RESPONSE TO QUESTION ON NOTICE - inquiry into the impacts on health of air quality in Australia.

Further to the Australian Medical Association's appearance before the inquiry into the health impacts of air quality, I wish to provide further detail regarding supporting research and examples of international best practice. The information provided below addresses a request from Senator Stephens who, during the inquiry hearings on 16 April, asked for further information regarding air quality monitoring systems, health surveillance systems, and other research that could assist the Committee in developing recommendations.

Health surveillance

One of the eight key objectives of the Australian Government's *National Environmental Health Strategy (2007-2012)* was the development of a national environmental health surveillance capability to identify and manage risks to health, including air pollution. To support this objective, the Western Australian Health Directorate completed a feasibility study in 2008, which found that a comprehensive national surveillance system was feasible. However, the recommendations arising out of this initial study are yet to be fully implemented, and Australia continues to lack a national environmental health tracking system that can effectively monitor and measure the health impacts of air pollution.

- Western Australia Environmental Health Directorate: Mullan, N, Ferguson, C, Paech, D, (2008). *Environmental health surveillance: a feasbility study.* Western Australian Department of Health: Perth. [http://www.public.health.wa.gov.au/cproot/2713/2/11176%20ENVIRONMENTAL%20SURVEILLANCE%20STUDY.pdf]

National environmental health surveillance systems have been developed in a number of overseas jurisdictions, including the United States, Europe and Canada. The WHO in Europe developed an Environmental Health Information System (EHIS) in 1999 within the larger system of European Community Health Indicators, and over the past decade there has been considerable work undertaken to strengthen this surveillance system. EHIS is now In the United States, the Centres for Disease Control and Prevention (CDC) oversee the National Environmental Health Tracking Program, which comprises a nationwide network that collects and integrates health and environmental data. The surveillance system in California, which is one of the more advanced state partners in the program, exemplifies the features of an effective environmental health surveillance system. The CDC, U.S. Environmental Protection Agency (EPA), and state local health departments funded by the CDC have also been collaborating in the development of air quality metrics for $PM_{2.5}$ for integration into the Tracking Network.

- California Environmental Health Tracking Program http://cehtp.org/project.jsp?project_key=EHSS01
- Vaidyanathan**,** A, Dimmick, W**,** Kegler, S, Qualters, J, (2013). Statistical air quality predictions for public health surveillance: evaluation and generation of county level

metrics of $PM_{2.5}$ for the environmental public health tracking network. *International Journal of Health Geographics* **12**:12 doi:10.1186/1476-072X-12-12.

- WHO Europe Environment and Health Information System (ENHIS) http://www.euro.who.int/en/what-we-do/data-and-evidence/environment-and-health-information-system-enhis

An additional aspect of health surveillance highlighted in the AMA's written and verbal submission relates to the absence of a comprehensive system of surveillance for occupational diseases associated with poor air quality. Examples of international best practice include Finland, where a centralised registry of occupational diseases provide a powerful means of identifying and tracking respiratory and other diseases associated with workplace air pollutants. Within Australia, the need for improved occupational health surveillance is most pressing in industries where the risks of exposure to hazardous air pollutants are high, such as mining, construction and agriculture. Two examples of occupational health surveillance are:

- **the Surveillance of Australian workplace Based Respiratory Events (SABRE) scheme**, which is a voluntary notification scheme established to determine the incidence of occupational lung diseases in NSW. (see Hannaford-Turner, K, Elder, D, Sim, M, Abramson, M, Johnson, A, Yates, D, (2010). Surveillance of Australian workplace based respiratory events (SABRE) in New South Wales. *Occupational Medicine-Oxford* 60(5):376-382.
- **the Western Australian mine employee health surveillance system**, which commenced in Western Australia in 1996. However, in January this year, the Western Australian Department of Mines decided to stop this program, reportedly due to a failure to detect any ill health associated with workplace exposures to air pollution. The data from this system is not publicly accessible, however the decision to terminate the program neglects the need for long-term monitoring to detect long-latency diseases, such as cancer.

Air quality standards and monitoring frameworks

During the Inquiry hearings, Senator Stephens sought clarification on the differences between air monitoring and exposure measurement systems in Australia, the United States and EU, and in regard to the AMA's statement that current air monitoring in Australia underestimates real-life exposures.

It is the AMA's position that exposure assessment is neglected in the setting of current air quality standards and in the air quality monitoring network. Air quality assessment remains focused on whether the average concentration of a pollutant across a region exceeds a specified standard. This does not, however, provide an indication of real-life exposure levels. Actual exposure depends on time spent outdoors, the proximity to 'hot spots', the duration and frequency of exposure, and so on. Accordingly, effective air monitoring needs to be strategically located to capture variations in air quality, including locations where air pollutant levels are elevated.

In the United States and Europe, ambient air quality standards place a greater emphasis upon exposure, rather than just ambient concentration. In contrast to Australia, monitoring networks in the United States and the European Union were established at locations chosen to measure variability in air pollution levels, thereby enabling population exposure to be determined. In measuring exposure, the US EPA combine air monitoring data with population time-activity data. The World Health Organisation (WHO) also recommends using monitoring to assess population exposure, and provide guidance on how this can be achieved:

- WHO, (1999). *Monitoring ambient air quality for health impact assessment*. WHO Europe: Copenhagen.
- U.S. EPA, (1992). *Guidelines for Exposure Assessment*. U.S. Environmental Protection Agency: Washington, DC.

A further weakness in the current air quality standards and monitoring framework relates to the coverage of individual sources of pollutants, such as emissions from industrial sources, road tunnels, or roadways. The application of emissions standards to off-road diesel engines and wood heaters has also been documented.

- NHMRC, (2008). *Air Quality in and Around Road Tunnels* (2008). (Recommends developing health-based exposure limits for the priority pollutants in and around road tunnels, which would draw upon transit times through tunnels, and realistic estimates of total trip and daily exposure).
- Environ Australia, (2010). *Cleaner Non-road Diesel Engine Project - Identification and Recommendation of Measures to Support the Uptake in Australia*. NSW Department of Environment, Climate Change and Water: Sydney.