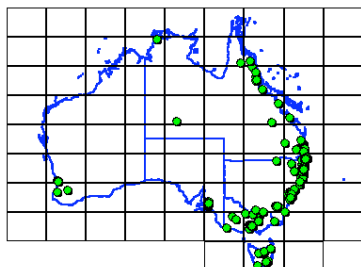


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Submission on

**Review of the National Environment Protection
(Ambient Air Quality) Measure**

Discussion Paper

August 2007

Introduction:

The National Toxics Network (Inc) (NTN) welcomes the opportunity to comment on the Discussion Paper. NTN has had a long and active association with the development and implementation of the Ambient Air Quality NEPM. Both directly and as a representative of the National Environment Consultative Forum (NECF), NTN's scientific advisor has been a member of the Impact Assessment Technical Review Panel (1997), the Key Stakeholders' Forum Steering Committee (1998), the Risk Assessment Taskforce (1998-2000) and the Peer Review Committee (PRC, 1998-present). We are aware of the submission from the PRC on the Discussion Paper and endorse the comments made in that submission.

Section 1.6:

This section canvasses a range of issues related to evaluating the effectiveness of the NEPM to date and possibilities for varying the Measure in future. We believe that variations should build upon the achievement of the NEPM, particularly in developing a more reliable and comparable data base on ambient air quality within Australian urban airsheds. While these achievements have not been as great as we would have wished, we believe this is mainly due to a lack of resourcing for NEPM implementation. This was particularly so during the early years of NEPM implementation and particularly in less-populous jurisdictions where pre-NEPM monitoring was very limited and sometimes non-existent, and initial resourcing for the NEPM was very limited. In significant part, this was clearly driven by an expectation promoted to Ministers that the cost of NEMPM implementation, and particularly start up costs, would be very low.

At various places the Discussion Paper laments the fact that meeting the requirements of the NEPM may have impacted upon the capacities of some jurisdictions to carry out monitoring for other purposes. Our view is:

- that the overall impact of the NEPM has been to increase the amount and quality of air quality monitoring in Australia; and
- that this improvement has been tempered by limited resourcing which has largely come about through the initial creation of political expectations that the cost of implementing the NEPM would be very small, and perhaps even zero.

Given the history of NEPM implementation, it essential that any variations to improve the NEPM are realistically costed and resourced to build upon the core achievements of the NEPM to date. It will be essential to avoid the possibility of any variations being introduced without intention to fully fund their implementation to reduce the concomitant danger that existing NEPM functions be traded off or downgraded to fund the variations in an under-resourced system.

Section 2.1:

It is stated that:

“The intent of the NEPM was to ensure air quality that was protective of population health by providing a framework to monitor and assess air quality at locations that provide an average measure of air quality that is representative of the exposure of the general population.”¹

and

“Implicit in the NEPM was the inference that meeting the compliance standards would ensure the achievement of the desired environmental outcome of the NEPM in providing adequate protection of human health and well-being.”

¹ This statement is repeated verbatim in Section 3.2.1 and several other places

and

“monitoring was not to be conducted at peak sites or sites impacted by individual sources since such sites would not represent general population exposure”.

We believe that there are several difficulties with these statements when taken both individually and together.

The NEPM states that the purpose of the “National Environment Protection Standards” is “to set standards that consist of quantifiable characteristics of the air against which ambient air quality can be assessed”. The desired environmental outcome is “ambient air quality that allows for adequate protection of human health and well-being”.

The term ‘average’ is only used in the NEPM with respect to the averaging periods for the various criteria pollutants, which, of course, is unrelated to “locations that provide an average measure of air quality”.

During the Key Stakeholders’ Forum process that preceded the transmission of the proposed NEPM to the then NEPC there was vigorous debate around how to site monitoring stations to provide data that would permit an assessment of “adequate protection of human health and well-being”. The two most strongly-supported initial suggestions were:

1. as suggested in the Discussion Paper, locations that provided “an average measure of air quality”
2. peak sites, to provide some confidence that “adequate protection of human health and the environment” was at least being assessed (and hopefully provided) for the entire population.

Opponents of 1 were concerned that there could be large sections of the population suffering below average air quality that was not being measured and who therefore may have diminished prospects of enjoying responses designed to protect their health and well-being. Opponents of 2 were concerned that it would lead to readings that were not reflective of ambient air but of concentrated source pollution and, in attempting to protect everyone in all circumstances, this would create expectations that would not be able to be met in the foreseeable future.

It was during this discussion that we recall the term ‘generally representative upper bound’² (GRUB) emerging. GRUB contains three main elements, which we submit have merit and which we believe has underlined its utilisation in the establishment of NEPM monitoring networks. These are:

1. “generally” –which we take to indicate an informed attempt to site stations so that they are reflective of the upper bound of pollution in an air shed, rather than implying a level of precision/quantification that does not exist. In the same way, we might reasonably refer to “about average” rather than “average” measures of air quality;
2. “representative” so that monitoring networks are providing some form of representative measure of air quality in an airshed and not being dominated by nearby phenomena; and
3. “upper bound” so that they may be seen as providing a precautionary measure of the level of air quality to which most people in an airshed could have been exposed. We see this as being a vital component of providing assurance of a measure of adequate protection of human health and well-being of the population as a whole, rather than adequate reassurance to the average person in an airshed.

While acknowledging that “monitoring was not to be conducted at peak sites” we submit that the generic claim that it was also not to be conducted at “sites impacted by individual sources since such sites would not represent general population exposure” is erroneous. If this principle had been followed with the respect to those airsheds in Australia most impacted by lead and sulfur dioxide emissions there would have been no monitoring of these pollutants in those airsheds at all.

Section 2.2.1:

² We note in passing, and will return to later, that this term leads to some perplexing commentary in the Discussion Paper.

This Section (and subsequent ones) quotes slabs of discursive text from the Revised Impact Statement for the NEPM to, rather like the Second Reading Speech for a Parliamentary Bill, attempt to establish a case for the “clear intent” of the NEPM. We do not know how widely these “clear intents” are shared but many of them are not shared by NTN and we would be surprised if they similarly not shared by many other stakeholders. We do not agree that it is clear that the intent of the NEPM was to “assess air quality at locations that provide an average measure of air quality”; if it were it would be very hard to explain the emergence of the GRUB concept, which we have supported.

Section 2.2.2:

It is noted that “the PRC was formed as an unfunded body to provide advice to jurisdictions”. Given that, we believe that the output of the PRC has been particularly commendable and has been a vital contribution to the achievements of the NEPM to date. NTN is strongly of the view that a body akin to the current PRC will have a vital role to play in the implementation of a new, and hopefully, improved and extended NEPM. We further believe that care should be taken to build on achievements to date (including learnings, corporate knowledge and working arrangements built up over time) and the current PRC is a good base model for determining the structure and operation of an ongoing technical advisory body. As with other aspects of NEPM implementation it is vital that such a body be properly funded to perform its tasks.

Sections 2.2.2-2.2.5

Two listings of PRC Technical papers are provided:

1. an apparently full listing of the papers (lines 1-12, p 11)’
2. a partial listing (lines 15-19, p12).

These listings disagree on several counts regarding the sequence and titles of the Technical Papers and in turn do not conform with the listing provided on the EPHC website (http://www.ephc.gov.au/nepms/air/technical_papers.html). We have not had time to sort out which, if any, of these three listings is correct but we believe that this should be done and, at least, it be ensured that the listing on the EPHC website is correct.

At line 48 on page 12 “it is suggested that evaluating long-term trends is important in assessing the effectiveness of control strategies, and the progress towards achieving the goal of the AAQ NEPM”; we are unequivocally of the view that such evaluation is indispensable. We believe a very high priority must be attached, in the review of the NEPM, to ensuring the maintenance of monitoring networks that enhance long-term trend data collection.

Section 3.2.1

The Discussion Paper notes that there is “no shared understanding of what ‘adequate protection’ means and adds:
“Implicit in the NEPM was the inference that meeting the compliance standards would ensure the achievement of the desired environmental outcome of the NEPM adequate protection of human health and well-being”

This does not tell us very much in the absence of a shared understanding of ‘adequate protection’. If this is to remain the goal of the NEPM, and it seems to us that it must even if further goals are added, it is essential that the meaning of ‘adequate protection’ be defined as it is impossible to judge whether an undefined goal has been achieved. We further submit that the expectation of most Australians is more likely to be that adequate protection be afforded to most of the population rather than to members of the population exposed to average concentrations of criteria pollutants.

Section 3.2.2

We find some of the discussion in this section very hard to follow. Implementing the NEPM, ie measuring pollutant levels in a (hopefully) robust and practicable way will produce data (either by itself or in combination with other

relevant measurements, if any are available). These data may highlight problems with air quality and/or opportunities for improving air quality, which may lead to desirable/effective policy responses. However, we do not believe that it follows that “one method of determining how effective the NEPM has been in driving improvements in air quality is assessment of air quality data from NEPM monitoring stations”. The assessment of air quality data from NEPM stations might show improvements (or diminution of worsening trends) in air quality to which a credible link may be drawn to government (or other) initiatives. If a government is behaving rationally it will know the reasons behind it taking an initiative, including whether, in whole or in part, a data from NEPM monitoring were a driver for the initiative being undertaken. Thus it could be judged whether the NEPM had been effective in driving initiatives to attempt to improve air quality and, in turn, NEPM monitoring data, if sufficiently comprehensive and robust, may be able to be used to determine whether those initiatives had been effective.

To summarise, it should not be hard to judge whether the NEPM has had a role in driving particular air quality initiatives. Where they has been a suite of drivers, actions and policies the contribution of the NEPM monitoring towards the outcome may be difficult to determine, both in terms of its contribution relative to other factors and a possible paucity of data due to the relative newness of the NEPM.

It is stated in this Section and repeated several time later:

*“Jurisdictions have identified some inconsistencies **in siting** (our emphasis) air monitoring stations that may influence the ability to identify any clear trend in air quality.”*

It would be helpful if these identified inconsistencies and the factors which may have brought them about could be identified. We believe that in some cases jurisdictions may have retained stations that they not conform to GRUB (or average) characteristics, either through difficulties in finding alternative sites, a desire to continue trend monitoring at existing locations with a trend data set, or perhaps for resourcing reasons. Particularly in circumstances of limited resources and in jurisdictions with relatively small monitoring networks, there are often competing demands impacting on the siting of monitoring stations. Where these are not consistent with the requirements of the NEPM and the technical guidance provided by the PRC, it is important that the nature of any inconsistencies and the drivers behind them be identified explicitly. There appears to be an implication in the Discussion Paper that such inconsistencies may have emerged through lack of clear advice from the PRC, rather than through jurisdictional choice (including resource-limited choice). We are not aware of this being the case, but if any jurisdiction believes that it is then the evidence for it should be brought forward for examination. Given the presence of all State/Territory jurisdictions on the PRC it would be very surprising if such cases had not been brought to the PRC for consideration.

It is stated:

‘Number of exceedances does not provide good information about trends in air pollution as peak events can be strongly influenced by natural events such as bushfires, drought and dust storms, or meteorology. Consideration of the percentile and average values provides a much better indication of the underlying distribution of air quality to assess trends.’

We support the reporting of more information regarding the underlying distribution of air quality. Indeed, most jurisdictions, consistent with the reporting guidance provided by the PRC, already supply such information in their annual reports. In the revised NEPM it would be valuable to set standards not only for exceedances of maximum values but also for exceedances of average values (potentially over a range of averaging periods), as well as building into the NEPM more explicit requirements for the reporting of pollutant distributions.

While the reporting of exceedances is a limited measure we do not agree that it does not provide good information about trends in air pollution. Peak events can be strongly influenced by the natural events listed and in turn such natural events can profoundly impact on the environmental goals of the NEPM. However, the views of greenhouse cynics aside, those listed natural events are being profoundly impacted by the trend of human forcing on the “natural” order of things. The existing standard of the five exceedances of the PM₁₀ standard per year specifically allowed for

bushfire impact, although it almost certainly underestimated the impact of drought/climate change on bushfire and dust storm frequency in much of Australia over the past decade.

The terms ‘fine particles’ (eg line 10, p19) and ‘ultrafine particles’ are generally used consistently throughout the Discussion Paper to refer to particles with aerodynamic diameters of 2.5 and 0.1 microns or less respectively. However the use of such terms often leads to confusion and we believe that it would assist clarity and public understanding to refer to particle fractions explicitly according to the maximum aerodynamic diameter of the fraction, eg PM_{2.5}, PM_{0.1} etc.

Section 3.2.3

It is suggested that “it may be appropriate to develop criteria against which the inclusion of indicator [substances] can be judged”. We strongly support the development of such criteria and recommend that a draft set of criteria be developed for consultation with stakeholders as part of the review.

It is stated:

“Epidemiological studies have identified health effects for most pollutants at levels below current air quality standards, especially for ozone and particles. These studies have not found a clear threshold for effects. This has led to a shift in the policy framework within overseas agencies to adopt an exposure reduction approach.”

This highlights the need to report information and set standards based upon the overall distribution of pollutant levels rather than merely reporting exceedances of a maximum standard. It also highlights, particularly in the circumstances of limited resources the need to take a precautionary approach to the siting of stations, as exemplified by GRUB stations rather by population-average stations. To assist in determining population exposure (which is a highly desirable thing to do) detailed emissions inventories and airshed modeling will be required. We strongly support investment in these activities to enable better interpretation of population exposures under the revised NEPM.

It is stated:

“The PRC guidance has focused on a strict network design to assess compliance to NEPM standards, not to determine population exposure as was intended when the NEPM was made.”

We believe that the last part of this statement is false. We submit that it is axiomatic that jurisdictions should seek to comply with NEPM standards and networks should be designed with a primary aim of allowing the degree of conformity with compliance to be assessed. There is no mention of “population exposure” in the NEPM, which would be an extraordinary omission if the determination of population exposure was intended when the NEPM was made. We submit that it was not intended when the NEPM was made. That said, we are strongly supportive of determination of population exposure being a priority under a revised NEPM and will support attempts to achieve this end.

Section 3.3.1

The last paragraph on page 24 points to the NEPM implementation leading to consistency in monitoring methods throughout Australia, an increase in monitoring in less populous jurisdictions and regional centres, and increased monitoring of both PM₁₀ and PM_{2.5}. While some of these gains were hard- and slowly-won, they are significant improvements on pre-NEPM monitoring in many jurisdictions.

Section 3.3.1.1

This section discusses the number of monitoring stations required under the population-based formula given in the NEPM, although the discussion is again clouded by claims relating to the current NEPM having the intent of determining population exposure.

We agree that the current formula for determining the minimum requirements in an airshed for the number of NEPM monitoring stations, if not supplemented by additional monitoring stations (whether for NEPM purposes or other purposes) “is unlikely to allow a determination of population exposure... unless the airsheds are small”. This provides further evidence that the current NEPM was never really intended or designed to seriously determine population exposure. If this is to be done under a revised NEPM, which we strongly support, it will be necessary to ensure that the minimum number of monitoring stations required is adequate for the purpose.

It is stated that:

“Smaller³ jurisdictions have commented that the [25,000] threshold makes it difficult for them to obtain resources to monitor in regional centres that have air pollution problems but have populations less than 25,000.”

If such jurisdictions were concerned about investigating air pollution problems in smaller jurisdictions they would do it rather than using the minimum requirements under the NEPM formula as a rationale for inaction. We presume the comment is really a lament over difficulties some environment agencies may have in accessing resources. We support a lowering of the threshold to require investigation of smaller population centres with potential air pollution, noting that mechanisms can be used to screen out centres that do not have potential problems.

It is stated that:

“There is no guidance provided in the NEPM or by the PRC that guides the estimation of either exposure or representativeness. This is information that all jurisdictions say is required.”

The PRC has provided guidance on representativeness, but not on exposure estimates as this is not required under the current NEPM. We support all jurisdictions ensuring that these items are essential elements of the revised NEPM.

It is stated that *“focus on compliance alone is inconsistent with current international practice.”* We agree, at least insofar as best practice is concerned, and support the establishment of practices as outlined in the last paragraph of page 26 of the Discussion Paper. We also note that that some of these matters will require significant additional resourcing.

It is stated that *“the population formula in the NEPM...has no clear basis and is being used in some jurisdictions as the basis for estimating entire monitoring networks”*. For this problem to be addressed, it will be necessary to identify and locate the requirements for NEPM monitoring (which is stated to have no clear basis) within a well-based framework for identifying the requirements for (otherwise unspecified) entire monitoring networks. Addressing this issue will clearly require significant work.

Section 3.3.1.2

In this Section it is claimed that the PRC introduced the concept of GRUB. This is not so, although the PRC further developed the concept which emerged from the Key Stakeholders processes.

It is stated that *“the PRC guidance recommends that the focus should be on GRUB sites and that the number of GRUB sites should not be reduced to allow population-average sites to be included”*. As stated previously, and particularly in the case of limited resources applied to air monitoring in most jurisdictions, a precautionary approach should necessitate a focus on GRUB sites. That said, we believe that the statement in the Discussion Paper does not accurately reflect PRC Technical Paper No 3, which states:

“There may be instances where the total number of Performance Monitoring Stations (PMSs) may exceed the number specified by the formula in Clause 14(1) when both GRUB and population-average sites are required.

³ The term ‘smaller jurisdiction’ is used throughout the Discussion Paper when ‘less-populous jurisdiction’ is really meant.

*In regions where the AAQ NEPM standard is likely to be exceeded, the number of GRUB stations should not be reduced **simply** (our emphasis) to provide population-based stations.*

In the final paragraph on page 28 the use of peak or hot spot sites by some jurisdictions is referred to as an inconsistent interpretation of GRUB by jurisdictions. However, we do not believe that the definition of GRUB is so unclear or the technical ability in jurisdiction so lacking that peak sites have been selected in the erroneous belief that they were GRUB sites – we believe that any such selections have been for other reasons, some of which we have touched on above.

We strongly support the proposals for a greater emphasis on population exposure and consistent station validation suggested on page 29 of the Discussion Paper. We also agree that there is a need to provide practical definition to terms such as ‘population exposure’ and ‘representativeness’. The option of providing such definitions in more detailed form in the body of the revised NEPM should be explored, given the lack of clarity around many key terms that is rightly highlighted in the Discussion Paper.

Section 3.3.1.3

In this Section there is a long discussion on monitoring methods for particles and the range of methods being used jurisdictions, including methods for which there are not Australian Standards. The Discussion Paper states:

“Although consistent methods for monitoring are being used, differences in interpretation of the PRC guidance on siting of monitoring stations and reporting of data raises the question as to whether the data that is being generated is in fact consistent and comparable. This is an issue that has been raised by all jurisdictions that responded to the questionnaire.”

Given the range of monitoring methods being used, we are surprised by the statement that “consistent methods of monitoring are being used”. Our view is that the data being reported is more consistent and comparable than the circumstances pertaining prior to the NEPM and also than would have applied if the NEPM had been implemented in the absence of the PRC technical papers. We acknowledge that this is a difficult and fast-moving area, but to the extent that there are differences in interpretation it would be helpful if such differences could be explicitly stated to offer the opportunity of effective remedy. Much of the discussion creates the impression that the PRC, the majority of whose members are from jurisdictions, has been handing down stone tablets without consultation with jurisdictions. This clearly is not the case and therefore such comments in the Discussion Paper are hard to understand.

Section 3.3.2

The discussion here and in subsequent sections appears to carry a strong implication that the PRC is broken and needs fixing. Like many other things under the NEPM after a decade of experience it is no doubt possible to identify areas where the PRC may have done better and may be put on a better footing for the future. However, we believe that overall the PRC has been a vital element contributing to the implementation of the NEPM and should not be tinkered with too strongly without robust debate and analysis which, unfortunately, we do not believe the Discussion Paper has provided. We do note that “the PRC is currently unfunded, affecting its ability to implement its tasks” and believe that this lack of funding is probably the element most needing fixing.

In discussing the current expertise of the PRC and that which may be required under a revised NEPM it seems to us that a false dichotomy is drawn between what is called “compliance” and “other aspects of the NEPM such as determination population exposure or to ensure the levels of pollutants are continually improving to reduce the associated health risks and to determine exposure, modeling and requirements for emissions inventories”. If the NEPM is expanded, the core task of jurisdictions will still be to achieve/demonstrate compliance albeit to a broader range of requirements. Given the range of potential issues being canvassed for inclusion in a revised NEPM it may well be that attempting to incorporate all the areas of expertise within the one committee would be very unwieldy. The PRC already has 13 members and, as we have stated, we believe that it works well but there would be dangers in having a

working committee much larger than that. The PRC has on several occasions convened workshops on issues to draw in extra expertise and we believe this approach has been very valuable.

Section 3.3.3

It is noted that “NEPM monitoring is not being conducted in accordance with approved monitoring plans in some jurisdictions” due to resource constraints. Where this is the case it simply means that Governments are in breach of their requirements under the NEPM.

It is stated that “the members of the PRC also have a role in the development of their jurisdictional plans”. In fact eight out of 13 members of the PRC have such a role; the others do not. “There has been a suggestion that an independent review of the plans may be beneficial”. We agree, provided it is an additional review of the plans, which could inform and analyse, but **not** replace, the existing PRC assessment of plans. We see particular value in the PRC’s embodiment of expertise from governments, industry and environmental NGOs and the major stakeholder accountability involved in this structure.

There may be an underlying suggestion in the Discussion Paper that the presence of jurisdictional members on the PRC leads to “Old Boy’s Club” assessments of jurisdictional performance and that the non-government representatives lack the strength or will to counteract this. We accept that this is always a risk and although we do not believe it describes the situation with respect to the PRC, it is an important matter worthy of independent and open examination. We recommend that EPHC consider funding an independent review of the implementation of the NEPM, including the role of the PRC, incorporating active consultation with key stakeholders. We suggest an appropriate model to consider is the review of the Scheduled Wastes Process⁴ (including the roles of the Scheduled Wastes Management Group and National Advisory Body) commissioned by Environment Australia.

* * * * *

The above comments relate to approximately the first half of the Discussion Paper. There are many further issues we would like to comment on but we are aware that the official closing date for comment has closed and that we are now beyond the agreed extension provided to us. If it is possible for further comments beyond the above to be considered we would expect to be in a position to provide them one week after the forwarding of these comments.

⁴ ARTD Management and Research Consultants (1998), *Evaluation of the Scheduled Wastes Program – Final Report*, March.