Comments from the Centre for Air quality and health Research and evaluation (CAR) on the

Clean Air for NSW Consultation Paper

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General comments

The Centre for Air Quality and Health Research and Evaluation (CAR) is broadly supportive of the content and intent of the Clean Air for NSW Consultation Paper (the ‘Consultation Paper’) which outlines strategies, the potential for new regulation and practices to help improve air quality in NSW.

The consultation paper lists a number of strategies targeting improved regulation of emission sources (eg standards for fuel emissions), improved guidelines and policies to help minimise emissions (eg coal mining operations, coal dust trains, domestic garden equipment), the need to work with other government agencies across local, state and Commonwealth domains to achieve beneficial outcomes, including in urban planning and transport, and the need for industry agreement and support for change in specific sectors. The consultation paper also outlines the desire for greater community engagement and participation in citizen science which will be beneficial in determining how best to deliver information on air quality and will also aid in improving science literacy in the community. CAR is engaged in research on the health impacts of air pollution and one of its priorities is to conduct research which is policy relevant and is useful for guideline setting. With this aim, it is important for CAR to continue to engage with industry, in our case predominantly the NSW Environment Protection Authority (EPA), NSW Ministry of Health and the NSW Office of Environment & Heritage (OEH), as well as other agencies such as CSIRO, ANSTO and other researchers working in this domain. Our comments are as follows.

Population exposures

The stated main aim of the consultation paper is to improve average air quality across NSW. While we fully support this aim from a population perspective, we also recommend that the also advocates for a decrease in peak population exposures. While many of the measures and tools suggested in the consultation paper will support this outcome, the consultation paper could benefit from an explicit statement about the need to reduce peak exposures. While this might be hard to achieve in some areas, it should nevertheless remain an objective of the plan.

CAR agrees with the plan’s statement that there is currently no known safe threshold for the effects of exposure to fine PM. As such reductions in exposure are expected to be associated with an improvement in health eg reduction of adverse symptoms, reduction of medication use and visits to doctors and hospitals (emergency department visits and admissions to hospital), as well as a reduction in premature mortality (pg 10). As the consultation paper indicates, this is important, as even small reductions in pollutant exposures are likely to have measurable and beneficial effects.
The health impact figures quoted in the consultation paper (Morgan et al, 2013; Broome et al, 2015) are the most recent and relevant assessments available.

The consultation paper indicates that the OEH will develop a population weighted annual clean air metric (CAM) to account for population exposure (compared to the AQI which does not account for population exposure) (pg 14). The CAM will combine annual average, multi-pollutant assessments of air pollution levels across NSW weighted by the population. This is an interesting development and an extension of the utility of the current Air Quality Index. The CAM metric is likely to use 3 year rolling averages to account for events which affect climate eg dust storms, El Nino. It aligns with EU and US EPA exposure reporting approaches, although the consultation paper does not specify how.

The consultation paper indicates that OEH will also back-cast the CAM to 1996 to understand how population weighted air pollution exposures have changed over time. For example it may be that population expansion may have counteracted the improvements made in air quality over the last two decades, with respect to population exposures. CAR recommends that CAR researchers and/or other health researchers are involved in any discussion on the development of the CAM metric.

Current pollutant concentrations

The consultation paper states that NO$_2$ concentrations meet the NEPM in all parts of NSW (pgs. 14-15). However NO$_2$ is a pollutant which varies substantially over small spatial scales. Given that the current locations of monitoring stations have not been chosen to measure “hot-spots”, especially areas where major sources of NO$_2$ occur, it is likely that there are locations where NO$_2$ levels are exceeded eg major and busy roads. CAR recommends that some hot-spot or “project” monitoring be conducted in locations where sources of pollutants might result in those pollutants being present in elevated concentrations. There have been no improvements in NO$_2$ annual averages over last 3 years (Fig 4).

PM and ozone standards are occasionally exceeded. The consultation paper indicates that poor air quality days for PM usually due to fires, dust storms or prescribed burning. Ozone peaks usually occur in warmer months during high temp or bushfires.

CAR agrees that pressing issues such as population growth, urbanisation, energy and transport demands and climate change, are together likely to offset gains made in improving air quality using existing policies (pg 18), and that new measures are needed to reduce emissions in the future. The predictions are for target pollutants to plateau, and then gradually rise if additional actions are not taken (Fig 8).

Figs 5 and 6 show contributions of different sources to air pollution in NSW. Is road traffic not contributing in Sydney or is it captured in the “Road, brake and tyre wear” category?

Secondary particles account for about 50% of the fine PM in Sydney on an annual basis (pg 20), and the consultation paper states that effective air quality management depends on controlling precursor emissions of ozone (NO$_2$ and VOCs) and PM (SO$_2$, NO$_2$, VOCs, ammonia). Electricity generation is the major contributor of the precursor pollutants NO$_x$ and SO$_2$ in GMR; followed by vehicular exhaust which is a major contributor of NOx. CAR agrees that controlling precursor emissions is an important goal, especially in the control of ozone and NO$_2$ formation.
Load based licences

CAR supports the goal of strengthening and better targeting of the EPA’s load based licencing (LBL) scheme. It supports minimising emissions from power plants to reduce primary and secondary particle precursors given that power plants are a major source of NOx and SO2 in NSW, and substantial contributor of PM2.5. It also supports measures to minimise coal dust emissions, including mine rehabilitation works and managing coal train dust emissions.

Reducing transport, engine & fuel emissions

It may be assumed but the consultation paper could indicate if the EPA/OEH makes representation and submissions to the Commonwealth when there are enquiries or public consultation on matters to do with fuel emissions standards and fuel make-up, issues which are currently relevant. The document does not outline proposals for adoption of fuel efficiency standards. Albeit regulated by the Commonwealth government, this document should state its preferred position. CAR supports early adoption of the Euro 6/VI (light vehicle /heavy vehicle standards) to help reduce motor vehicle emissions, provided that changes made to achieve these reductions in some pollutants, e.g. PM, do not result in increases in the emissions of other pollutants such as NOx, as has been seen in Europe.

The consultation paper discusses the need to encourage greater use of electric vehicles (pgs 31-32). CAR is of the opinion that the consultation paper could also encourage greater use by government (at all levels) to adopt electric cars for its day-to-day operations and for lease-back schemes, and further advocate for their use in private and public vehicle contracts. For instance, there could be investigation of incentives and the potential for programs to be implemented in private sector/industry to move to providing electric vehicles for its employees who are on lease-back schemes.

With respect to marine and shipping diesel emissions, the consultation paper could advocate for the need for further negotiation with the Commonwealth Government for it to reduce allowable pollutant shipping emissions to a level in line with that previously announced by the NSW EPA’s Diesel and Marine Emissions Management Strategy (pg 33). There is a steadily increasing number of large ships entering major port facilities and populated areas in Sydney, Australia’s most populated city, and thus contributing to overall population exposure. CAR researchers have been involved in impact assessment of shipping emissions and found that the extent of controls to reduce diesel emissions from shipping in Sydney would be felt not only in the local area but across the greater metropolitan area as well (Broome et al, 2016). This points to a potential control strategy with the ability to exert beneficial impacts beyond just the source area.

Reducing wood smoke emissions is an important issue given the major contribution of wood heater emissions to PM10 and PM2.5 to the Sydney air shed and regional centres. CAR notes the new regulation for solid fuel heaters which came into force in NSW on 1 November 2016. CAR supports proposals which have the aim of reducing wood smoke emissions and previously made a submission to the national review of wood heater standards.
CAR is supportive of measures taken in other areas to reduce population exposures including investigating zero emission equipment and 4-stroke engines used for garden equipment.

CAR is active in the research area of the health effects attributable to bushfires and hazard reduction burns. Much of its work in this area is directed at quantifying the health effects due to this exposure and determining the efficacy of intervention measures to decrease exposures during fires. It aims to conduct research which is policy relevant and, as such, it will be interested in engaging in cross-agency discussion and in funding opportunities in this area.

**AQ monitoring review**

CAR supports this proposal and would be interested in having input into any review of the air quality monitoring scheme. It advocates for some government funding to enable project monitoring of “hot-spot” or non-background sites eg along busy and main roads, near industry, near tunnel portals, near shipping terminals, near airports, to better understand the geographical influence of these sources and extent of peak emissions and thus potential for heightened community exposure.

**Air quality forecasting**

CAR researchers are involved with two AQ forecasting and information tools; 1) the AirRater project in Tasmania which estimates measures data on pollen, smoke haze (fine PM) and temperature which is available to users of the AirRater smartphone app to help them manage their daily activities ([http://www.sense-t.org.au/projects-and-research/health](http://www.sense-t.org.au/projects-and-research/health)). Users can also report their daily symptoms of asthma, allergies and hayfever. CAR researchers based at the Woolcock Institute of Medical Research are currently working with University of Sydney researchers to explore the potential for an air quality app which estimates air quality on a finer spatial scale, i.e., at suburb scale. This will first be tested for part of Sydney. CAR researchers are collaborating with OEH to access real-time air quality data for this project.

The consultation paper outlines the wish of the OEH to forecast specific AQ events such as bushfire and hazard reduction burns, emissions or industrial and other incidents. It is stated that additional monitoring tools may be needed to meet these needs, which would in part be met by the portable monitoring pods. Do these pods include monitoring capabilities for non-regulated air pollutants, e.g. VOCs other organic or inorganic compounds? Monitoring for non-regulated air pollutants would be useful in the event of an industrial incident. Increasing the capacity to provide timely and accurate advice on the potential for health effects from unintended incidents will be advantageous.

**Co-benefit actions**

The goal for more productive use of energy in the transport sector through increased public and active transport and through reduced road congestion, is highlighted as an action on pg 40, however there is no mention of how this will be achieved.

**Urban & transport planning**

Reducing road congestion and improving the use of public and active transport have the potential to significantly impact on air quality. Health impact assessments relevant to road congestion and urban planning have been applied to a number of cities or locations around the world, and are being
increasingly published (e.g. Mueller et al, 2017 (Barcelona)). While reducing road congestion is an important goal for the NSW and Commonwealth governments, it appears to be primarily driven by concern over reductions in productivity with less consideration of air pollution exposure issues. Any strategy to reduce road congestion must rely on reducing the number of vehicles on roads, as well as improving public and active transport opportunities and uptake. CAR is supportive of environmental and health agencies playing an explicit role in decision-making on urban and transport planning issues, and to this end, it is hoped that the establishment of the Interagency Taskforce on Air Quality in NSW in 2016 will help to progress and develop whole of government policies on air quality.

These issues are relevant to planning for clean air (pg 44) and clean transport for air (pg 44). Perhaps the consultation paper could expand on the principles and features in relation to best practice urban planning and design that are being used to minimise population exposures to air pollution. Are there any specified guidelines issued by the Department of Planning, or case studies that can be highlighted? CAR is concerned that new infrastructure projects currently taking place (e.g. Westconnex) and new in-fill developments across Sydney are placing new populations along major road corridors. This will increase population exposures to urban air pollution from traffic.

There are many examples of traffic minimisation strategies such as the introduction of congestion zones (London, Milan, Oxford). There are also examples of traffic calming strategies and active transport infrastructure development. A case in point is the City of Utrecht in the Netherlands which has a population of 334,000 people and is the fourth largest and fastest growing city in the Netherlands. It has had a car-free centre for over 40 years, and estimates that 90,000 cyclists travel to work or school each day by bicycle. In 2015, the municipality also introduced an environmental zone (low emissions zone), where diesel cars manufactured before 2001 are not permitted to enter the zone. The city also has a number of public electric car charging stations, thus providing incentives for electric car use (https://www.utrecht.nl/city-of-utrecht/living/mobility). The Netherlands and many other centres around Europe have car-free city streets for shopping and commerce. Support for car-free zones in our major cities as well as our major commercial suburban hubs could be highlighted in the consultation paper as relevant for discussion by the Interagency Taskforce on Air Quality in NSW.

Supporting active transport

CAR supports increased active transport opportunities (pg 46), however it is important that new walking and cycling infrastructure is located in corridors and areas which are not subject to high air pollution concentrations. A recently published study by CAR researchers found that there are few highly walkable neighbourhoods in Sydney which are subject to low traffic density. The majority of neighbourhoods had health limiting characteristics of either low walkability or high traffic density (Cowie et al, 2016). Any new initiatives for active transport need to consider likely air pollution exposures. See also comments above.

Community engagement & research

CAR endorses the community engagement strategy and piloting of a citizen science project. Together these activities will inform government and researchers of the main interest of consumers and the public in air quality information, and the likely form and detail such information should take. Involving the public in measurement of air pollution, and collection and interpretation of data, will
ultimately lead to a more scientifically literate community and should help to inform public debate on important air quality issues.

CAR recognises that improving air quality is a complex challenge that requires a multi-disciplinary and multi-jurisdictional approach across all sectors and endorses the EPA/OEH’s desire to support local and community actions to improve air quality and to work with the Commonwealth government. Further, there is opportunity for research to be conducted with the aim of evaluating the health, economic, and environmental impact of some of these policy measures. The Clean Air for NSW Consultation Paper should advocate for such research.

References:


