

Parliamentary Inquiry into Health Impacts of Air Pollution in the Sydney Basin

2nd Hearing Questions on Notice Department of Environment and Conservation

Question taken on notice at 2nd hearing, 11 September 2006

The Chair asked Mr Ross Malcolm Carter, Director Metropolitan Branch, Department of Environment and Conservation:

- You said that from time to time the department undertakes environmental audits sometimes unannounced. Is it possible to get a list of the total number of audit inspections carried out in 2005-06?*
- Will you provide a summary of the outcome of the inspections, for example, if it led to the company being required to change certain things?*

To protect air quality and human health, DEC sets strict conditions and limits for air emissions from 123 premises licensed in the Sydney Basin. These premises carry out a wide range of activities such as ceramic works, sewage treatment works, waste activities, petroleum works, chemical industries and contaminated soil treatment works. Of these 123 premises, 53 were inspected during 2005-06, some on a number of occasions, with a total of 162 inspections carried out.

As a result of site inspections/audits, DEC issued 44 variation notices to vary/add licence conditions to ensure environmental compliance. In addition, 14 Pollution Reduction Programs were added to these licences, totalling over \$19 million approximately of additional works to protect the environment, (with 10 specific to air emissions). In all other instances, DEC required licensees to undertake minor improvements to ensure compliance or improved performance.

Supplementary Questions on Notice

- 1) *Does DEC concede that PM_{2.5} levels are above the 8 micrograms per cubic metre and that this exceedence is already corrected for bushfires?*

The PM_{2.5} monitoring data provided to the Inquiry was gathered with the Tapered Element Oscillating Microbalance (TEOM) instrument. The continuous TEOM data is consistently above the 8 micrograms/m³ annual average throughout Sydney. This data is not corrected for bushfire influences and therefore includes bushfire impacts.

- 2) *Does DEC concede that PM_{2.5} levels are increasing annually?*

No. The period over which monitoring data are available is too short to show any trend. DEC's assessment is that there is currently no discernable trend in PM_{2.5} concentrations. They are significantly influenced by extreme events such as dust storms, bushfires and hazard reduction burning.

We anticipate that levels of both PM₁₀ and PM_{2.5} will decrease as new fuel standards are introduced and new motor vehicle standards penetrate the market. NSW also has programs in place or under development to address other sources of particle emissions (see response to Question 3 below).

3) *What has DEC done to get levels of PM_{2.5} down?*

Particulate pollution is one of the main forms of pollution targeted under the Government's 25 year air quality management plan, *Action for Air*, for which DEC is the lead agency. Initiatives aimed at addressing PM₁₀, which is subject to an Ambient Air Quality National Environment Protection Measure goal that becomes mandatory in 2008, will generally also address PM_{2.5}. Sydney has met the NEPM goal for PM₁₀ for the last two calendar years as reported in the National Environment Protection Council Annual report for 2004 and will be confirmed in the report for 2005.

Actions that DEC has already undertaken or is currently pursuing to address particle pollution under *Action for Air* are set out in the *Action for Air Update 2006* (Appendix 1 to the NSW Government submission to the Inquiry). Examples of such actions include:

- The review of the Clean Air Regulation in 2005 that established a framework for tightening standards for new and established industry – it is estimated that in the next 20 years the regulation will avoid 26,700 tonnes of solid particle emissions in NSW;
- The diesel retrofit program, a DEC/RTA trial of after-treatment technology on older diesel vehicles. The technology can reduce a vehicles fine particle emissions by up to 90%;
- Input to and implementation of national standards for fuels and motor vehicles; and
- Community education and powers for councils to issue on the spot fines to improve the operation of solid fuel home heaters in winter.

4) *When will the DEC give regular and consistent PM_{2.5} results to the Department of Health and also data on this that can be used for studies of the tunnels?*

Such data are already readily available not just to the NSW Health but to other agencies (state and national) as well as to the community, and have been since the EPA commenced monitoring PM_{2.5} in 1995. These data are available through quarterly air quality monitoring reports published on the DEC website (www.environment.nsw.gov.au).

The DEC's PM_{2.5} data were used in the development of the recent PM_{2.5} variation to the Ambient Air Quality National Environment Protection Measure.

5) *Why does DEC not consult the Department of Health re the morbidity and mortality and their costs created by pollution and take this into account in their licensing?*

As outlined by Mr Ross Carter at the Inquiry hearing of 11 September 2006, DEC requires that a proposed development to be licensed by DEC meet all the concentration limits set out in the Clean Air Regulation and also potentially any more stringent concentration levels that are necessary to prevent adverse impacts on the local area.

NSW Health was consulted during the development of the regulation and also during the establishment of the licensing frameworks established under the Protection of the Environment Operations Act. Health cost data from DEC's study, *Health Costs of Air Pollution in the Greater Metropolitan Region* (DEC, 2005), informed the remaking of the Clean Air Regulation in 2005, including the introduction of new tighter limits for emissions from industry. DEC takes all of this input into account when setting the final licence conditions.

As well as the standards prescribed by regulation, industries licensed by DEC may be subject to more stringent standards based on the outcomes of impact assessment specific to the proposal. This involves modelling of local impacts to set out acceptable levels of exposure at ground level (ground level concentrations). These derive from health-based national and international standards. The emissions from an industrial proposal are

modelled, then compared with the ground level concentrations and the licence limits are set according to the impact of the proposal on the ground level concentrations. In order to grant a licence, DEC must be satisfied from the environmental impact assessment that modelling has demonstrated that the proposal, operating under the conditions set by its licence, can meet all the standards appropriate to it.

- 6) *Is the Department aware of the Report in 2003 by the Bureau of Transport and Regional Economics where in Table 1 it refers to the estimated vehicle pollution induced deaths and road fatalities in the year 2000? (The pollution induced deaths range from 339 to 762 (average 555/yr). By comparison road fatalities are 267).*

Yes.

- a) *If the Department is aware of this study, what is it doing to reduce the deaths?*

As outlined in the NSW Government submission to the Inquiry and particularly in the *Action for Air Update 2006* (provided to the Inquiry as Appendix 1 to the submission), the Government is implementing a comprehensive 25 year air quality management plan. *Action for Air* includes a range of initiatives to reduce vehicle emissions and associated health risks, as well as emissions from the industrial and commercial and domestic sectors.

Action for Air includes initiatives to reduce vehicle emissions by integrating air quality goals and urban transport planning, providing more and better transport choices and making cars, trucks and buses cleaner. For example DEC has worked with the Commonwealth to develop more stringent vehicle emissions limits and fuel standards and has introduced regulation of petrol volatility in summer to decrease emission of volatile organic compound (VOC) emissions, which are a precursor to smog.

As also outlined in the Government submission to the Inquiry, DEC together with NSW Health and other agencies, has established programs and initiatives to reduce exposure to air pollution. An example is the joint NSW Health/DEC Air Pollution Health Alert System, commenced in 2004, that issues health alerts on days when high air pollution is expected and provides information to the community and health providers in relation to high risk groups such as people with asthma and people with chronic lung and/or heart disease.

DEC also makes input to planning and development processes to reduce the risk of exposure to vehicle emissions and is currently contributing to the consideration of urban design guidelines for mixed-use development along enterprise corridors to help reduce the risk of exposure to noise and air pollution.

- 7) *What actions has DEC taken to address the problems in the M5 East?*

DEC's role in the M5 East tunnel has been to:

- Advise the Department of Planning (DoP) on the environmental assessment required for the project, including required air quality outcomes and suggested conditions of consent for the project; and
- Issue the environment protection licence for the construction of the M5 East Tunnel.

DEC had an environmental regulatory role in relation to the construction of the tunnel, but does not have this role in relation to its operation. NSW Health is responsible for advising on air quality issues inside the M5 East tunnel.

DEC contributes its experience in regulating air pollution by working co-operatively with NSW Health and DoP to manage operational air quality impacts.

DEC has contributed to an Interagency Nitrogen Dioxide Working Group (including representatives from RTA, Department of Planning, DEC and NSW Health) to:

- improve understanding of NO₂ levels in the M5 East tunnel; and
- investigate appropriate measures for managing NO₂ in road tunnels in NSW.

The Interagency Nitrogen Dioxide Working Group is now finalising its report on that work.

8) *M5 East Condition 70 states: the Proponent must implement any reasonable requirements of the EPA which aim to improve in-tunnel air quality, as requested by the EPA.*

a) *How has it exercised its powers under condition 70 and with what result/outcome?*

In NSW, road tunnels are regulated as follows:

- The Department of Planning (DoP) is the regulator under the Environmental Planning and Assessment (EP&A) Act via Ministerial planning approvals;
- The DEC licenses construction only. DEC contributes its experience in regulating air pollution by working co-operatively with NSW Health and DoP to incorporate appropriate in-tunnel health based goals into enforceable conditions of approval. DEC advises DoP on the management of operational air quality impacts;
- NSW Health advises on air quality health impacts, including appropriate health based goals for in-tunnel air quality.

DEC exercises its powers by working cooperatively with DoP.

Refer also to Question 9 below.

9) *Does DEC consider the internal and external air quality of the M5 East to be safe to tunnel users and nearby residents?*

NSW Health is the lead agency in advising on in-tunnel air quality and its impacts on tunnel users.

DEC provides advice on external ambient air quality goals. For road tunnels, the operating conditions are designed to ensure that the emissions from the stack will not compromise ambient air quality goals. The DoP, as the consent authority, is responsible for setting and enforcing the operating conditions.

NSW Health provides advice on the health impacts of air quality on nearby residents.

10) *What responsibility does DEC take for addressing air quality issues arising from road tunnels under its Charter and the Protection of the Environment Act?*

One of the responsibilities of DEC, under the Protection of the Environment Act 1997, is to adopt principles of reducing to harmless levels the discharge into the air of substances likely to cause harm to the environment.

a) *What actions has it taken to address these?*

DEC assesses the potential impact of new proposals on the environment and advises the relevant approving authority. Dispersion modelling is undertaken at the project planning

stage for all major development proposals in NSW that have the potential to adversely impact air quality. This allows the project to be assessed against appropriate air quality goals and helps guide detailed design of the project to ensure compliance with these goals.

DEC also monitors, reports on and reviews air quality data from a number of sources in the Sydney Basin including ambient air quality around Sydney.

- 11) *Why is it that the NSW DEC has allowed the application of monitoring of pollution from a point source such as a stack discharging toxic pollutants from a traffic tunnel, when the National Environment Protection Council (NEPC) specifically states in its guidelines that the National Environment Protection Measures (NEPM) do NOT apply under such circumstances?*

The DEC does not apply the NEPM framework to point sources, and does not have a regulatory role in the operation of road tunnels.

DEC provides advice on external ambient air quality goals. For road tunnels, the operating conditions are designed to ensure that the emissions from the stack will not compromise ambient air quality goals. The DoP, as the consent authority, is responsible for enforcing the operating conditions.

- 12) *The NSW DEC has been integral to the discussions about incorporating a correction factor into the continuous PM₁₀ measures by the Tapered Element Oscillating Measure (TEOM) to monitor pollution in the precinct of the M5 East stack. Air quality scientists Dr Kerry Holmes and Dr Peter Best recommended a correction factor of 1.2 be applied to readings in winter to correct for underestimation of the PM₁₀ levels. Thus a reading of 45 µg/cubic metre becomes 1.2x45=54 i.e. an exceedence of the NEPM that would require filtration to be installed according to the Minister's Conditions of Approval.*

- a) *Why has DEC failed to incorporate the recommended prescribed correction factor into the TEOM measurements when a failure to do so underestimates the particle pollution by between 11-40% depending upon temperature?*

Because of the diverse nature of the chemical and physical properties of particles in the air, there are many possible measurement techniques, all quantifying different properties of the airborne particles. Conversion from one technique or metric to another is rarely possible because the relationships are site- and time-specific.

DEC's experience is that no consistent correlation between TEOM and Hi-volume PM₁₀ measurements has been found that can be applied across the whole of the air quality monitoring network (AQMN). So a relationship recommended for the M5 East Precinct monitors operated by the RTA would not apply to the DEC's locations elsewhere in the Sydney region. As such, the DEC publishes the unadjusted data collected using analysers that are maintained according to all standard protocols.

There is thus no universal adjustment factor applicable to all TEOM measurements. The adjustment factor applicable to any measurement would vary, for example, according to site and season. In reporting the TEOM measurements, DEC has been explicit and transparent in presenting the data as being unadjusted.