
<p><b>Supports the proposed SO<sub>2</sub> standards</b></p> <ul style="list-style-type: none"> <li>Supports the standard for SO<sub>2</sub> (30, 32, 64, 152)</li> </ul>	<p>This support is appreciated.</p>
<p><b>Relax the proposed SO<sub>2</sub> 1 hr standard</b></p> <ul style="list-style-type: none"> <li>The proposed 1 hr standard for sulphur dioxide is too low (99, 154)</li> <li>A sensitivity analysis on the proposed standard may well show that a slight upward adjustment of the SO<sub>2</sub> 1 hr standard does not result in significant detriment to health, but does reduce costs substantially (87)</li> </ul>	<p>Based on the available health data, concentrations of SO<sub>2</sub> above the proposed 1 hr standard may adversely affect susceptible individuals.</p> <p>The UK, WHO and EC have recently set levels well below this level.</p>
<p><b>Remove the 1 hr limit</b></p> <ul style="list-style-type: none"> <li>The 1 hr standard should be removed and only a 24 hr standard should apply. (6, 44, 62, 72, 88, 106, 110, 114, 145, 154):</li> <li>'Ambient air quality' should relate to long-term exposures of the community (99)</li> <li>The reason US EPA did not adopt short term standards in 1994 is not the lack of consensus, the EPA did not believe short term standards were justified as health effects from SO<sub>2</sub> are reversible. (72, 106, 107)</li> </ul>	<p>The evidence on health effects supports the setting of a short term standard.</p> <p>US EPA acknowledged that there are clear adverse health effects from short term exposure to SO<sub>2</sub>. The severity and reversibility of health effects were considered in setting the standard.</p>
<p><b>Tighten the proposed SO<sub>2</sub> standards</b></p> <ul style="list-style-type: none"> <li>The standard for SO<sub>2</sub> should be 2 ppb for 1 hr. (142)</li> <li>In the long term, the SO<sub>2</sub> 24 hr standard should be set at 0.04 ppm. (64)</li> <li>All areas currently comply with the proposed annual standard for SO<sub>2</sub>, which raises the issue of whether it should be tighter. (135)</li> </ul>	<p>No evidence is provided to support this proposal which is well below recommended levels for protecting human health.</p> <p>A review of the SO<sub>2</sub> standard will commence within 5 years. In the mean time, jurisdictions have been asked to monitor for 10 minute SO<sub>2</sub> as resources allow.</p> <p>The proposed annual standard is based on the agreed recommendation of the health and TRP reviews as sufficient to protect health.</p>



## D. Sulfur dioxide (SO<sub>2</sub>)

### D1. Proposed standard (sulfur dioxide)

COMMENT	RESPONSE
<p><b>Short term SO<sub>2</sub> standard</b></p> <ul style="list-style-type: none"> <li>• Recommend that reference to any number on a ten minute basis should be removed. (110)</li> <li>• To protect community health a short term (10 min.) standard should be set for SO<sub>2</sub>. (21, 36, 48, 62, 64, 94, 128, 142, 144)</li> <li>• 10 minute standard for SO<sub>2</sub> should be 0.175 ppm in line with the recommendation from the Streeton (health consultant) report. (36, 128, 144)</li> <li>• Given the proposed 1 hr value, also recommend a 10 minute standard of 0.50 ppm. (62)</li> <li>• Why is assessing compliance with a 10 minute standard any more difficult than for a 1-hour. (48, 94).</li> </ul>	<p>The draft NEPM did not include a 10 minute SO<sub>2</sub> standard.</p> <p>A 10 minute standard was not adopted because of the difficulties of assessing compliance with such a standard.</p> <p>Limited historical 10 minute data was available against which to assess economic and social costs of a possible 10 minute standard.</p> <p>A 0.50 ppm 10 minute standard would be double the NHMRC goal and above the NOEL.</p> <p>It has been recommended that jurisdictions monitor 10 minute SO<sub>2</sub> levels. This will provide significantly improved information to inform the review of a short term standard which NEPC has agreed to conduct by 2003 (see "Future Action" in the Introduction to the final impact statement).</p> <p>Assessing compliance with a 10 minute standard is difficult because urban levels of SO<sub>2</sub> are generally so low that it is extremely difficult to achieve accurate measurements with the monitoring equipment available. Over longer time periods, the measurement errors are less serious because the balance out to achieve an average measurement for the period.</p>
<p><b>Relax the proposed SO<sub>2</sub> 24 hr standard</b></p> <ul style="list-style-type: none"> <li>• The proposed SO<sub>2</sub> 24 hr standard is too tight because US NAAQS is 0.12-0.14 ppm. (110, 114)</li> <li>• The proposed standards are too tight and should be revised to the US EPA primary standards. (169)</li> <li>• The proposed standard will impact on Australia's international competitiveness with one of our major trading partners. (110)</li> <li>• The 24 hr standard does not statistically agree with the 1 hr value; it is excessively low. Recommend that the 24 hr standard</li> </ul>	<p>The US EPA standard was listed in table 11.2 of the impact statement and taken into account during the assessment.</p> <p>No detail is provided to support the claim that the standard will affect international competitiveness. Some other trading partners (eg. Japan, the EC) have more stringent standards. Sulfur removal technology has already been installed in a number of Australian facilities.</p> <p>Analysis of past SO<sub>2</sub> data shows that at lower concentrations of SO<sub>2</sub> the 1 hr to 24 hr ratio is closer to one than at higher concentrations.</p> <p>Statistical considerations notwithstanding, epidemiological studies show that sensitive</p>

## D. Sulfur dioxide (SO<sub>2</sub>)

### D1. Proposed standard (sulfur dioxide)

COMMENT	RESPONSE
<p>be 0.15 ppm which is statistically consistent with the 1 hr value. (6, 62)</p> <ul style="list-style-type: none"> <li>The NEPC SO<sub>2</sub> proposal for 24 hour standard is not based on any assessment of postulated health impacts but has been selected after consideration of a statistically consistent level with the proposed 1 hour standard. Statistical consistency is not a legitimate objective for an NEPM. (114)</li> </ul>	<p>individuals developing symptoms when SO<sub>2</sub> levels exceeded 0.087 ppm and the data support the proposed 24 hour standard as being achievable.</p> <p>EC limits are based on peak monitoring stations. The EC limit is 0.125ppm (not 0.20 ppm as per the Measure) with exceedences calculated over the whole network, not individual monitoring stations. EC exceedences are also based on hours, not on exceedence days as in the Measure.</p>
<ul style="list-style-type: none"> <li>It is not appropriate that a LOEL threshold be used to guide the formulation of a standard. (99).</li> </ul>	<p>It is appropriate to consider lower observed effect limits (LOELs) when developing a standard.</p>

### D2. Exceedences (sulfur dioxide)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The one day per year exceedence proposal, which will result in additional plant downtime is a considerable competitive burden relative to overseas competitive which use more appropriate environmental management controls. EU allows 24 exceedences for its 1 hr SO<sub>2</sub> standard. (107)</li> <li>The allowed exceedences is unduly restrictive. (115)</li> </ul>	<p>The proposed one exceedence is considered appropriate. The EU example is based on a much more stringent standard and is not strictly comparable. As noted above, many of Australia's major trading partners already have more stringent standards in place.</p>

### D3. Impact statement (sulfur dioxide)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The figure of 147,000 used for the population of the Latrobe Valley is too high. (146, 153)</li> </ul>	<p>Depending on how the Valley area is defined, the population is between 50,000 and 150,000. This does not change any conclusions, as Latrobe Valley is not a major contributor to total SO<sub>2</sub> exposures.</p>
<ul style="list-style-type: none"> <li>Costings in the impact statement are incorrect because: <ul style="list-style-type: none"> <li>- the population response is not all or nothing as assumed for the impact statement p 138</li> </ul> </li> </ul>	<p>The assessment in the final impact statement has been modified to take account of further information made available to NEPC.</p> <p>A conservative estimate has been used on</p>

### D3. Impact statement (sulfur dioxide)

COMMENT	RESPONSE
<p>- have recalculated the number of significant bronchospasm</p> <p>- time/activity studies of asthmatics shows that only a very little amount of time is spent each day at breathing rates high enough to produce asthma signs and symptoms on SO<sub>2</sub> exposure</p> <p>- the impact statement assumes that that none of the asthmatic patients exposed during a pollution event uses long acting bronchodilating medication routinely or before exercise. (114)</p> <ul style="list-style-type: none"> <li>• Costs greater than benefits. (114)</li> <li>• It must be kept in mind that not all the social and environmental benefits can be given a dollar figure, and that costs have been overestimated. It is important that the justification for choosing a standard not be solely based on economic considerations. (97)</li> </ul>	<p>health protection in the absence of other data.</p> <p>The degree of bronchial effects do vary between individuals.</p> <p>It is recognised that some asthmatics have medication. However many don't and atopics are not usually on medication.</p> <p>As explained in the impact statement, the standard was chosen after considering health, social and economic impacts.</p>
<ul style="list-style-type: none"> <li>• The relationship between the ground level concentrations and emission reductions used for the derivation of Table 11.7 of the impact statement is invalid. (114)</li> </ul>	<p>Reducing SO<sub>2</sub> emissions will in general reduce SO<sub>2</sub> ground level concentrations although stack height variations also have an impact. The table is an estimate based on an assessment of available information.</p>
<ul style="list-style-type: none"> <li>• Recognise the potential cost of SO<sub>2</sub> control investment in the Brisbane River area. Use consistent data and indicate the degree of uncertainty throughout the document. (110)</li> </ul>	<p>Based on information available at the time, neither the costs or benefits of any SO<sub>2</sub> controls that may be required by Brisbane's refineries were included.</p>
<ul style="list-style-type: none"> <li>• What does the long running Pt Pirie program, see 11.8.2, refer to? The basis of the 15% assumption in 11.8.2 needs to be clarified; the logic of not counting the cost of capital works planned or in progress is flawed. If these costs are not counted then the benefits must be based on the commissioned exposure assessment and the exposure that would be delivered by the standard. Do not believe it is appropriate to use changes in physiological response as the basis for establishing standards. Detail should be</li> </ul>	<p>Chapter 11 (see part 11.9.2) of the final impact statement discusses the Port Pirie pollution mitigation program. 15 % is the 15% atopics susceptible in the population.</p> <p>The costs and the health benefits both take the planned works into account.</p> <p>Physiological response is valid as a measure of respiratory impairment.</p> <p>The impact statement summarises voluminous information from the health studies which has been assessed. Information on individual studies is available.</p>

### D3. Impact statement (sulfur dioxide)

COMMENT	RESPONSE
provided on the numbers and percentages of subjects who suffered bronchospasm on a study by study basis. (72)	

### D4. Other issues (sulfur dioxide)

COMMENT	RESPONSE
<p><b>Point Source Issues</b></p> <ul style="list-style-type: none"> <li>• The inclusion of the short term number in the NEPM is creating an expectation in the community that the NEPM will be used for the control of point sources. (6, 62, 99, 154)</li> <li>• Since the peak to mean ratio for say 10-minute versus 1-hour concentrations are very site specific it is practically impossible to define surrogate 1-hour goal (6, 48, 62, 94, 154)</li> <li>• Agrees with imputed 10 minute approach. Industry emission reductions required. (32)</li> <li>• P141 indicates that residents in some point source regions will see an improvement in their air quality based on achievement in compliance with the standard which is misleading. (110)</li> <li>• While standards are not to be applied to zones directly influenced by point sources, there are some large industrial areas which may have a significant influence on SO<sub>2</sub> measurements at performance monitoring stations. The NEPM needs to explain how a performance monitoring station covering 25,000 to 330,000 people, in say Kwinana or Mt. Isa could report a one hour standard without being directly influenced by the local point source. (87)</li> <li>• SO<sub>2</sub> is involved in acid rain, therefore fuel companies should eliminate sulphur or at least decrease it to an insignificant</li> </ul>	<p>The imputed 10 minute guide for SO<sub>2</sub> is not in the draft NEPM. Jurisdictions will determine what SO<sub>2</sub> guidelines are used for industrial design.</p> <p>The 1 hr goal is considered to provide health protection for the majority of the population.</p> <p>Jurisdictions will develop air quality management plans which will detail how the goal is to be achieved.</p> <p>There will be reductions in some point source emissions as existing and future plans are implemented and this will improve air quality in some point source regions.</p> <p>See further comments and discussion within the monitoring section of this document.</p> <p>Major point source emissions can influence regional air quality. Jurisdictions are responsible for controlling point sources. Areas such as Kwinana and Mt Isa have specific jurisdictional legislation setting specific standards for the industry emissions.</p> <p>The proposed one year health standard will also provide protection from acid rain, which is not considered a serious problem in most parts</p>

**D4. Other issues (sulfur dioxide)**

COMMENT	RESPONSE
amount. (59)	of Australia.
<ul style="list-style-type: none"><li>• The NHMRC guidelines which the standards are based on have never been justified in public. (6)</li></ul>	The proposed standard is not based directly on the NHMRC guidelines.
<ul style="list-style-type: none"><li>• Recommends 5 yr review (64)</li></ul>	NEPC has committed to conducting a review of the need for a short term standard by 2003 and a review of this Measure by 2005 (see “Future Action” in the Introduction chapter of the final impact statement).

## E. LEAD (Pb)

### E1. Proposed standard (lead)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• A number of submissions <b>supported</b> the proposed standard:</li> <li>- Agrees with proposed standard. (32, 152)</li> <li>- No disagreement with proposed lead standard. [Consensus] (94)</li> </ul>	<p>This support is appreciated.</p>
<ul style="list-style-type: none"> <li>• A number of submissions supported a more stringent standard:</li> <li>- The lead standard should be <math>0.5 \mu\text{g}/\text{m}^3</math> as a monthly average. (21)</li> <li>- The proposed standard (for lead) in the draft NEPM equates to doing nothing. There can be no possible rational argument for calling for an annual average only. The 90-day average hides many poor air quality days; the concept of an annual average seeks only to hide more. (128, 144)</li> <li>- Report does not demonstrate that the proposed 1-year limit provides adequate protection from short-term events. Favours continuing with a 3 month lead limit of <math>1 \mu\text{g}/\text{m}^3</math>. (113)</li> <li>- The standard for lead should be nil. (142)</li> </ul>	<p>The NEPM lead standard is the most stringent in the world and coincides with the WHO goal.</p> <p>In areas described it is assumed that point sources are predominating and additional near source daily monitoring might be required. The annual average is to be determined from monthly averages.</p> <p>Current information indicates that there are few exceedences of 3 month goals in major urban centres.</p> <p>The proposal for a nil standard is impracticable.</p>
<p><b>Proposed standards too stringent</b></p> <ul style="list-style-type: none"> <li>• Increase standard to <math>1 \mu\text{g}/\text{m}^3</math> or <math>1.5 \mu\text{g}/\text{m}^3</math> (three month average) (24, 30, 51, 70, 81, 88, 114, 145)</li> <li>• The lead standard should be changed to <math>1.5 \mu\text{g}/\text{m}^3</math> of respirable lead as an annual average. (24)</li> <li>• Report does not demonstrate that the proposed 1-year limit provides adequate protection from short-term events. Favours continuing with a 3 month lead limit of <math>1 \mu\text{g}/\text{m}^3</math>. (113)</li> </ul>	<p>Such a standard would be met in most places, would represent a relaxation of the current situation, and would not protect human health.</p>
<ul style="list-style-type: none"> <li>• Any renewed media attention because of an inability to meet unnecessarily low ambient air lead levels will significantly</li> </ul>	<p>The standard coincides with the WHO goal and is not considered unnecessarily low.</p>

## E. LEAD (Pb)

### E1. Proposed standard (lead)

COMMENT	RESPONSE
depress property values, adding further to the stress level of inhabitants. (24)	
<ul style="list-style-type: none"> <li>• WHO and US Occupational authorities recommend much higher values (shown below) for an 8 hr working day. (51)</li> <li>- USA: 0.15 <math>\mu\text{g}/\text{m}^3</math> with short term exposure of 0.45 <math>\mu\text{g}/\text{m}^3</math> for 15 minutes;</li> <li>- WHO: 30 – 60 <math>\mu\text{g}/\text{m}^3</math></li> </ul>	This Measure sets ambient air quality standards, not occupational exposure standards.
<ul style="list-style-type: none"> <li>• There is no mention of one day in six, which is specified in the Victorian air quality objective for lead. (140)</li> </ul>	Note 1 under Schedule 2 of the Measure states that lead sampling must be carried out for a period of 24 hours at least every sixth day.

### E2. Exceedences (lead)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• No comment received on exceedences</li> </ul>	No exceedences are allowed for lead.

### E3. Impact statement (lead)

COMMENT	RESPONSE
<p><b>Impact Statement</b></p> <ul style="list-style-type: none"> <li>• Exposure assessment overestimates population exposure for lead. (24, 94)</li> </ul>	There may also be underestimates where ambient data from industry monitoring around point sources are not supplied to NEPC for analysis and consideration.
<ul style="list-style-type: none"> <li>• Agree with concept for holistic systems study of lead risks but note there is no mechanism. Recommend terms of reference of PRC be widened to allow commissioning of these studies. (62)</li> </ul>	See section 26 for further discussion on the role of the PRC.
<ul style="list-style-type: none"> <li>• The calculation shown for the 0.5 <math>\mu\text{g}/\text{m}^3</math> uses an incorrect lead level of 1 <math>\mu\text{g}/\text{m}^3</math> and wrongly assumes that a new standard of 0.5 <math>\mu\text{g}/\text{m}^3</math> automatically means an actual decrease in ambient air lead of 50%. (24)</li> </ul>	The calculation uses the difference in the levels. A concentration of 1 $\mu\text{g}/\text{m}^3$ was assumed as the current ambient level with the 0.5 $\mu\text{g}/\text{m}^3$ standard as the target. As lead levels are decreasing as a result of existing programs, there seems to be no reason why the 50% decrease would not occur over an extended time period as re-entrained leaded dust is cleaned up.
<ul style="list-style-type: none"> <li>• The calculations use average blood lead</li> </ul>	A no threshold assumption was made to

### E3. Impact statement (lead)

COMMENT	RESPONSE
<p>levels and changes that are well below 10 <math>\mu\text{g}/\text{dL}</math> and apply the 0.25 IQ points deficit per 1 <math>\mu\text{g}/\text{dL}</math> of blood lead. But these deficits are only relevant to blood lead levels above 10 <math>\mu\text{g}/\text{dL}</math>. (24)</p> <ul style="list-style-type: none"> <li>Any conclusion regarding adverse health effects below 10 <math>\mu\text{g}/\text{dL}</math> is speculative although some authors argue that in view of the fact that lead has no physiological function, a safety threshold does not exist. It needs to be made clear what assumptions were used in the case of lead. (158)</li> <li>Studies have not shown linear relationships in supposed IQ deficits</li> <li>If, as should be done, only the blood lead changes for those children currently above 10 <math>\mu\text{g}/\text{dL}</math> are considered, Then the relationship is not linear when the total child population is used. (24)</li> </ul>	<p>determine an upper bound estimate.</p> <p>Although the IQ effect has been attributed to blood lead levels above 10 <math>\mu\text{g}/\text{dL}</math>, no specific threshold has actually been identified at or below 10 <math>\mu\text{g}/\text{dL}</math>.</p> <p>The total IQ loss equation is linear and based on the difference in the geometric mean lead-in-blood levels within a specific range.</p> <p>It was assumed that reducing the current measured ambient levels by half would reduce the mean lead-in-blood levels by the same amount over time as lead contaminated soils and dust are slowly cleaned up.</p> <p>It is also assumed on page 166 that the total loss of IQ points at 1995 population levels is some 290,000 at current measured ambient lead levels.</p> <p>Reducing the theoretical ambient lead levels to half and using a blood lead-inhalation slope factor of 1.92 <math>\mu\text{g}/\text{dL}</math> per <math>\mu\text{g}/\text{m}^3</math> gives a total IQ loss of 56,000 points.</p>
<ul style="list-style-type: none"> <li>The initial calculation uses the average blood lead figure of 5.05 <math>\mu\text{g}/\text{dL}</math>. However, the resultant calculated loss of IQ points is equated with the current goal of 1.5 <math>\mu\text{g}/\text{m}^3</math> ambient standard, NOT the current actual ambient value. (24)</li> </ul>	<p>This was used to provide a crude comparison with the goal and the proposed standard in order to overcome the drawbacks of the analysis described above.</p>
<ul style="list-style-type: none"> <li>The blood lead-inhalation slope used of 1.92 <math>\mu\text{g}/\text{dL}</math> per <math>\mu\text{g}/\text{m}^3</math> differs significantly from figures quoted elsewhere in the impact statement (Streeton, Schwartz and WHO). Which of the three is correct? (24)</li> </ul>	<p>The blood lead-inhalation slope depends on a range of factors such as the age of the children, (eg, 3.8 <math>\mu\text{g}/\text{dL}</math> per <math>\mu\text{g}/\text{m}^3</math> was used for children under 4 years of age, 1.92 <math>\mu\text{g}/\text{dL}</math> per <math>\mu\text{g}/\text{m}^3</math> for those under 6) and whether indirect pathways are considered. It would also depend on the specific assumptions used in the various studies. For example, a study by Schwartz (1994b) used an approximate relationship of 1 <math>\mu\text{g}/\text{dL}</math> per <math>\mu\text{g}/\text{m}^3</math> as a screening study of health benefits to show total savings of \$17 billion for each 1 <math>\mu\text{g}/\text{dL}</math> reduction in blood lead levels in the USA.</p>
<ul style="list-style-type: none"> <li>It is considered (that as) there is no need for the adoption of further specific actions</li> </ul>	<p>Point source emissions may still need to be better-controlled, and current petrol pricing</p>



### E3. Impact statement (lead)

COMMENT	RESPONSE
to reduce lead emissions from mobile sources there are no gains to be made from the introduction of a new ambient lead standard. (24)	differentials may offer some gains for further reductions from older cars.
<ul style="list-style-type: none"> <li>• Alternate fuel conversion should be encouraged for those vehicles unable to run on low-octane unleaded petrol/leaded petrol. (44)</li> </ul>	This is an implementation issue which will be considered by jurisdictions in developing management strategies.
<ul style="list-style-type: none"> <li>• The first paragraph on p.178 claims 'the SA Health Commission advises that current management programmes for Port Pirie will lead to ultimate compliance with the NHMRC blood lead goal of ten micrograms per decilitre". This statement is quite incorrect and needs to be corrected. The comprehensive review of the programme released in 1993 advised the State Government that a substantial part of the city would have to be relocated if the goal was set to achieve 95% of children under 5 years below a blood level of 10µg /dL. (158)</li> </ul>	The impact statement has been revised.
<ul style="list-style-type: none"> <li>• The methods for calculating person events needs to be clarified. (158)</li> <li>• The estimated population intake of 100 µg/day of lead by the food chain needs to be corrected. (158)</li> </ul>	<p>This issue is discussed in comments related to exposure assessment.</p> <p>An intake of 30 µg/day of lead by the food chain is now assumed.</p>
<ul style="list-style-type: none"> <li>• P174 In estimating the population near point sources, it is unclear whether all ages or just those below five or six years of age were included. (158)</li> </ul>	The population below 4 year old was used.

### E4. Other issues (lead)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The need for lead monitoring is no longer justified, we should now be measuring lead replacement such as benzene. (63)</li> </ul>	Measurements of air toxics, such as benzene, have commenced in some jurisdictions and show levels below international guidelines. Australian design rules provide for lower compression ratios in engines to ensure low leaded and unleaded fuel can be used. In Australia there is no need for significant

**E4. Other issues (lead)**

<b>COMMENT</b>	<b>RESPONSE</b>
	increases in fuel VOCs or benzene.
<ul style="list-style-type: none"><li>• Replace lead with MMT rather than using benzene. (59)</li></ul>	There are also health concerns with MMT and hence caution about its introduction. It is not usual to add benzene (as it is already in the feedstock) to fuel in this country. Industry generally limits benzene levels to 3% with a max of 5%, as an annual average.

## F. PARTICLES

### F1. Proposed standard (particles - PM10)

COMMENT	RESPONSE
<p><b>Proposed standard is supported</b></p> <ul style="list-style-type: none"> <li>• The AHHA accepts that a 24-hour average limit of 50 µg/m<sup>3</sup> for PM<sub>10</sub> might be appropriate. (37)</li> <li>• Support the adoption of the Californian particles standard of 50 µg/m<sup>3</sup> PM<sub>10</sub>. (3)</li> <li>• The standard for particulate matter PM<sub>10</sub> measured over a 24-hour period is supported. However, a five-year review frame is not appropriate, and the standard should instead be reviewed when warranted by further scientific developments. (97)</li> <li>• The proposed interim standard for particles seems reasonable at the present time. (28)</li> <li>• Support the proposed standard. (22)</li> <li>• Given the health criteria that the particulate Standard is based on, the Road Transport Forum (RTF) does not object to this proposed standard. (152)</li> <li>• Notes the relaxation of allowable exceedences to five days per year for particulate as PM<sub>10</sub>, which has provided further comfort to some ESAA members who see PM<sub>10</sub> at 50 µg/m<sup>3</sup> as being tight, based on limited information available. (93)</li> <li>• I support the NEPC's efforts to strengthen standards for particulate matter. (111)</li> </ul>	<p>This support is appreciated.</p> <p>The allowable exceedences are not exemptions from reporting, they are ten-year achievement goals.</p>
<p><b>Proposed standards is too stringent/not supported</b></p> <ul style="list-style-type: none"> <li>• If PM<sub>10</sub> is adopted, it would be anti-competitive and a breach of the Trade Practices Act and a valid reason for competition payments. (109)</li> <li>• Standard is too low and exceedences levels is too few (1)</li> </ul>	<p>As discussed in the competition policy assessment to the Measure (see Appendix 2 of the final impact statement), the adoption of standards does not restrict competition in any market.</p> <p>The serious impacts of PM<sub>10</sub> on mortality was considered in setting the standard and the allowable exceedences.</p>

## F. PARTICLES

### F1. Proposed standard (particles - PM10)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• The PM<sub>10</sub> standard is not supported on the basis of evidence on health effects. (101, 169)</li> <li>• It is totally inappropriate in rural environments where naturally high dust concentrations are likely - this includes most of Western Australia. (101, 169)</li> <li>• The standard for PM<sub>10</sub> is excessively stringent relative to comparable overseas and existing Australian standards. If everyday operation is intended for monitoring PM<sub>10</sub> the goal is much more stringent than for one day in six operation. The 50 µg/m<sup>3</sup> standard is incompatible with the 150 µg/m<sup>3</sup> 24-hour standards of the USA and NSW. It would also be expected that the stringent standard proposed would have a substantial effect on the capacity of electricity generators to comply. (103, 106)</li> <li>• PM<sub>10</sub> standard and goal of 50 µg/m<sup>3</sup> and 5 exceedences per annum are considered to be too low and too extreme, respectively given local area conditions. A PM<sub>10</sub> guideline of 150 µg/m<sup>3</sup> is considered to be achievable in the goal period of 10 years. (154)</li> <li>• In the absence of better scientific information, the Minerals Council recommends adoption, as a national guideline, the PM<sub>10</sub> level of 150 µg/m<sup>3</sup>, 24 hr average, in line with the current NSW EPA goal. (88, 140, 145)</li> <li>• The standard for PM<sub>10</sub> is excessively stringent relative to comparable overseas and existing Australian standards. (140)</li> </ul>	<p>The NSW air quality management plan “Action for Air” (released in March 1998) indicated the draft NEPM PM<sub>10</sub> standards as an interim goal, and the standard has now been formally adopted under the Measure.</p> <p>A PM<sub>10</sub> guideline of 150 µg/m<sup>3</sup> is considered to be already achieved</p> <p>Air quality objectives such as the California, the EC and UK standards are similar to the Measure’s standard.</p>
<ul style="list-style-type: none"> <li>• The Air NEPM must demand reporting to the NEPC of PM<sub>2.5</sub> particles and PM<sub>1.0</sub> particles as the preferred option instead of PM<sub>10</sub>. (109)</li> </ul>	<p>NEPC has agreed that jurisdictions should commence PM<sub>2.5</sub> monitoring under its “Future Action” commitments (see the Introduction chapter in the final impact statement).</p>

## F. PARTICLES

### F1. Proposed standard (particles - PM10)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The standard for PM<sub>10</sub> should be 5 µg/m<sup>3</sup> per 1 hour. The period for developing a PM<sub>10</sub> standard within ten years is too long. The implementation period by the US EPA is sixty days, Australia should be able to do the same. (142)</li> </ul>	<p>Health Studies have not uncovered impacts over one hour as yet as they have only been correlated against daily maximum one hour averages in some studies.</p> <p>The ten years period is the goal for compliance; the NEPM will be the standard after it is made.</p>
<ul style="list-style-type: none"> <li>The proposed objectives for particulate matter PM<sub>10</sub> averaged over twenty four hours aligns with the current goal in California and is a third of the NAAQS in this regard for the US generally. Since the Australian urban pollution concern, including suspended particulate matter, compares favourably with most regions in the continental USA, and is perhaps an order of magnitude less of a concern than in California, the FCAI considers the setting of the NEPM standard at this level of stringency to be entirely unjustified. Submission. (44)</li> <li>MIM submits that NEPC should not make a standard, guideline or goal for PM<sub>10</sub> for a 24 hour averaging period which is numerically lower than the present USA EPA NAAQS of 150 µg/m<sup>3</sup> given the uncertainties in the science, the smallness of the effect and the lack of adequate analysis of the impacts. (114)</li> </ul>	<p>Justification for the standard includes averted levels of daily mortality with significant social and financial benefits associated with such mortality reductions. The lower existing levels in Australia will make it easier and much less expensive for us to meet the standard than it would in the US and California in particular.</p>
<ul style="list-style-type: none"> <li>Standard should differentiate between urban and non-urban regions. (60)</li> </ul>	<p>Rural residents would justifiably claim that this is not equivalent protection.</p>

### F2. Exceedences (particles)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Notes the relaxation of allowable exceedences to five days per year for particulate as PM<sub>10</sub>, which has provided further comfort to some ESAA members who see PM<sub>10</sub> at 50 mg/m<sup>3</sup> as being tight, based on limited information available.</li> </ul>	<p>The allowable exceedences are not exemptions from reporting, they are ten-year achievement goals.</p> <p>Exceedences are considered necessary to take account of the practical difficulties of achieving compliance in particular extreme</p>

## F2. Exceedences (particles)

COMMENT	RESPONSE
<p>(93)</p> <ul style="list-style-type: none"> <li>There is no evidence to suggest exceedences should be permitted rather than considered problematic. The impact of allowing five exceedences per year of the proposed PM<sub>10</sub> standard is likely to be a diminished motivation on the part of regulatory bodies to manage hazard reduction burning more carefully to avoid elevated PM<sub>10</sub> levels. (36)</li> <li>Support for the proposed 5 exceedences for particles. (93)</li> <li>Too few exceedences are allowed. (1, 102, 154)</li> </ul>	<p>meteorological conditions.</p> <p>The allowance for five exceedences is considered appropriate to allow for extreme meteorological conditions if there is appropriate management and timing of activities which may lead to exceedences.</p>
<ul style="list-style-type: none"> <li>Who will determine background levels and sources, and what if these are above the limit? (22)</li> </ul>	<p>The standard has been designed taking into account the background levels that are normally experienced. Except in unusual meteorological circumstances, background levels of particles should be well below the standard.</p>

## F3. Impact statement (particles)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>A five-year review time frame is not appropriate, and the standard should instead be reviewed when warranted by further scientific developments. (97)</li> <li>The Air NEPM must demand reporting to the NEPC of PM<sub>2.5</sub> particles and PM<sub>1.0</sub> particles as the preferred option instead of PM<sub>10</sub>. Adoption of PM<sub>10</sub> would result in delay of at least 5 years and up to 10-15 year delay in adoption of a PM<sub>2.5</sub> standard which is justified now on grounds of Protecting the health of Australian population in cities/urban areas. (109)</li> </ul>	<p>It is proposed to review the need for a PM<sub>2.5</sub> standard by 2001 and commence a review of the Measure as a whole in 2005. (See the “Future Action” discussion in the Introduction chapter of the final impact statement.)</p>
<ul style="list-style-type: none"> <li>Particulates must be measured daily - not every 6-day. (61)</li> </ul>	<p>This is the intention.</p>
<ul style="list-style-type: none"> <li>Research on the health effects of particles is still very active. The proposed standard</li> </ul>	<p>This paper was considered, as many others were. It should be noted that the research was supported by the Electric Power Research</p>

### F3. Impact statement (particles)

COMMENT	RESPONSE
<p>of 50 µg/m<sup>3</sup> will be exceeded in several sectors. Should consider the information published by Lipfert (1997) in which data on 25 recently published papers relating mortality change to short-term exposure to PM<sub>10</sub> is presented. The results show an intriguing downward trend over time. [Non-consensus] (94)</p>	<p>Institute.</p>
<ul style="list-style-type: none"> <li>• The determination of person events and subsequent benefit impact quantification is highly dubious and can lead to very incomplete conclusions about costs, impacts and benefits. The paper strongly implies that costs to industry are small and manageable while costed benefits are large and hence the proposed standards must be about right. (88, 145)</li> <li>• Health benefits are subjective with assumption that benefits will half health problems attributed to PM<sub>10</sub>. Reasonableness of assumptions not tested nor explained. In particular, per capita extrapolation of the Simpson and London 1995 report is not reasonable. This is not representative of the national situation. There has not been a thorough or proper estimate of costs. Sugar Industry has not been approached for input. It does not appear equitable or fair that Industry is required to take the burden of costs of implementing the measure (estimated at \$540 million). (102)</li> </ul>	<p>The determination of person events and the limitations of the assessment are fully explained in the impact statement.</p> <p>Costings associated with the measure are monitoring costs generally met by governments. The costs mentioned relate to the installation of control equipment are those that governments would consider as part of their normal air quality management strategies.</p>
<ul style="list-style-type: none"> <li>• No analysis of risk evaluation appears in the impact statement. Until such time as the NEPC conducts a reasonable risk assessment, NEPC should not make a PM<sub>10</sub> standard, which is inconsistent with the Queensland EPP. (102)</li> </ul>	<p>The risk evaluation applicable to particles is the 1% increase in mortality for every 10 µg/m<sup>3</sup>, (24 hr average) increment over a possible threshold of 10 µg/m<sup>3</sup>.</p> <p>Further explanation is included in the final impact statement.</p>
<ul style="list-style-type: none"> <li>• A strategy needs to be developed to cope with hazard reduction burning and wild fires in the Top End. Monitoring and public reporting on pollution levels at peak burning season would assist the public to</li> </ul>	<p>Greenhouse inventory estimates of these impacts might assist with public understanding, pending commencement of monitoring, however this is an implementation issue.</p>

### F3. Impact statement (particles)

COMMENT	RESPONSE
understand. (82)	
<ul style="list-style-type: none"> <li>It is extremely dubious about the percentage of particulates that is ascribed to diesel engines and seeks clarification of this figure. (152)</li> </ul>	<p>The impact statement states that diesel vehicles produce up to 80% of particles from vehicle produced emission in major cities. This data is sourced from the MAQS 1992 inventory for Sydney. It is for a Winter weekday and shows some 80% of PM<sub>10</sub> emissions come from heavy-duty vehicles, which are mostly (94%) diesels and the smaller proportion from other diesel powered vehicles.</p>
<ul style="list-style-type: none"> <li>Wood Smoke inventory data in error. (19)</li> <li>There is argument for further thought on the PM<sub>10</sub> standard. The NEPC has proposed an allowable exceedence of 5 event per year. There is no economic assessment of the implications (in terms of health effects and compliance benefits) of exceedence levels ranging from zero to 5 events per year. I consider that the</li> </ul>	<p>It is assumed that submission 19 refers to figure 13.4 of the draft impact statement which shows estimates of particle emissions per day. Emission estimates for Launceston used data from the NPI Trials (where an outdated emission factor estimate was used for wood heaters compared to new heaters meeting Australian Standards). However, subsequent modelling and comparison, in the NPI trials report, with actual monitoring indicated that measurements were somewhat higher than modelling predictions, which was unexpected as the emission factor used was a factor of two higher than anticipated. Hence, the emission factors are, for the moment, reasonable emission estimates for Launceston.</p> <p>Estimates for other Cities used published inventory data, was suitably qualified, and it was not expected that data needed to be reworked to provide indicative estimates. Estimates for Melbourne come from the Inventory for 1990 and hence might be also higher because of higher emission factor estimates than expected from new wood heaters.</p> <p>As discussed, economic assessment is difficult, as exceedences might be marginal or major, eg; 51 µg/m<sup>3</sup>, or 200 µg/m<sup>3</sup>, and hence would be so much dependent on the assumption as to be of limited value.</p> <p>Exceedences are not exemptions from reporting they are ten-year achievement goals.</p>



### F3. Impact statement (particles)

COMMENT	RESPONSE
<p>exceedences on 3 days per year should be used for short-term limits (1 to 24 hours). (113)</p>	
<ul style="list-style-type: none"> <li>NEPC should commission an independent expert review of the scientific basis for the proposal for PM<sub>10</sub> (which should include an assessment of the air quality data used in the key studies). (60)</li> </ul>	<p>A range of independent expert advice was sought both in the form of expert consultants studies and advice and Technical Review Panel advice during the development of the standard.</p>
<ul style="list-style-type: none"> <li>Why is the NEPM standard reduced by two-thirds? The report does not support this change with sufficient economic justification or the health justification. (102)</li> </ul>	<p>It is not clear what this statement refers to. If as suspected it refers to US NAAQS for PM<sub>10</sub>, then the justification appears in the impact statement.</p>
<ul style="list-style-type: none"> <li>The apparent lesser impact on health in European studies, around 0.3% increase in mortality for a 10 µg/m<sup>3</sup> increase in PM<sub>10</sub> compared to the 1% figure used in the draft, should at least be acknowledged. (37)</li> </ul>	<p>The variability in study results is greater in European studies than in US studies, presumably because of greater variability in particle measurement methods.</p>
<ul style="list-style-type: none"> <li>Regional Environmental Differences have not been taken into account with respect to respirable particles. (60)</li> </ul>	<p>See discussion of Regional Environmental Differences, above. The issue of existing or natural particle loading is an issue of practicability. For example sea salt levels in air have been shown to vary from 4% to 14% of the total of fine particles with distance from the coast and to also vary with season. This would mean that standards could be different across a city and be also dependent on the season if RED was to be taken literally. It would not be in accordance with the spirit of section 15 (c) of the NEPC Act that calls for the simplicity, efficiency and effectiveness of the administration of the measure to be taken into account.</p>
<ul style="list-style-type: none"> <li>Particles of crustal origin are recognised in the existing health report as being significantly less harmful than respirable particles from combustion sources. (60)</li> </ul>	<p>Given the doubt about the biological mechanism, this conclusion should be treated with some caution, when applied to daily mortality impacts.</p>
<ul style="list-style-type: none"> <li>The implied exposure/effect relationship appears based on a statistical association rather than a causal one, and there is no clear biological mechanism postulated for the relationship. (60, 84)</li> </ul>	<p>There are many studies with consistent results, which has prompted the UK Department of Health to conclude that it would be imprudent not to regard the demonstrative associations as causal. WHO also consider the effect is real.</p>

### F3. Impact statement (particles)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The impact statement indicates growing concern about smaller particles, however, it does not make clear how extensive the proposed standard is and degree of concern about particle size not caught by the standard. (135)</li> </ul>	<p>All particles up to the proposed cut-off of 10 µm are captured. The concern is with practical problems of measurement, especially the effects of the soluble and volatile components (including water vapour) and ensuring consistency of methods between TEOMs and Hi Vols.</p> <p>As stated before there appears to be more studies associating Mortality with PM<sub>10</sub> than for other particle sizes and hence the proposal to use it as the upper cut-off size range pending further research and development.</p>
<ul style="list-style-type: none"> <li>The draft ignores key local information such as the extensive CSIRO/ANSTO aerosol project. (73)</li> </ul>	<p>Data were sought from all agencies and needed to be in a form that could be used for the exposure study which was also conducted by CSIRO. The study cited has not been finalised, but the earlier ANSTO study provided information on elemental composition (for twice weekly, 24 hour samples) which has been referenced in the impact statement.</p>
<ul style="list-style-type: none"> <li>Exceedences of standards by wildfires cannot be managed and have the potential to challenge the reality of the NEPM and influence compliance. (1)</li> </ul>	<p>Excessive wildfires might indicate that sufficient fuel reduction has not taken place. Exceedences are not exemptions from reporting they are ten-year achievement goals.</p>
<ul style="list-style-type: none"> <li>NSW examples are not relevant to WA. (1)</li> </ul>	<p>No data have been supplied so far by WA fire authorities.</p>
<ul style="list-style-type: none"> <li>Use of fire by other than Fire Authorities such as land holders and Pastoralists need to be considered. (1, 7)</li> </ul>	<p>This is an implementation issue which will be considered by each jurisdiction.</p>
<ul style="list-style-type: none"> <li>The cost of implementing control measures by industry to achieve the proposed standards are incomplete - particularly as they apply to the electricity supply business – in fact there is no evidence that the costs on this industry have been considered effectively. (93)</li> </ul>	<p>The costs have been estimated using available data from jurisdictions, overseas cost data and other stakeholders. Costs of power station emissions control are discussed in section 13.9.6 of the final impact statement.</p>
<ul style="list-style-type: none"> <li>Standard should differentiate between urban and non-urban regions. (60)</li> </ul>	<p>Rural residents would justifiably claim that this is not equivalent protection.</p>
<ul style="list-style-type: none"> <li>NEPM should clearly specify the types of material coming within the definition of</li> </ul>	<p>It is not clear how this will assist monitoring of particles as most types of particles are</p>

### F3. Impact statement (particles)

COMMENT	RESPONSE
<p>“Particles”. (7)</p>	<p>measured by the methods proposed. The ANSTO study provides some understanding for elemental composition in NSW.</p>
<ul style="list-style-type: none"> <li>Note that smoke from rural sources such as bushfires and agricultural practices have recently been proved to be the major causes of primary, and perhaps secondary pollution episodes in several Australian cities. (165)</li> </ul>	<p>The impact statement notes the impact of smoke from a range of sources including bushfires and agriculture on air quality outcomes.</p>

### F4. Other issues (particles)

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>There is no mention of one day in six, which is specified in the Victorian air quality objective for lead. (140)</li> </ul>	<p>Continuous monitoring is proposed for particles as it is a 1 day standard. One day in six may be used for lead as it is an annual standard.</p>
<ul style="list-style-type: none"> <li>All jurisdictions should adopt uniform legislation for wood heaters and coordinate their policies, specifically using AS 4013 and with a tightening of emission standards from 5.5g/kg to 4g/kg by 2001 as per the recommendation in the report “Urban Air Pollution in Australia”, effective immediately. Restrictions should be placed on the sale of heaters that do not comply with AS 4013, which should be phased in as soon as possible. (42)</li> <li>Local government should target smoky home heaters and apply penalties for non-compliance with emission standards. (41)</li> <li>There should be an immediate ban on all new open fireplaces in the urban environment. (142)</li> <li>Modern fireplace inserts make the practical emission performance of the inserts comparable to slow combustion heaters, thus reducing overall emissions. Therefore it is clear that a heat-circulating firebox cannot be placed in the same category as a traditional brick open fireplace. (41)</li> </ul>	<p>Implementation issues are a matter for jurisdictions to consider in developing their air quality management strategies. These comments are not relevant to the content of the Measure.</p> <p>The Measure is not a federal government initiative, it is a national approach of all nine Australian Government and there is no provision to ban open fire places.</p>

**F4. Other issues (particles)**

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>• I can see no benefit in the empty gesture of banning open fireplaces in new homes. This will not achieve any measurable decrease in pollution, but rather a draconian measure to deny our families of traditional enjoyment passed on through the generations. This is a broad reaching Federal Government proposal with a detrimental impact on South Australian employment. (74)</li> <li>• Hazard reduction burning should not be conducted when the weather patterns are conducive to the formation of smog. (142)</li> <li>• Media warnings of high pollution days should be initiated along with a ban on the lighting of all fires on such days. (142)</li> <li>• As a possible means to combat the higher particle emissions from older vehicles in urban areas, the RTF would support the inclusion of tax incentives to encourage the purchase of new equipment. (152)</li> <li>• Bushfire hazard reduction is only one of a number of important reasons for prescribed burning. Does not seem to have been fully understood with the focus being on fuel reduction burning rather than environmental and other valid reasons for managing fire through prescribed burning. (116)</li> <li>• Prescribed burning is a well-established management practice of Forestry SA and is an integral part of managing both plantation and native forests. Prescribed burning is insignificant when compared with overall matter particles resulting from other sources, including wildfires. The essential interaction between native vegetation and fire in the management of our landscape, including why agencies like ourselves manage fire through prescribed burning for protection, conservation and commercial reasons, does not appear to have been recognised.</li> </ul>	

#### F4. Other issues (particles)

COMMENT	RESPONSE
<p>(116)</p> <ul style="list-style-type: none"> <li>Any control measures resulting from this NEPM must not limit or prevent the proper maintenance of biodiversity needs and other activities associated with sustainable forest management and development. (116)</li> </ul>	
<ul style="list-style-type: none"> <li>Smoke haze cannot be easily identified or separated by background sources. (1)</li> </ul>	<p>In most cases, where it is the major source, it can be identified; for example the NSW Fire Authorities have indicated that they can identify such incidents.</p>

#### F5. Particles – PM<sub>2.5</sub> and smaller

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>The fine particulate standards need further consideration, with respect to the allowed number of exceedences, under what conditions these occur and whether it is included in the monitoring. (campaign)</li> <li>The standard for PM<sub>10</sub> is a courageous proposal, but is out of step with the USA and others where PM<sub>2.5</sub> is the focus. In any case the evidence for the claimed impacts is controversial. Certainly, however, a standard based on the precautionary principle is warranted in this case. (6)</li> <li>If a standard pending further research is required in Australia, it should be either a PM<sub>2.5</sub> standard or its equivalent in nephelometer coefficients. (campaign)</li> <li>Recommend that the NEPM be amended to include a PM<sub>2.5</sub> annual and 24 hr standard consistent with Health advice. Should this recommendation not be adopted, it would be desirable that reference be made to the USEPA as an interim standard pending the review. (campaign)</li> </ul>	<p>NEPC has committed to commencing monitoring PM<sub>2.5</sub> of as soon as possible and reviewing the need for a PM<sub>2.5</sub> standard by 2001 (see the “Future Action” discussion in the Introduction chapter to the final impact statement).</p> <p>This lack of PM<sub>2.5</sub> data is one of the main issues. Until inventory data is available on PM<sub>2.5</sub>, costs and controls will remain unknown as acknowledged in the impact statement. NEPMs are not able to be made without consideration of such data.</p>
<ul style="list-style-type: none"> <li>The panels have recommended a PM<sub>2.5</sub></li> </ul>	<p>The USA has serious problems because of the</p>

## F5. Particles – PM<sub>2.5</sub> and smaller

COMMENT	RESPONSE
<p>standard – the US has serious pollution problems in its major urban centres because it adopted the ineffective PM<sub>10</sub> standard. (campaign)</p>	<p>continued growth in emission sources in the large major cities. Growth in population and car use cancels out many of the useful gains of the attempts at controlling emissions. The main problem with the US PM<sub>10</sub> standard may have been that it was not stringent enough to provide the extra incentive for effective control measures.</p>
<ul style="list-style-type: none"> <li>• It is clearly obvious that a PM<sub>2.5</sub> (24 hour) standard of around 20-25 µg/m<sup>3</sup> is needed. There should be firm commitments to this standard and to obtaining relevant data and consensus on measurement techniques. (148)</li> <li>• Given that research is indicating the dangers of PM<sub>2.5</sub> and PM<sub>10</sub>, we urge NEPC to require reporting on both within three years, with the standard to be reviewed in 2001. (80)</li> <li>• The standard being proposed is insufficient to protect people's health, especially in the long term. (54)</li> <li>• Introduction of a PM<sub>2.5</sub> standard is required. (campaign, 5, 21, 32, 36, 61, 64, 65, 98, 108, 109, 128, 134, 142, 144)</li> <li>• Against the advice of both your health review study and TRP, you have chosen to ignore the case for providing a current standard for PM<sub>2.5</sub>. PM<sub>2.5</sub> data needs to be monitored now. (108)</li> <li>• The PM<sub>2.5</sub> pollution relates largely to motor vehicle emissions which are the greatest contributor to air pollution in urban areas and are responsible for significant negative impacts on community health and morbidity. Why then is there the possibility that only a PM<sub>10</sub> standard will be specified. (108)</li> <li>• The Inquiry by the Australian Academy of Technological Sciences and Engineering (ATSE) into Urban Air Pollution in Australia, 1997 reported "Photochemical smog (ozone) and particulates are the</li> </ul>	<p>Of the 32 studies cited by the Health Review Consultant showing significant associations between particulate matter and daily mortality from respiratory and cardiovascular causes, 8 were correlated with PM<sub>2.5</sub>, 1 with PM<sub>7</sub>, 13 with PM<sub>10</sub>, 3 with PM<sub>13</sub> and 8 with PM<sub>50</sub> (TSP).</p> <p>At the time this comparison was made by the Health Consultant, there were as many studies of PM<sub>10</sub> that were correlated with mortality as there were PM<sub>50</sub> (TSP) studies.</p> <p>Hence there is no clear case at this stage to favour PM<sub>2.5</sub>, against PM<sub>10</sub>.</p> <p>A single study might appear convincing for one particle mode, while another might be equally convincing for another.</p> <p>Despite the consistency of the results of these studies the question of which particles cause the observed effects is unknown at this stage.</p> <p>However, it has been recommended that Jurisdictions monitor for PM<sub>2.5</sub>, to ensure that when a review of the particle standard occurs, there will be a sufficient body of data to ensure a costing of controls and benefits can be undertaken.</p> <p>Critics of these studies have questioned the validity of the data sets used and statistical techniques applied to them; have noted that studies of other cities have not found similar effects; have independently analysed some of the same cities and come to different conclusions about the relative effects of particulate air pollution, other forms of pollution, and weather, and have questioned the biological plausibility of the reported</p>

**F5. Particles – PM<sub>2.5</sub> and smaller**

COMMENT	RESPONSE
<p>most serious of the urban air pollutants". Yet it is precisely for these two most serious of all urban air pollutants that the recommendations of the Health Review Study and the Technical Review Panels have been ignored. Substantially greater adverse effects have been found in relation to PM<sub>2.5</sub> pollution than PM<sub>10</sub> pollution. While the need for further research is appreciated, even the interim standard must be set in relation to the pollutants found to be responsible for the most adverse health effects as well as those actually found to relate to illness and mortality. If a standard pending further research is required, it should either be a standard, or its equivalent in nephelometer coefficients, to take advantage of the extensive existing air monitoring network in our capital cities. (campaign)</p> <ul style="list-style-type: none"> <li>• Any standard should err on the side of caution, therefore PM<sub>2.5</sub> is recommended, to avoid taking unnecessary risks. (campaign)</li> <li>• Australia should strive to ensure the use of the best measurement available to monitor air quality. PM<sub>2.5</sub> should be used as an indicator. Now is the opportune time to assist Health Departments in the future with data that enables public health conclusions to be reached. (5)</li> <li>• The American Lung Association is currently recommending stricter standards for particulates. The report should have thoroughly addressed particulate less than 2.5 µm. (153)</li> <li>• There is a growing body of literature pointing to particles smaller than 2.5 microns in diameter being most directly associated with adverse health impacts: These studies suggest major roads are a major source of ultra-fine particles warranting monitoring and impact mitigation. (campaign)</li> </ul>	<p>associations between particulate air pollution and higher illness and mortality rates.</p> <p>Much of the very fine particles below 2.5 µm are largely soluble and formed from gases as atmospheric transformation products of nitrogen oxides, sulfur oxides and organic species including biogenic organic emissions (such as terpenes) from trees and vegetation. In regions near the coast, sea salt particles make up to 16.5% of total PM<sub>2.5</sub> particle fraction and have been found in samples obtained 5 km from the coast ranging down to 4% at 50 to 100 km from the coast in summer according to some ANSTO data for NSW. Sea salt has a size range from 0.1 to 20 µm with a medium size of about 7 µm.</p> <p>In view of the apparent uncertainties, it was considered appropriate to invoke the precautionary principle for a staged response to monitoring and controlling PM<sub>10</sub>, where we have evidence on control costs and have a large body of monitoring to consider, and have local studies to rely on.</p> <p>Developing controls for PM<sub>10</sub> will also assist in understanding controls on finer particles. As mentioned before on page 188 of the impact statement, monitoring PM<sub>10</sub> indicates that some 40% to 60% of PM<sub>10</sub> is PM<sub>2.5</sub> depending on location and season and hence would be a surrogate for a PM<sub>2.5</sub> standard of 20 to 30 µg/m<sup>3</sup> as a 24 hour standard in many situations.</p> <p>The NEPM particulate standard will be one of the most stringent in the world and will afford much better protection than existing goals and provide a similar level of protection to that suggested in most regions.</p>

### F5. Particles – PM<sub>2.5</sub> and smaller

COMMENT	RESPONSE
<ul style="list-style-type: none"> <li>Support the PM<sub>10</sub> standard but concerned about the delayed introduction of the PM<sub>2.5</sub> standard. There is significant research that exists now to indicate the dangers of PM<sub>2.5</sub> and PM<sub>1</sub>. We have the capability of measuring PM<sub>2.5</sub> now. Recommend that NEPC include a PM<sub>2.5</sub> standard within the air NEPM. As a poor second choice, NEPC should commit itself to developing a standard, and require reporting, on PM<sub>2.5</sub> by 2001. (98)</li> </ul>	
<ul style="list-style-type: none"> <li>The effects of PM<sub>2.5</sub> are not clear. (65)</li> </ul>	<p>Every attempt has been made to clarify the health effects where this was possible.</p>
<ul style="list-style-type: none"> <li>The new USEPA PM<sub>2.5</sub> Standard would appear to be in reasonable alignment with the PM<sub>10</sub> standard, given the small amount of Australian data on the fraction of PM<sub>2.5</sub> within the PM<sub>10</sub> range. AIP supports the intention to collect monitoring data on PM<sub>2.5</sub> over the coming years in order to improve the information base. Submission: (87)</li> </ul>	<p>The NAAQS for PM<sub>2.5</sub> is at the lower end of data estimates for Australia.</p>
<ul style="list-style-type: none"> <li>Reporting on PM<sub>2.5</sub> (or nephelometer coefficients) and PM<sub>1</sub> should be required by NEPC within three years, not postponed. (campaign, 134)</li> <li>There is a growing body of literature pointing to particles smaller than 2.5 microns in diameter being most directly associated with adverse health impacts:               <ul style="list-style-type: none"> <li>– These studies suggest major roads are a major source of ultrafine particles warranting monitoring and impact mitigation.</li> <li>– State EPAs should have no difficulty whatsoever in monitoring PM<sub>2.5</sub> within a two year timeframe. (36)</li> </ul> </li> </ul>	<p>Ministers agreed under ‘Future Actions’ that jurisdictions will commence or continue programs for monitoring particles less than 2.5 microns in major airsheds to provide the basis for NEPC to review the need for a related standard.</p>
<ul style="list-style-type: none"> <li>An ambient air standard for PM<sub>2.5</sub> (2 µg/m<sup>3</sup> per 1 hour) should be developed now. (142)</li> </ul>	<p>The TRP or Health Review Consultant made no recommendations for a one hour standard. There are no reported health impacts over one hour only correlations with daily maximum one-hour averages.</p>



**F5. Particles – PM<sub>2.5</sub> and smaller**

<b>COMMENT</b>	<b>RESPONSE</b>
<ul style="list-style-type: none"><li>• PM<sub>2.5</sub> is already monitored in many airsheds. (54)</li></ul>	Monitoring has commenced in some airsheds but it is not extensive in terms of numbers of monitors or length of monitoring period.
<ul style="list-style-type: none"><li>• What is the point of a new standard which requires installation of a new set of measuring devices. (campaign)</li></ul>	The new standard uses existing technology and can be adapted for PM <sub>2.5</sub> .

## APPENDIX A – AMBIENT AIR QUALITY SUBMISSIONS RECEIVED

<b>Submission No.</b>	<b>Name</b>
1	<b>Bush Fires Board of WA</b>
2	<b>Mr Neville Peck</b>
3	<b>Mr Tim Frodsham</b>
4	<b>Ashes to Dust (newsletter of Canberra Ash Incorporated)</b>
5	<b>Wollongong City Council</b>
6	<b>Environment Management Industry Association of Australia</b>
7	<b>Mr Hugh Evans</b>
8	<b>Ms Sue Gordon</b>
9*	<b>Ms Ann Stephens</b>
10*	<b>Greater Lithgow and District Bicycle Advocacy Group</b>
11*	<b>Bicycle Institute of Queensland Incorporated</b>
12*	<b>Dr. Jan Hunter</b>
13	<b>Transfield Pty Ltd</b>
14*	<b>Mr Richard Smithers</b>
15*	<b>Bicycle Industries &amp; Traders' Association Inc.</b>
16*	<b>VeloHealth – Community Health Centre</b>
17*	<b>Ms Emelia Holdaway</b>
18*	<b>Retail Cycle Traders Australia Inc.</b>
19	<b>Associate Professor John Todd</b>
20	<b>Professor Peter Newman</b>
21	<b>Environmental Defenders Office (SA) Inc.</b>
22	<b>R Hardwick</b>

23*	<b>Centre for Development and Innovation in Health Inc.</b>
24	<b>Mr Brian Hutchinson</b>
25*	<b>Mr Andrew Loch</b>
26	<b>Natural Allies Environmental Advocates</b>
27	<b>Western Action Group</b>
28	<b>Air Pollution, Environmental Health &amp; Respiratory Diseases (Northern Region Tasmania) Working Party</b>
29	<b>Jetmaster Brick Fireplace Components P/L</b>
30	<b>Mr Mutthiah Manick</b>
31	<b>City of West Torrens</b>
32	<b>City of Mitcham</b>
33*	<b>Paul Maynard</b>
34*	<b>Mr Peter Doogue</b>
35*	<b>Ms Jane Griffith</b>
36	<b>Queensland Conservation Council</b>
37	<b>Australian Home Heating Association Inc.</b>
38	<b>Mr John Sullivan</b>
39	<b>Mr Tony Iso-Aho</b>
40*	<b>Ms Helena Bond &amp; Mr David Levick</b>
41	<b>Jetmaster (Vic) Pty Ltd</b>
42	<b>Mr Charles W Buckingham</b>
43*	<b>Mr John Monro</b>
44	<b>Federal Chamber of Automotive Industries</b>
45	<b>Ecotech</b>
46*	<b>Ms Monique Bond &amp; Dr Graham Bond</b>
47*	<b>Ms Ruth Beach</b>

48	<b>Queensland Public Health Services Branch</b>
49*	<b>Mr Brent Parkinicholas</b>
50*	<b>Mr Michael Mulcahy</b>
51	<b>Yilgarn Star Pty Ltd</b>
52	<b>Mr Clive Woodwort</b>
53*	<b>Mr Andrew McIver</b>
54	<b>Smogbusters Working Group</b>
55*	<b>Mr Marshall Wilkinson</b>
56*	<b>Ms Dorothy L Robinson</b>
57*	<b>Mr Theo Bekkers</b>
58*	<b>Mr Robert Moore</b>
59	<b>Mr A Glover</b>
60	<b>Extractive Industries Council</b>
61	<b>R Clemens</b>
62	<b>CSIRO Environment &amp; Natural Resources</b>
63	<b>Mr David Lapans</b>
64	<b>Dr Jonathan A Streeton</b>
65	<b>RACQ</b>
66*	<b>Kris Brimmel</b>
67*	<b>Mr David Foran</b>
68*	<b>Mr Sebastian Welsh</b>
69	<b>Hydro Magnetics Pty Ltd</b>
70	<b>People for Public Transport</b>
71	<b>People for Ecologically Sustainable Transport</b>
72	<b>Pasminco</b>

73	<b>Shell</b>
74	<b>Jetmaster – Wood and Gas Fireplaces</b>
75	<b>Huson &amp; Associates Pty Ltd</b>
76	<b>Jorgen (Joe) Holm</b>
77*	<b>University of New England</b>
78	<b>Otto Gara</b>
79*	<b>Ian Reeve</b>
80	<b>Environmental Defender’s Office Ltd</b>
81	<b>Thomas J Flynn</b>
82	<b>The Environment Centre NT Inc</b>
83	<b>Reanne Jarvis</b>
84	<b>Victorian Chamber of Mines Inc</b>
85	<b>Confidentiality requested</b>
86	<b>Solomon Corrosion Control Services Pty Ltd</b>
87	<b>Australian Institute of Petroleum</b>
88	<b>Minerals Council of Australia</b>
89*	<b>Smogbusters</b>
90*	<b>Mark McCann</b>
91*	<b>Ken Wilson</b>
92*	<b>Klaus Hetzel</b>
93	<b>Electricity Supply Association of Australia Ltd (ESAA)</b>
94	<b>Clean Air Society of Australia and New Zealand</b>
95	<b>Energy Developments</b>
96	<b>The Australian Gas Association</b>
97	<b>Local Government and Shires Association on New South Wales</b>

98	<b>Environment Victoria Inc</b>
99	<b>Kalgoorlie Consolidated Gold Mines</b>
100	<b>Chamber of Commerce and Industry</b>
101	<b>The Chamber of Minerals and Energy of WA</b>
102	<b>Australian Sugar Milling Council</b>
103	<b>Yallourn Energy Pty Ltd</b>
104	<b>Australian Business Limited</b>
105	<b>Australian Conservation Foundation</b>
106	<b>Normandy Mining Limited</b>
107	<b>MTIA</b>
108	<b>Mr W Godson</b>
109	<b>Neville Ford</b>
110	<b>Ampol</b>
111	<b>Mrs Helen Fitzgerald</b>
112*	<b>Silas Palmer</b>
113	<b>Consulting Environmental Engineers</b>
114	<b>MIM Holdings Limited</b>
115	<b>Mobil Oil Australia Limited</b>
116	<b>Forestry SA</b>
117*	<b>Peter and Annabell Leske</b>
118	<b>National Association of Forest Industries Ltd</b>
119	<b>Confidentiality requested</b>
120*	<b>John McCarthy</b>
121*	<b>Chris Hewgill</b>
122*	<b>J A McCarthy</b>
123*	<b>Harley McCarthy</b>

124*	<b>M Courtenay</b>
125*	<b>Angus Witherby</b>
126*	<b>W K Jollie, JP</b>
127	<b>Graeme S Lorimer, PhD</b>
128	<b>No-Lead Group</b>
129*	<b>Mrs Lynette McLean</b>
130	<b>Mr Douglas V Huntley</b>
131*	<b>G Trott</b>
132*	<b>Paul Markham</b>
133*	<b>Author Unknown</b>
134	<b>Total Environment Centre Inc</b>
135	<b>Royal Australian Planning Institute</b>
136	<b>Australian Chamber of Manufactures</b>
137*	<b>Bev &amp; Ron Lukin</b>
138*	<b>Elizabeth McCrudden</b>
139*	<b>Chris Pairet</b>
140	<b>Ecogen Energy</b>
141	<b>Confidentiality requested</b>
142	<b>ASEHA Qld Inc</b>
143*	<b>M Appleby</b>
144	<b>The Lead Group</b>
145	<b>Queensland Mining Council</b>
146	<b>Edison Mission</b>
147*	<b>Mr David Jackson</b>
148	<b>Nature Conservation Council of NSW Inc.</b>
149*	<b>Christopher Nolan</b>

150*	<b>Darryl Anderson</b>
151*	<b>Brian Brett</b>
152	<b>Road Transport Forum</b>
153	<b>Mrs. Joanne Jones</b>
154	<b>Nabalco Pty. Ltd.</b>
155	<b>Australian Cogeneration Association</b>
156	<b>Confidentiality requested</b>
157	<b>Confidentiality requested</b>
158	<b>South Australian Health Commission</b>
159*	<b>Mr. Warren Flood</b>
160	<b>CSIRO Division of Coal &amp; Energy</b>
161	<b>Transport WA</b>
162	<b>Environmental Defender's Office of Northern Queensland</b>
163*	<b>Mr. Charles Perry</b>
164	<b>Associate Professor Rod Simpson</b>
165	<b>Scantech Limited</b>
166*	<b>E. MacLean</b>
167*	<b>Mr. John Watts</b>
168	<b>Confidentiality requested</b>
169	<b>Chamber of Minerals &amp; Energy of WA</b>
170*	<b>Mr. Malcolm Park</b>
171	<b>Environment Institute of Australia</b>
172	<b>Gas Appliance Manufacturers Association of Australia</b>

*(Note that submissions marked with an asterix (\*) are campaign submissions and have been cited as 'campaign' for ease of reference)*

## **APPENDIX B - PROTOCOL FOR CONSULTATION**



## **PROTOCOL FOR CONSULTATION BY NATIONAL ENVIRONMENT PROTECTION COUNCIL**

Complementary National Environment Protection Council legislation has been passed by all jurisdictions in Australia. This legislation enables the National Environment Protection Council (NEPC) to develop National Environment Protection Measures (NEPMs).

The legislation requires that prior to a NEPM being made, notice of the intention to prepare a draft NEPM must be given (Section 16)<sup>1</sup>. The legislation also requires that a draft NEPM and its accompanying Impact Statement must be made available for public comment (Section 18).

The NEPC recognises that effective consultation will contribute to the making of informed decisions for the increased effectiveness of NEPMs. This Protocol describes the approach to be adopted by the NEPC in ensuring productive and transparent consultation processes.

This Protocol for consultation incorporates objectives, principles and strategies.

### **CONSULTATION OBJECTIVES**

The NEPC, in accordance with the Principles of Consultation, seeks to achieve the following objectives:

1. To ensure the development and implementation of National Environment Protection Measures through effective consultation.
2. To ensure that the NEPC obtains useful information from stakeholders.
3. To maximise the understanding and involvement of stakeholders in consultation leading to the development of NEPMs.
4. To encourage an appropriate level of community and stakeholder ownership of NEPMs.

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<sup>1</sup> Note that throughout this document reference is made to sections of the NEPC legislation. The section numbers refer to the legislation in all jurisdictions except the Australian Capital Territory.

## PRINCIPLES OF CONSULTATION

The National Environment Protection Council, in accordance with the Consultation Objectives:

1. recognises that relevant consultation is an essential component of public policy development, implementation and review and that effective consultation will lead to more informed decisions and increase the effectiveness of environmental outcomes.
2. will conduct consultation in a transparent and accountable manner, encouraging input from all interested parties and will commence consultation as soon as practicable after the publication of the Notice of Intention.
3. will provide comprehensive and timely information, ensuring that there are clearly defined lines of communication.
4. will ensure that material is written in plain English and is accessible to all stakeholders.
5. will have regard to the differing resources of interested parties and use appropriate means of disseminating information.
6. will provide feedback to those providing comment and submissions.
7. will monitor and review the effectiveness of consultation.
8. assumes effective management of the chosen methods and techniques which promote the ease of understanding of material.

## STRATEGIES FOR CONSULTATION

The elements of a consultation strategy are outlined with reference to the four key stages of NEPM development. In each stage, there will be identified actions, roles and responsibilities.

### **Stage 1: NEPC work program**

It is recognised that the environmental priorities are identified by NEPC and the NEPC Committee and proposed for the work program are not developed in a vacuum. They result from issues raised over a period of time in many different ways - from submissions, research, complaints, other fora (eg. ANZECC) and environment policy development processes.

Non Government Organisations (NGOs) and other stakeholders have many opportunities to contribute to the proposed work program of NEPC such as through

member agencies or directly to Commonwealth, state or territory governments. NEPC will, therefore, not establish new and duplicative formal processes for obtaining input to its work program decisions, but instead encourages NGOs to continue to put forward their views through existing mechanisms.

The NEPC legislation states the scope of potential NEPMs (Section 14). Matters which come before Council must be consistent with the legislation.

## **Stage 2: Public notification of the intention to prepare a measure**

Once Council has decided to undertake development of a draft NEPM, a Notice of Intention will be published in accordance with the legislation (Section 16); that is, twice in a newspaper circulating in each jurisdiction and the Commonwealth Government Gazette.

The Notice will specify the nature of the proposed NEPM and state that Council intends to proceed with the development of a draft. It will also describe how stakeholders can register their interest in the development of a NEPM and will call for preliminary submissions on the proposal.

An information bulletin will be available as soon as possible after the Notice of Intention has been published. This will contain preliminary information explaining the reasons for proposing the development of a draft NEPM, details of where information held by the NEPC can be accessed and where submissions can be forwarded.

A consultation plan, which outlines methods and tasks that will be used to achieve participation and maximise understanding among stakeholders and the general public, will be developed.

The legislation specifies a minimum of 30 days for comment before a draft NEPM is prepared. However, in most cases, there will be significantly more time between the NEPC announcing its intention to prepare a draft NEPM and the preparation of the draft. During this time, submissions will be considered and, where appropriate, input on specific issues or aspects of the draft NEPM and Impact Statement will be sought from stakeholders.

## **Stage 3: Drafting the NEPM and making the draft available**

For each NEPM, there will be a Project Chair who will be a member of the NEPC Committee. The Project Chair shall guide the development of the NEPM. A Project Manager from the Service Corporation and a Project Team will be established to prepare the draft NEPM and associated impact statement. In addition, other approaches could be adopted to facilitate consultation such as establishing:

- mechanisms for ensuring appropriate consultation within each jurisdiction. For example, a Jurisdictional Reference Network (JRN) may be established involving a nominated environment agency representative from each jurisdiction. These

representatives should provide a link between the Project Team and their jurisdiction.

- mechanisms for ensuring peak NGO input to the NEPM development process. This may occur via the Jurisdictional Reference Groups or it might occur through other mechanism such as some form of NGO advisory group.
- mechanisms for ensuring input from other sections of the community. Again, this might occur, at least partly, through the Jurisdictional Reference Network or other mechanisms might be used. For example, focus groups of community, professionals and industry representatives may be established. These might be established by the associations themselves to provide information and input to the NEPM development process.

During the development of the draft NEPM and impact statement, the Project Team, through the NEPC Service Corporation, will provide regular information to stakeholders. The NEPC Service Corporation will also maintain a register of stakeholders and will actively solicit submissions where appropriate.

Once the draft NEPM and impact statement are prepared and made available for public comment, submissions will be sought in accordance with the legislation, principles and objectives. This requires a minimum period of two months.

#### **Stage 4: Adoption and Implementation in the Legislation, Principles and Objectives**

All comments will be recorded, acknowledged and considered by the Project Team in finalising the proposed NEPM. Feedback will be provided to people who have made submissions.

Having allowed at least two months for submissions, Council may vote on the NEPM in accordance with Section 19.

Once Council has made a decision, this decision will be promptly communicated to stakeholders and the broader community.