

**REPORT OF PROCEEDINGS BEFORE**

**GENERAL PURPOSE STANDING COMMITTEE No. 2**

**INQUIRY INTO HEALTH IMPACTS OF AIR POLLUTION IN  
THE SYDNEY BASIN**

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**At Sydney on Monday 11 September 2006**

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**The Committee met at 9.00 a.m.**

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**PRESENT**

The Hon. P. Forsythe (Chair)

The Hon. A. Catanzariti

The Hon. Dr A. Chesterfield-Evans

Ms S. P. Hale

The Hon. M. J. Pavey

The Hon. C. M. Robertson

The Hon. H. S. Tsang

**CHAIR:** Welcome to the second public hearing of General Purpose Standing Committee No. 2 inquiry into health impacts of air pollution in the Sydney basin. Before the hearing commences I would like to make some comments about aspects of the Committee's inquiry and the conduct of this hearing. The Committee has previously resolved to authorise the media to broadcast sound and video excerpts of its public proceedings. Copies of guidelines governing broadcast on the proceedings are available from the table by the door. In accordance with Legislative Council guidelines for the broadcast of proceedings, members of the committee and witnesses may be filmed or recorded. People in the public gallery should not be the primary focus of any filming or photographs. In reporting the proceedings of this Committee, the media must take responsibility for what they publish or what interpretation is placed on anything that is said before the Committee.

Witnesses, members and their staff are advised that any messages should be delivered through the attendants or the Committee clerks. I also advise that under the standing orders of the Legislative Council any documents presented to the Committee that have not yet been table in Parliament may not, except with the permission of the Committee, be disclosed all published by any member of such Committee or by any other person. The Committee prefers to conduct its hearings in public, however, the Committee may decide to hear certain evidence in private if there is a need to do so. If such a case arises, I will ask the public and the media to leave the room for a short period. Could all mobile phones be turned off for the duration of the hearing. I now welcome our first witnesses, Dr Ray Kearney and Ms June Hefferan from the Lane Cove Tunnel Action Group.

**RAYMOND KEARNEY**, Chairman, Lane Cove Tunnel Action Group, affirmed and examined:

**JUNE MARY HEFFERAN**, Deputy Chair, Lane Cove Tunnel Action Group, sworn and examined:

**CHAIR:** Dr Kearney, what is your occupation?

**Dr KEARNEY:** I am an academic.

**CHAIR:** In what capacity are you appearing before the Committee? Are you appearing as an individual or as a representative of an organisation?

**Dr KEARNEY:** I am appearing as Chairman of the Lane Cove Tunnel Action Group Incorporated.

**CHAIR:** Are you conversant with the terms of reference for this inquiry?

**Dr KEARNEY:** I am indeed.

**CHAIR:** What is your occupation?

**Ms HEFFERAN:** I am a retired journalist.

**CHAIR:** In what capacity are you appearing before the Committee? Are you appearing as an individual or as a representative of an organisation?

**Ms HEFFERAN:** I am the Deputy Chair of the Lane Cove Tunnel Action Group.

**CHAIR:** Are you conversant with the terms of reference for this inquiry?

**Ms HEFFERAN:** I am.

**CHAIR:** If either of you should consider at any stage that certain evidence you wish to give or documents you may wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. Does either of you wish to make a brief opening statement?

**Ms HEFFERAN:** We both do, thank you.

**Dr KEARNEY:** I do wish to make a statement. I also would like to table all of the statement. I will read only some of it because of time constraints. I request that Ms Hefferan be asked to read her statement first.

**CHAIR:** Thank you. You may proceed.

**Ms HEFFERAN:** I will hand copies to members of the Committee. I am here both in my capacity as Deputy Chair of the Lane Cove Tunnel Action Group and as a community representative on one of the construction community liaison groups for the Lane Cove Tunnel project. I would like to stress the fact that I am not a scientist. I am speaking from a community perspective and will confine my remarks to your terms of reference (f) and (h), using issues that have arisen from road tunnel projects, particularly the Lane Cove Tunnel. There is no doubt that air quality and the health effects of motor vehicle pollution are high on the list of community concerns—and it is not just from locals. We have many visitors to the tunnel action group's Information Centre who are looking at buying a house in the area. They want to know about vehicle emissions and tunnel filtration, and whether pollution from the stacks will harm them and their children if they buy in a particular location. I might say that we cannot give advice in the latter case.

It seems to me that the current laws and programs for mitigating air pollution are either inadequate or are applied imperfectly when it comes to motor vehicles and major infrastructure. Given that motor vehicles are responsible for the largest slice of Sydney's air pollution, this is a serious

concern. One would imagine that our politicians, bureaucrats and community leaders would be taking steps to discourage private vehicle use, but that is clearly not so. Despite the fact that the Government's Action for Air and Action for Transport aim to increase public transport use, this Government has just announced that it will sacrifice bus lanes on Epping Road when the tunnel opens. This is a clear case of a government ignoring its own policy in favour of motorists and in the face of media pressure. Air quality is supposed to be a key issue for major infrastructure projects and much is made of the so-called stringent conditions that are applied.

But even when opportunities exist to mitigate the effects of vehicle emissions, they are often ignored. One obvious example is pollution control—what we all refer to as tunnel filtration. The Roads and Traffic Authority's [RTA's] response to this technology has been staggering. First of all the RTA denied its existence and then claimed, falsely, that it is ineffective. The RTA obfuscated and delayed at every turn. But, what is worse, it has been aided and abetted by agencies that are supposed to advise and regulate for the benefit and protection of the community. The National Environment Protection Council has stated quite clearly that standards for ambient air should not be applied to a point source of emissions. Yet no-one—not the EPA, the Department of Planning or the relevant Ministers—stepped in to prevent the RTA using ambient air measurements to claim that tunnel ventilation stacks will have negligible effects on surrounding communities. This demonstrates how easily programs intended to mitigate air pollution can be circumvented.

New South Wales Health continues to use its flawed report on M5 East residents to bolster the RTA's position. Even when health researchers discovered, in their second study, that portal emissions from the tunnel had significantly altered exposures for participants, New South Wales Health refused to admit that its results were compromised. Now the Department of Health has begun a study of the health effects of the Lane Cove Tunnel. We all know that cancers can take up to 20 years to develop. Will the study track the original respondents over two decades? What if there is a peak in cancer or heart disease that can be attributed to emissions from the stacks? What will the Government and the Department of Health say to the people they could have protected?

Since there is plenty of evidence, including here in New South Wales, to link motor vehicle pollution with heart disease and some forms of cancer, any reasonable citizen would expect preventative action rather than a study that might simply observe as vulnerable people become sick and some die. So community confidence in New South Wales Health has been dealt another yet blow. The Department of Planning sets the conditions of approval for road tunnels, frequently described as among the most stringent in the world. Even if that is the case, stringent conditions are worthless if they are not enforced. Condition 153 for the Lane Cove Tunnel states that:

... the tunnel shall be designed and constructed for future installation of an appropriate pollution control system to treat air emissions from the tunnel.

Any reasonable person would understand that to mean that pollution control systems must be considered and accommodated in the design and construction. That did not occur, yet both the design and construction plans were approved by the Department of Planning. Nowadays one would imagine that an appropriate system would protect people both in and outside the tunnel. Ceiling mounted systems are effective and popular in tunnels with a high diesel load because particulate removal reduces or eliminates haze inside the tunnel. The RTA knows this and is planning a version of in-tunnel filtration at for the M5 East Tunnel. Even if we turn a blind eye to the fact that the Department of Planning approved design and construction plans that did not include provision for pollution control systems, we have a right to expect that the ultimate proposal would be subjected to close scrutiny.

The RTA's submission regarding Condition 153 makes no mention of in-tunnel filtration. Instead it proposes to filter 100 per cent of the air immediately before it leaves the stacks. This jumbo size installation requires digging underground caverns more than 43 metres high and 20 metres long at each of the ventilation sites. The concept is so extravagant that it would use nearly 6,000 additional kilowatts of power and require expensive upgrades. Clearly, the intent of Condition 153 is to ensure that there is a viable option to install pollution control systems. Any intelligent and reasonably knowledgeable assessment would have raised serious questions about the RTA proposal. For example: Why treat 100 per cent of the air when that is not common practice overseas? Why has in-tunnel filtration not been considered? Why is there no discussion of ceiling mounted installation? Was sufficient room excavated in the tunnel ceiling to accommodate filtration? If not, why not?

How does this profligate use of energy fit with the Government's policy on greenhouse gas emissions? Where is the proposed cost of the system? Is it cost efficient? Apparently none of these issues was raised or explored. A simple question as to cost would have revealed what the company and the RTA trumpeted loudly once they had approval. This so-called filtration option would cost around \$500 million. That is almost half the cost of the entire project! Clearly, it is not now and never will be, a viable solution. It fails any reasonable test of compliance with Condition 153. Department of Planning Officers attended two Construction Community liaison group meetings and the AQCCC. Their responses to questions caused disbelief and outrage. They had not done a cost-benefit analysis and they had not sought a comparison with in-tunnel or ceiling mounted systems. The reason for the latter was that condition 153 states the system will treat polluted air "from" the tunnel, not air "in" the tunnel.

As Committee members can imagine, community members were astounded that an assessment of measures to protect the health of tunnel users and the local community was stalled on a matter of semantics.

In summary, there is a strong community belief that government agencies pay mere lip service to enforcement of measures to reduce air pollution and protect human health. I recognise that large infrastructure projects form a relatively small part of your deliberations into air quality in the Sydney basin, but I suspect they present a microcosm of the bigger picture. As community representatives, we have tried and failed to make a difference. We hope you will succeed where we could not.

**Dr KEARNEY:** As I have indicated I have prepared a statement which I would like to table.

**Document tabled.**

I will read from the first page of the three-page statement and then move to the last page to make a final comment. Whether or not something is good or beautiful or right in a moral sense cannot be determined by the scientific method which is limited to what is observable and measurable. In science, theories about precisely how pollution affects health and well-being may be shattered, but with additional knowledge, new theories are found. However, the recorded observations endure. The extensive literature documents episodes of air pollution are positively associated with enhanced mortality and acute/chronic illness in urban populations.

Whether it is right to blow cancer-causing fumes into the wind or whether it is right to install filtration systems in a tunnel or to replace toxic fossil fuels with clean renewable fuels is a problem solved not only by a value judgment but can be greatly assisted by the scientific method. This issue then is one, I strongly believe, transcends party politics. Community residents have a number of expectations of NSW Health, the Roads and Traffic Authority, Department of Environment and Conservation, the Department of Planning and the corporate stakeholders in the public-private partnerships. We expect these agents will, for example, understand the public's point of view and that its concerns will be the agency's top priority, and ensure those concerns will be scientifically investigated, documented and addressed.

The Lane Cove Tunnel Action Group's [LCTAG] expectations, however, have been dashed by documented bureaucratic dishonesty, incompetence, indifference and tardiness in each of the respective departmental portfolios. Concealment of data, overlooking published evidence, or the deliberate termination of studies at a stage where findings were suggestive have caused LCTAG to be mistrustful of government officials and suspicious of the activities they conduct with corporate clients. Why then is the "preventive" or "precautionary approach" not taken? Because the risk-based approach to public health is adopted instead, that is, wait until the incidence of sickness or dead bodies can be counted. Whilst diesel fumes are a known cause of lung cancer, health bureaucrats state that they are "not yet sure" how big the problem is and "we have not identified the extent of the problem" or "we have yet to understand the underlying mechanism". This is the classic risk-based approach. Ignore the evidence so long as it is not 100 per cent watertight. Use uncertainty as an excuse to delay. Remember tobacco and asbestosis? Precaution is not yet fashionable while risk-assessment is!

If a substance is known to be harmful, it should not be necessary to demonstrate scientifically that it is actually causing harm before doing something about it. Compelling evidence confirms sickness and death are associated with air pollution in the Sydney Basin and are preventable. To

reduce adverse health impacts, the totality of the evidence is, beyond reasonable doubt, in favour of replacing harmful fossil fuels with clean renewable fuels. Equal to this is the proven evidence to make it obligatory for the installation of filtration technology in traffic tunnels and in polluting industry stacks as a conscionable "duty of care".

**CHAIR:** In the opening statements you have made reference to the national air quality standard. The desire you focus on is surface area in particles, not on weight. Dr Kearney, does any country overseas use a standard that is based on surface area and number rather than weight?

**Dr KEARNEY:** To date, as I understand, the measurements of particulate matter is based upon weight. But as knowledge has developed, coupled with a better understanding, it is clear as from the work of Professor Lidia Morawska and Professor Michael Moore that in terms of the ultra fine particles, measuring weight is inappropriate for assessing health-risk impact.

**CHAIR:** Is the standard that Australia applies similar to what is applied in other developed countries?

**Dr KEARNEY:** That is correct. Recently when I was in Canberra Dr Cosgrove, one of the representatives of the Bureau of Transport and Regional Economics, made the point, in response to my comments about the need to introduce particle numbers and surface area, that he had been for some years now trying to persuade the National Environment Protection Council to adopt a different standard, namely, numbers of particles and surface area.

**Ms HEFFERAN:** May I add something? I was not talking about how you count particles or how you measure them, I was talking about the fact that the National Environment Protection Measure [NEPM] says, the NEPM goals should not be used for a point source. You cannot use ambient air to measure what is coming out of a point source. That is a different point entirely. It does not matter how it is measured, it is what is measured, what is considered in the measurement of pollution.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Is there any evidence that says there is a relationship between particle numbers or surface area and the development of disease?

**Dr KEARNEY:** From simple principles, one can estimate that one billion ultra-fine particles of an aerodynamic diameter of 0.01 micrometres is equivalent to one PM10 particle, that is, one billion of the ultra-fine are equivalent to one of the course PM10 particles. However, the surface area of the billion particle content of equal weight is one thousand times more, and it is in the fine ultra-fine particles that carry most of the polycyclic aromatic hydrocarbons PAHs of which a number have proven to be carcinogens. There is now documented evidence to show that indeed exposure to the fine particles, whether it be number or by a surface area is associated with a higher cancer risk, such as reported in the Journal of American Medical Association where one in five lung-cancer deaths was associated with exposure to the fine particles.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** In essence, you are saying if a big particle gets caught in your nose hairs and the small particles go down into your lungs?

**Dr KEARNEY:** Correct.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** If that is the case, and all the technology particularly of the much touted improvements in the European diesel standards are to produce smaller particles, because they are producing less large particles, does that mean the new diesel is producing more small particles whereas the old diesel produced both large and small particles.

**Dr KEARNEY:** Currently the diesel produces both large and small particles but 85 per cent of the particles coming out of the exhaust pipe of motor vehicles powered by diesel are less than one micrometre in diameter. The fact is that we are led to believe that just because motor engines are producing finer particles that it is safe but, according to Professor Lidia Morawska and Professor Michael Moore that is not so. In terms of the actual numbers of the fine particles on the basis of weight we are, in fact, dealing with a product that is far more toxic for two reasons. The first is that

the toxic molecules that adsorb onto those fine particles through condensation are proven to be products such as the PAHs.

Second, most of those ultra-fine particles are soluble in the lungs off-loading their cancer-causing cargo in the lower extremities of the airways. This is in contrast to the insoluble coarse particles that, as you rightly said, are trapped in the upper airways and get propelled out by the escalatory movement of that ciliary action.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** When they are propelled upwards do they get swallowed? Are they as harmful swallowed as they were in the lungs?

**Dr KEARNEY:** One would expect.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Do they still get absorbed?

**Dr KEARNEY:** Yes, but they are still insoluble particles but what is perhaps on their surfaces may indeed be eluted off, and those products may indeed be absorbed.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** If smaller particles are to get into the lungs better then could people be getting a higher dose from the new diesel than they were from the old diesel or did the old diesel produce plenty of small particles as well as large particles?

**Dr KEARNEY:** The fact of the matter is that as the combustion generates finer and smaller particles, on a weight-for-weight basis the end result is more toxic because they are going all the way down the airways and most of them are dissolving.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Are carcinogens being delivered right to the bottom of the lungs whereas they were being delivered to our nose, to put it in shorthand?

**Dr KEARNEY:** Not strictly. The coarse particles are derived from the mechanical process—the wear and tear of tyres, and the brake linings—and they are mainly insoluble whereas the fine particles are derived from the combustion, and in the cooling down process from nucleation, accumulation and condensation, products in that combustion condense on the surface of those fine particles. When those fine particles are then inhaled, because of their fine size, many of them go all the way down to the gas exchange units, or the alveoli where they dissolve in the surfactant and from there absorb cumulatively in the body as well as cause local irritation to which the body responds with inflammation.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Asthma or whatever?

**Dr KEARNEY:** Yes.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Is there a relationship between the amount of pollution in the air and the amount of cancers that develop? Can you simply say if we take away all the chimneys, factories and trucks and put them into the soup we breathe we will get more cancers? Is there a relationship between the total drug, if you like, and the total amount of illness?

**Dr KEARNEY:** On basic principles of tumorigenesis the dose of the carcinogen is usually proportional to the incidence of cancer. But, of course, you have got a lot of variables involved in this.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Presumably the constituents of the drug would make a difference?

**Dr KEARNEY:** Yes.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** What other variables are there? For instance, if it rains they are washed out of the air? In the end the cancers developing is proportional to the dose, is that the essence?

**Dr KEARNEY:** In general principles of tumorigenesis that is correct. But whether a person actually gets the cancer will depend upon other factors—lifestyle, genetic predisposition and so on.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** The fact that it could be one person rather than another who gets the cancer, but what you can say is that the total cancer burden on society will be higher?

**Dr KEARNEY:** Correct, yes.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** When you set a standard of so much benzene in our air, or so much nitrogen dioxide or whatever, on what is that standard based? Obviously the ideal standard is zero?

**Dr KEARNEY:** Ideally yes, but in terms of setting standards obviously a balance is reached. The balance is between economic growth and the trade-off is an acceptable number of deaths and sickness, and that is the fact of life.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Nobody actually say we are willing to have 1,000 deaths a year in order to get a 2 per cent economic growth. In a sense, nobody discusses the figures in those terms but they say, "this is the standard of air we can reach" or "the Americans have" and then later a doctor or epidemiologist says, "this is how many cancers we are getting for that load". Is that right?

**Dr KEARNEY:** The facts are not always disclosed publicly. But in terms of setting standards of this kind that is, in fact, what takes place. A balance is set between what is acceptable in terms of economic growth versus the trade off of sickness and death. Ideally, if you do not want sickness and death, then it is reduced down to the minimum level in terms of background without these sources of pollutants, such as traffic combusting fossil fuels. But the point is that the current standards could not, and do not, guarantee that below them there is no impact. The fact is that from one major study two-thirds of the sickness-care costs incurred as a result of exposure to these pollutants occurred under the current 50 micrograms per cubic metre set for the PM10. In other words, we should not accept that the current standard is a safe standard. It is a standard set based upon a balance between economic growth and an acceptable trade off of sickness and death.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Let us say we have built a bunch of tunnels so the cars save 20 sets of lights, so instead of the diesels going inefficiently and pumping out the gunk they will zip through the tunnel pretty quickly, running at relatively optimum rates, and the total load of pollution for the Sydney Basin would be less because of the tunnel. Is that possible?

**Dr KEARNEY:** If whatever measure you adopt, and you reduce the pollution loads, you are bound to reduce the sickness care costs as a result of reducing health impacts.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Does that not mean that tunnels are unlikely to reduce the total health impact, even if they cause a couple of hot spots where the exhausts come out?

**Dr KEARNEY:** The fact is that the tunnels do in fact bypass sets of traffic lights. We know in the stop-start process, that motor vehicles do generate extra pollution. But the problem we have with the current tunnels is that, if we take the M5 East for example, the ventilation system in that tunnel cannot cope with the pollution generated when the traffic speed is reduced below 25 kilometres per hour. On a daily basis, it is down to 5 kilometres per hour at certain times, which means that the pollution in the atmosphere in the tunnel simply is reaching toxic levels and the ventilation system cannot cope with removing that fast enough to reduce it to below an acceptable level.

However, the point I should make also is that the majority of the pollutant coming out of the stack is derived from the tailpipe, as well as dust swept up off the road and so on. Those fine particles ultimately become very much like a vapour; they will simply disperse into the atmosphere and get carried, according to the wind direction, many kilometres away. Being a stack, you have the plume coming out according to the wind direction. It does not go up, up and away, as we are told by NSW Health; it actually bounces, and there are hot spots generated according to the landscape, the



topography and the wind direction. Those short-term exposures to relatively high concentrations of pollutants can precipitate episodes of asthma, for example, and bronchitis.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Even if the total load is less, it is being hit on certain people, who, by virtue of the fact that they bought their houses in a hollow near the stack; they are the ones that it spills onto, if you like?

**Dr KEARNEY:** Yes. It would be worse, for example, when there are temperature inversions, when the pollution tends to be trapped under that cloud. If it just so happens that persons are in the track of the trajectory, they will be exposed to significantly higher levels. Within that population there will be at-risk people. People who have atherosclerosis, narrowing of the coronary artery, and any irritation in the lung as a result of that exposure may generate clots, and those clots may then block the narrowed down coronary artery to precipitate a heart attack. That has been documented, even by NSW Health last year: the levels of pollution in Sydney are sufficient to precipitate a heart attack in at-risk persons—not all persons, but at-risk, elderly persons.

**CHAIR:** Dr Kearney, you referred to hot spots in the M5 East and the way in which the plume might react to wind, the topography, and certain conditions. Specifically in relation to the Lane Cove Tunnel, have you done modelling on what you anticipate in terms of the so-called hot spots as to where they might be and how much of the population close to the area would be particularly affected?

**Dr KEARNEY:** I personally have not done modelling. The modelling has been done by a number of agencies, including those who have been commissioned by the company. But my concern is, as was raised by independent assessment, such as by Dr Peter Best, that the flaw in the modelling—for example, in relation to the eastern stack—is that it does not include the background pollution. The background pollution in that area is derived mainly from the large volumes of traffic on the Gore Hill Expressway. Why not include that pollution in the modelling involving the fumes coming out of the stack? Because it would indicate that there are levels that are above the standards.

**The Hon. TONY CATANZARITI:** Ms Hefferan, please correct me if I am wrong. In your opening statement I think you said that public transport was not seriously considered. I formed the opinion that you may have been suggesting that the tunnel should never have been constructed. Am I right?

**Ms HEFFERAN:** Most definitely not. I have been working for 20 years now to find a solution to the problem of Epping Road—only 10 years to have a tunnel built. So, having given 10 years of my life to it, I would never say it should not have been built. However, the trade-off is that our community—which has suffered both from the health effects, for those poor people for whom Epping Road is a residential street, and for the rest of us who cannot get across Epping Road, which is like a gigantic ocean that divides our suburb—what we wanted and what our community demanded was the reinstatement of our right-hand turns, which the RTA took away 27 years ago without consultation; and 24-hour bus lanes to improve public transport, because unless you improve public transport you will never get people off the road. You can put 20 lanes on Epping Road and the cars will fill it.

No, I do not wish the tunnel had not been built. I am, and have been, a great supporter of the tunnel, but I also support public transport. I think the modifications that our community demanded of Epping Road should have been taken into account; the car should not always be God.

**The Hon. MELINDA PAVEY:** Ms Hefferan, can expand on some of the proposed solutions to vehicle air pollution you have outlined in your submission to the Committee? In your opening statement you said that the \$500 million option that is on the table now is simply too expensive and will not be used. What other options do you see as being viable?

**Ms HEFFERAN:** The real problem comes from the fact that the Department of Planning allowed a design to go in without including pollution control systems. Pollution control systems are at their most effective when they are part of the ventilation design. I am not an engineer or a scientist, but I have read widely. I would have thought that the most effective solution might well have been, say, ceiling-mounted EPs, and perhaps denitrification. There is a place which was a mid-tunnel access, which is in the middle of the tunnel, and may well have been a reasonable place to put denitrification

equipment. When the road headers were in the tunnel, they would have had to gouge out ceiling heights—not just for the jet fans that are going in there but for the EPs.

The Department of Planning never intended that this condition be met, because it never did anything all the way through to make sure it was met. The RTA also never intended to meet the condition. What has happened now is that no-one is ever going to put \$500 million into digging those enormous caverns. It is an absolute outrage to pretend that that is a solution, and a betrayal of everything the Department of Planning is supposed to be there for.

**Ms SYLVIA HALE:** Dr Kearney, we are shortly to hear from officers of the Department of Health. Could you set out as clearly as possible what you believe are the defects in the studies that are being undertaken by the Department of Health, both in relation to, if you think it relevant, the M5 East as well the Lane Cove Tunnel?

**Dr KEARNEY:** First of all, as I understand it NSW Health is not an integral part of these projects from the beginning. NSW Health only becomes involved when it is asked to become involved to make comment, and often that is initiated by the community. In our experience, what has happened is that these projects have got so far under way that by the time NSW Health gets involved it is too late. We observe that NSW Health, together with the rest of the bureaucratic departments, all behave as bristles in the one brush and bend according to political pressure or the particular mindset.

The primary motivator in all of this is undoubtedly the New South Wales RTA; they are the decision-makers. We have noted in the Lane Cove Tunnel project that when the contract was signed there must have been a deal struck between the RTA and the company to delete a 1,600-metre long tunnel, which was designed as a kind of sump. The RTA did not advise NSW Health of that deletion, nor did it advise the EPA. Certain correspondence emerged when both departments were ultimately notified of that through the media, some six months after the project commenced.

To come back to your question in other respects, I am very concerned that NSW Health adopts the kind of principle that a phenomenon really does not exist unless we understand the precise mechanism. We hear time and again that we are not quite sure how the PM2.5s impact upon health and wellbeing, and therefore more studies need to be undertaken.

We also find the principle being adopted that, rather than accept the fact that the literature confirms time and again that benzene, for example, is associated with leukaemias, we know that some of the toxins in the PAHs are associated with cancer. Instead of adopting a precautionary principle, the response by NSW Health is, "Let's do more study." Instead of adopting the precautionary principle, or adopting measures to prevent what is known, we have to undertake more studies, which is essentially a waste of taxpayers' money. Often we see that the terms of reference of those studies are designed in such a way to come out with a negative outcome. Indeed, that has been confirmed by the New South Wales second-phase study of the M5 East residents who were allegedly exposed to these pollutants.

My serious question is: Why is it that after that study had been shown to be defective by three independent experts, NSW Health has not removed that report from the table? I put it to this Committee that it is because of political expediency. As long as that report remains on the table, it can be said that there is no adverse impact on residents exposed to these pollutants. Therefore, we do not need to install filtration. Indeed, that was the kind of statement that was made by the former Minister for Roads, the Hon. Carl Scully, when he virtually said, "Well, it is just what we expected: these exposures do not cause impacts."

If you look at the study of the NSW Health M5 East research, it has been utterly flawed and the conclusions, as indicated by the three independent experts, unanimously said Lane Cove Council should not accept the findings. We know now that during that particular study, unknown to NSW Health, the RTA had been approving the illegal exhausting out of the portals into the precinct where residents, who were used as the low-dose exposed population in the New South Wales Health study. There is no difference now between the two cohorts of people. What was said to be low, the other one was said to be high, but unknown to New South Wales Health, the low-dose population had, allegedly, been exposed to pollution that was coming out illegally from the portals.

**Ms SYLVIA HALE:** I understand that a leaflet on the RTA's web site in relation to the M5 East says that 90 per cent of emissions are through the stack, which suggests that 10 per cent are through the portals. Is 10 per cent a safe proportion to be ventilated through those portals, or would you say that was an unsafe proportion?

**Dr KEARNEY:** My interpretation of your assertion is that 90 per cent of the high level of pollution already in the tunnel is going out of the stack, and 10 per cent of that same level of high pollution that is exceeding the prescribed standard is going out of the portals into the precinct where residents, presumably, are being affected. Allegedly there are now reports that some of those residents are experiencing ill effects, where previously they had not experienced ill effects.

**The Hon. MELINDA PAVEY:** What is the evidence of that?

**Dr KEARNEY:** I can only go by the evidence that has been derived from residents in that area, through other groups, such as Residents against Polluting Stacks [RAPS], and you are well aware that Mark Curran is familiar with these issues and some of that evidence has come via RAPS.

**Ms SYLVIA HALE:** Is it appropriate that initial studies are being undertaken to set the pace so that you know what the existing state of health of residents in the vicinity is? Are they being undertaken so that you have a benchmark against which to judge the subsequent impact of emissions?

**Dr KEARNEY:** In the case of studies undertaken by New South Wales Health, it is my understanding that both levels were not undertaken. In other words, how many at-risk people are there in that community.

**Ms SYLVIA HALE:** Is that only in relation to the M5 East, or is it also relevant to what is happening at Lane Cove?

**Dr KEARNEY:** I am not familiar with the specific terms of the health study regarding the Lane Cove community, other than it involves both adults and children this time. Some of those children from the local schools will be monitored, but one concern is that some of those children will move from local schools to high schools, and that is one of the variables to be considered. Whilst those children are not in that constant atmosphere they will move, and that is another variable that may invalidate some of those findings.

**The Hon. CHRISTINE ROBERTSON:** Obviously, one of your major campaigns is to increase the use of biofuels to remove issues in relation to petroleum products, which I do not think anyone on the Committee would argue against in any way, and have all been active in some way in implementing and increasing the use of biofuels. However, I question why you are so cross with the bureaucratic process, the evidence and the process of government when biofuels are being introduced. This Government removed lead from petrol on an evidence basis. Will you explain why you feel that there is some sort of conspiracy to maintain something?

**Dr KEARNEY:** Your question has many parts to it.

**The Hon. CHRISTINE ROBERTSON:** Yes, I am good at that.

**Dr KEARNEY:** In terms of the lead issue, the lead was removed not because of a health issue but because the lead interfered with the catalytic converter of the motor car. It poisoned the catalytic converter. Lead was removed not because of its health impacts but because of its poisoning of a mechanism that allowed the oil companies and the motor car manufacturers to keep using petrol as a fuel to power those motor vehicles. We all know that whilst the lead was reduced, aromatics were increased. In other words, whilst the lead was reduced the potential carcinogenic properties of the fuel were increased. That is the lead issue. In terms of the biofuels, as a benefit I applaud the New South Wales Government and the Opposition for their initiatives. At the Federal level, last year, I was interviewed twice by the Biofuels Task Force. I was immensely disappointed that it set a goal of 350 megalitres of biofuels for all of Australia, which represents less than 1 per cent of all the fossil fuels sold in the marketplace. It will have absolutely no impact on health.

**The Hon. CHRISTINE ROBERTSON:** I do not understand Peter Best's qualifications to be an epidemiologist. Can you tell it what they are?

**Dr KEARNEY:** Peter Best has been a consultant to the M5 East project. He has been an adviser in the committee dealing with the correction factor for monitoring particulate air pollution on a continuous basis using the so-called TEOM method. His background is one of science, specifically air science. His company, from which he has now retired, is Katestone Environmental. He is a person of wide experience and appropriate qualifications to make the judgments he has made: Unless correction factors are incorporated in continuous monitoring then an error can be between 11 and 40 per cent underestimating that level of pollution.

**The Hon. CHRISTINE ROBERTSON:** He is not actually an epidemiologist. He is a physical scientist?

**Dr KEARNEY:** No. The epidemiologist is Professor Michael Moore, who is one of his colleagues, and happened to be one of the experts who was commissioned by Lane Cove Council to review the report by New Wales Health.

**The Hon. CHRISTINE ROBERTSON:** To which university is he attached?

**Dr KEARNEY:** It is a Queensland University.

**The Hon. HENRY TSANG:** I pay my respects to Professor Kearney for his statement about sustainable development and Ms Hefferan, who said that to do that you need to support public transport. We cannot talk about the Lane Cove Tunnel without also looking at the experience we had with the Cross City Tunnel. The bus lane, which was promoted by the City of Sydney, Planning and so on, ultimately choked the city because the people who wanted to get into the city by car could not get into it and they could not get out of it. The recent decision by the Government to remove the bus lane allowed some reasonable flow of traffic. That being so, do you think it is worthwhile to allow a time to see whether the temporary removal of the bus lane in the Lane Cove Tunnel would give residents the opportunity to get in and out and, more importantly, so that the business community and the industrial community of Lane Cove could be served by their delivery trucks? Do you think the residents and the people who have factories or industrial parks in Lane Cove should have a chance to use the tunnel without the bus lane?

**Dr KEARNEY:** I will speak from a personal point of view. The Lane Cove West Business Park, which now employs some 8,000 to 10,000 people, need some access to that location. At the moment there is only one entry/exit, and that is known as Sam Johnson Way. In the past there was another entry/exit, namely the Mars Road connection, which was closed permanently to prevent that traffic moving into the residential area. The residents, by and large, would want that. However, there are now concerns from the industrial owners and occupiers that property values would depreciate. If one looks into that area one would see a lot of offices now up for sale or for lease because of diminishing interest.

I am concerned, and I received an email only this morning from a concerned resident in Barwon Road, that between the hours of seven o'clock in the morning and nine o'clock a gate is put across Moore Street to stop that traffic accessing Epping Road to give some respite to the residents and schoolchildren to go to school. The concern of these residents in some sections, not necessarily all, is that should there be a narrowing to one traffic lane that may put pressure on reopening Mars Road and Moore Street to allow the traffic to access Epping Road through residential areas. That would be a major downside of this tunnel project. I understand that the RTA has expressed concerns about the so-called ramp up period. It, too, has expressed its position that it would like some settling-in process to allow a look and see.

**Ms HEFFERAN:** I would like to say something, because we actually have different views on this. Yes, it is true that a lot of people want to drive their cars. I think the time has passed when any responsible government or any responsible politician or community leader can say, "Yes, drive your car and I do not care who you kill in the process." We have to get past that. This tunnel can take up to 100,000 vehicles. Its two traffic lanes will carry almost as many vehicles as three lanes on the surface, more people than 2 and a half car lanes on the surface. One bus lane will carry nearly as many people

as three lanes of cars. What are we trying to do? Are we trying to move people in the peak hour or are we trying to move vehicles?

**The Hon. HENRY TSANG:** My question really is about people who live and work in Lane Cove West.

**Ms HEFFERAN:** I live in Lane Cove.

**The Hon. HENRY TSANG:** I am not really talking about taking people from the city to the west.

**Ms HEFFERAN:** But you are. What you are saying is that those other people do not count. To my understanding a ramp-up period is a period when the tunnel traffic goes from a small amount to a large amount. What you are saying is that while people are determining whether they would use the tunnel or whether they will not we should give them a wide-open road.

**The Hon. HENRY TSANG:** Just to see how people who live in Lane Cove, who work in Lane Cove and who employ people in Lane Cove are affected before reimposing a bus lane.

**Ms HEFFERAN:** But would you do that at a time when you are attracting more and more and more cars? The RTA by doing this project wants to attract more vehicles to the route. In fact, we do not have three lanes on Epping Road, basically: we have two, and a T2. If we have two lanes and a T2, they will fill, but not with people who live in Lane Cove or work in Lane Cove. They will fill with people who want to go past. The whole purpose of this tunnel was to say that if you have business in Lane Cove and you live in Lane Cove, there is room on the road for you. If you want to go through Lane Cove, then you use the tunnel. We in the community set out to funnel traffic, and I am not ashamed of that in any way at all. Public transport, cycle lanes and pedestrians are much more important than the people who want to drive through, and it is time that governments had the spine to say to people, "Public transport, pedestrians, cyclists and the people who live here are our priority."

**CHAIR:** Dr Kearney and Ms Hefferan, the time for questions for your group has expired but if you think, as a consequence of anything said today, that you wish to send a supplementary submission, we of course would be willing to receive that from you. Thank you for your attendance. I thank you also for your extensive submission, which we have found and will find very valuable in the preparation of our report.

**(The witnesses withdrew)**

**DENISE MARGARET ROBINSON**, Chief Health Officer, New South Wales Health, 73 Miller Street, North Sydney, 2060, and

**MICHAEL PHILLIP STAFF**, Director of Environmental Health, New South Wales Health, Locked Bag 961, North Sydney, 2060, and

**VICKY SHEPPEARD**, Senior Policy Analyst, New South Wales Health, P. O. Box 798, Gladesville, 1675, on former oath:

**CHAIR:** As you have been previously sworn in, we do not need to go through that process again. Do you wish to make any further opening statements today?

**Dr ROBINSON:** No, thank you.

**The Hon. MELINDA PAVEY:** The New South Wales Opposition, through an Info-i request this year, uncovered the "Draft Report into the Air Quality Impacts of Development in Sydney", which indicated that New South Wales Health advised the Environment Protection Authority [EPA] that elevated concentrations of ozone are associated with increases in mortality, hospital admissions, respiratory symptoms and decreases in lung function. Would you care to comment on this, given that increased air pollution causes increased ozone levels and that the annual report of the National Environment Protection Council, released earlier this year, indicated that Sydney smog levels are almost 10 times worse than those in any other Australian city?

**Dr STAFF:** Certainly, we would agree that air pollution does have health effects, and certainly it depends upon which pollutant we are talking about as to how we try to quantify that. There are some problems in separating the components out. Sydney does have an issue with ozone levels. Ozone is a secondary pollutant. It is created when ultraviolet light interacts with volatile organic compounds and oxides of nitrogen. Certainly in the Sydney Basin the topography is such that this does occur. What we would expect is that efforts would be taken to minimise those impacts.

**The Hon. MELINDA PAVEY:** What has happened with the draft report? Has it been finalised?

**Dr STAFF:** I am not actually sure which draft report we are talking about here.

**The Hon. MELINDA PAVEY:** The Opposition received it through a freedom of information request and it was titled "Draft Report into Air Quality Impacts of Development in Sydney". Do you know anything about that report?

**The Hon. CHRISTINE ROBERTSON:** Has it got a year?

**Dr SHEPPEARD:** I think it may have been done through other agencies. It was not something that the health Department was generating itself. It may have gone through other agencies like the Department of Planning.

**The Hon. MELINDA PAVEY:** On another issue, where is the complete New South Wales Health study on the effects on residents from the M5 East that was conducted in 2003, reviewed supposedly in 2005, and due for release shortly after? Has the study been modified to take into account the fact that the Roads and Traffic Authority [RTA] was expelling air out of the portals on a regular basis during the time of the study?

**Dr STAFF:** We have conducted, as I think everyone knows, a study into the emissions of the stack from the M5. It was a multiphase study. From my recollection, it was released in April 2004. Subsequent to the release of that report, we were made aware that there had been some portal emissions occurring. That has the potential to alter the exposure patterns of pollutants in the area. As a result we decided to reanalyse the data, looking at a different exposure level. The two factors that came into play there were that there were some portal emissions which, as I have just indicated, could potentially have changed the pattern of exposure and also gave us the opportunity to use recorded levels over the three months of the actual study when it was conducted.

**CHAIR:** If I could follow up in that general area, in answers to questions on notice provided to the Committee, question 15 relates to a question asked in the September 2005 budget estimates. The Minister for Health stated that a study into the effects on residents in the vicinity of the M5 East stack would be reanalysed by the end of 2005. The question was where was the study at, had it been released, and if not, why not. The answer from New South Wales Health suggests that it has taken longer than expected because of the difficulty in appropriate independent experts having time to do the required tasks and also partly due to the additional step in the process of the community-nominated expert reviewing the methodologies. You state, "We expect the findings will be released in the third quarter of 2006". Could you confirm for me in relation to the appropriate independent experts that in fact it is not a question of their not having the time to do it, but they are undertaking the required task. If so, exactly where are we at? Is it being done? In relation to this additional step of a community-nominated expert reviewing the methodology, has that person been identified? Is this actually being taken seriously?

**Dr STAFF:** I can confirm that, yes, we are taking it seriously. I can confirm that the vast majority of the work has been completed. Certainly what we are talking about here is very complex, difficult work. There are at least three steps in the process. First, the process is to get the CSRIO to remodel the actual emissions that occur to give us better modelling. That has taken place. That was completed by the end of last year. Second, in response to our community consultation, there was an expectation that we would get an independent review by someone nominated from the community. That person has reviewed it and they have looked at what has been produced and they are satisfied with that. That has produced a report.

The next step we need to do is to get some statistical advice on how to analyse this study. That has just been received and finalised. We are now in the process of looking at the numbers and coming up with the progress in the report. So we do take it very seriously, but we will not go and do a half-hearted effort. We will need to have our experts, all the experts who are around, to do this. It is not an easy task to do. There is a very limited pool of people that we could get, so we have decided we need to get the best people. We have also taken the extra transparent step of getting some community consultation.

**CHAIR:** Do you hold to the comment that it will be released in the third quarter of 2006?

**Dr STAFF:** I know that that is very rapidly approaching, but that is certainly our expectation that we would be able to meet that target or, if not, very shortly afterwards. It is a matter of getting the experts together and reanalysing the data. We are at the point where we are almost ready to reanalyse the data.

**The Hon. MELINDA PAVEY:** And that data, would that have taken into account the impacts on residents in the portals?

**Dr STAFF:** What the new data addresses is a different level of exposure. We are using the same recorded information that we got from the residents, so there are no new residents included in the sample. It will probably be limited in its ability to tell us anything about the impacts on the portals per se simply because the original people were not selected, based upon exposures around portals. They were selected based upon exposures or planned exposures around the stack.

**The Hon. MELINDA PAVEY:** Have you had any correspondence or any concerns in the local community about impacts on residents around the portals?

**Dr STAFF:** We have had some anecdotal information at public meetings that people are concerned about issues around the portal.

**CHAIR:** Can I just take the whole area of air pollution and the role of New South Wales Health a little more broadly? Could you outline exactly what is the process in any, say, approval for major projects, such as a road tunnel? How does Health work with the Department of Environment and Conservation and the Department of Planning? At what point are you involved? Are you always involved? It has been one of the points of criticism that it seems that the New South Wales Health perspective is not always clearly given.

**Dr STAFF:** New South Wales Health does not have a legislated role. I think that the best way I can describe our role is what is actually happened in the recent large developments that have been around. Quite often, if it is a large, significant development, the Department of Planning will call a planning focus meeting and routinely New South Wales Health is usually invited along to those, if they are substantial projects. In that planning focus meeting, a lot of the issues are discussed, brought up, and we have an opportunity to provide some information. Sometimes we are asked to provide input into the director general's requirements of what an environmental assessment process or an environmental assessment document may look like. That has happened on several large infrastructure projects.

Following that, the usual course is that an environmental assessment is created or produced by the proponent. New South Wales Health will certainly look at that and provide comments, if it is appropriate to do that, so that is another stage of involvement. Then if the proposal goes ahead, there may well be some draft conditions of consent, in which case they are often provided back to New South Wales Health for them to have some input into those and their appropriateness. While there is not a mandated legislated role, there is certainly an administrative capacity there for New South Wales Health to be involved in interagency meetings and to provide specific advice to the Department of Planning.

**CHAIR:** Does New South Wales Health have a point of view as to whether it should be part of the legislated assessment process?

**Dr STAFF:** Assessments for major infrastructure I think is vested with Planning. Planning has an approach that they are using. I think it is a matter of as long as New South Wales Health has appropriate administrative roles to provide its information, then that is a reasonable outcome.

**CHAIR:** Finally from my point of view, one of the issues that we have asked about previously and that I will seek clarification on because I am not sure that I asked you last time is in relation to air quality standards and the issue of measuring particles by surface area rather than weight in order to address the issue of health concerns. Looking at the standard, does New South Wales Health have a view on that issue?

**Dr STAFF:** We are not experts in monitoring pollutants, as such. I think we need to be informed by our other colleagues who are better at actually measuring and characterising pollutants. I would refer that to the Department of Environment and Conservation. I think they have the most appropriate expertise in that area.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Should the Department of Environment and Conservation be measuring particles by surface area rather than by weight in order to address health concerns?

**The Hon. CHRISTINE ROBERTSON:** He thinks it should be the Department of Environment and Conservation.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Is the Department of Environment and Conservation supposed to be the health department with regard to public health concerns of epidemiology of air quality? Is that your contention?

**Dr STAFF:** No.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Then you are, is that right?

**Dr STAFF:** We have carriage of jurisdiction over health issues. Certainly we can look at health patterns, and as long as we have appropriate exposures to measure against we can look at any health links associated with that.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** So you have to be given the data by the Department of Environment and Conservation?



**Dr STAFF:** It is a matter of we do not monitor environmental pollutants. If we have a view we will provide some information to that but, certainly, I think it would be appropriate if people have expertise in monitoring environmental pollutants then we should use that to best characterise what people are being exposed to, just as we will characterise what are the appropriate health outcomes that should be looked at.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But if you wanted to measure something in order to measure some health effects and you were not getting the data you needed you would obviously have to do something to get that data, would you not? You do not sit there and say, "Give us whatever you give us and then we will make conclusions based on it", if what you are being given does not allow you to draw conclusions.

**Dr STAFF:** We certainly review literature and have our own view as to what sort of information would be useful and certainly what is best practice. In a lot of situations, routinely collected environmental exposure data is not available. I think the Lane Cove Tunnel is a very good example of that in that there is not necessarily routinely available information on exposure and it needs to be collected for a specific study, and as part of the commissioned study, which the Co-operative Research Centre for Asthma and Airways is conducting, they are looking at developing and collecting some more refined exposure measures.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** What changes were there in benzene levels in Sydney when the fuel composition changed with the new refineries to the aromatics?

**Dr STAFF:** I cannot answer that question. I do not know if Vicki can, but I am sure someone from the environment department may be able to provide some useful input as well.

**Dr SHEPPEARD:** I think it is a bit soon yet to have any data back from that. I think it only happened on 1 January 2006. But we would expect that we would see lower benzene levels in Sydney over time with the lowering of benzene levels.

**CHAIR:** I would ask if you would take that on notice and if there is some additional information you could provide please do so. We accept that it may well be too soon but we would just ask you to check that.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** How many people die of air pollution in the Sydney Basin?

**Dr STAFF:** I think that is a very difficult question to give a precise answer to. My understanding is that it would be approximately 1,000, or in that order, that pollution has contributed to their deaths.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** A thousand people a year die of air pollution in Sydney, is that right?

**Dr STAFF:** I think it is a matter of if there is pollution and there are health effects related to it then we certainly need to be very upfront about this in that, yes, there are 1,000 people as an estimate, but that does need to be put into context; that needs to be put into the context of other causes of illness; it needs to be put into historical exposures—

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But you need to know how many people are dying. We know the road toll is 800 a year, or whatever it is; we know that 43 people a day die in Australia of tobacco-caused disease, we need to know how many people are dying of air pollution, surely? Those figures should be publicly available. If they have got an error margin then say it is between 900 and 1,100, or whatever your error margin is. Surely that is a reasonable request of an epidemiological part of the health department?

**Dr ROBINSON:** The figures that I have, to recollection, were that the range was something from 600 to about 1,400 per year where there was a contribution to the deaths. It was not that people died solely of air pollution but people who had asthma, chronic airways disease, cardiovascular disease, pollution was deemed to be a contributing cause to their illness and their subsequent death.

**CHAIR:** Can I follow that up by asking if that is a static figure or has that been steadily rising over a period of time? Over what period of time have statistics been kept?

**Dr ROBINSON:** No, that was just one point of time.

**CHAIR:** It might be one point in time but let us go back a decade. What figure would you have given me then?

**Dr ROBINSON:** I cannot give you the figure. Can I ask Vicki whether she knows?

**Dr SHEPPEARD:** What has happened over time is that our population has increased, which is more people are exposed to air pollution, but our pollution levels have, in the main, dropped. So while we have not gone back over decades and looked at the attributable mortality over that time, one would expect that it would have been at a similar level to what it is now.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** We had some changes in planning when we went to the aromatic fuels. How many extra deaths were caused by the change to aromatic fuels with more benzene, per year and when they came in?

**Dr STAFF:** I think that is a terribly difficult question to quantify. When we are talking about attributable deaths to pollution it is not a simple, precise matter of going out and saying this person has been exposed to pollution therefore this has caused their death, there are multifactorial elements here and it is very difficult to work that out. It is clear with some accident related deaths obviously, but to work out the definitive cause of death is not that easy with pollutants. There may well have been some attempts, to answer your question directly. I am not aware of them but we can look at that.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Let us assume there is some sort of linear relationship between pollutants and deaths. If you say this facility will increase the pollutant load by a certain amount it is likely that the number of deaths will increase along that line, is it not? So that although there is not complete accuracy for each individual there should be a reasonable calculation for a population, should there not, and should not that epidemiological branch of the health department come out with these things as part of an assessment of what we are doing?

**Dr STAFF:** I think we are talking about regional air sheds here. I am a little bit confused as to whether we are talking about a facility producing some extra pollution or we are talking about increases in pollution across the Sydney Basin. If we are looking at increasing pollution across the Sydney Basin, which my understanding is that that has not happened, and we are talking about decreases in overall levels over the last decade or two or three decades prior to that, then we can postulate an actual decrease in the relative number of deaths caused by that pollution. As Vicki has already said, there are more people living in the Sydney Basin and there is more exposure with that.

There are some calculations that you can make and there has been a lot of work done in terms of working out attributable deaths and attributable cancers associated with air pollution both here in Australia and across the world and we can come up with those numbers, but I think the important issue that we need to be heading in the direction of is reducing people's exposure to pollutants.

**CHAIR:** Can I just follow up one of the questions you took on notice last time? It is an answer to question 17 and in it you say, "NSW Health recently attended a briefing by the RTA on the implementation of the air quality improvement plan of the M5 East tunnel. Subsequent to that meeting NSW Health has recommended a range of criteria for the Department of Planning to enable assessment of the health impacts of any changes considered to the operation of the M5 East". Could you outline the range of criteria that you have identified?

**Dr STAFF:** Certainly. What I will probably do is just give some context, then Vicki may be able to provide some specifics around that. It goes to pretty much what we were saying before in terms of our administrative relationship with the Department of Planning and what will happen. We have this proposal that we have just recently been made aware of of putting extra emissions out through the portals. Health is obviously concerned that any sort of modification or change would not have an unacceptable health impact. To do that we need to give people, the proponents, an idea of

what are the sort of criteria we would be looking at to try and assess that, and that is what we are doing here in terms of providing some basic requirements into looking at an assessment of what this proposal will be. They are about air pollution impacts, obviously, and looking at the levels that were there. We need to have all the information that we can have available so that we can give expert advice with that. I think Vicki will be able to give some precise points of those criteria, if you would find that useful.

**Dr SHEPPEARD:** There were three key aspects that we wanted to look at if this proposal was to go ahead. The first thing is the exposure of the people living around the exits of the tunnel. So we asked that modelling be undertaken of the particle exposures over 24 hours, to nitrogen dioxide and carbon monoxide over the short term—like one hour—as well as over longer time periods, and also air toxics such as benzene, acetaldehyde and 1,3 butadiene that might come out of the tunnel over a long-term exposure. The second area that we are keen to see what the impact might be is the in-tunnel exposure, and particularly with regard to carbon monoxide and nitrogen dioxide. The third thing that we wanted to find out about was what kind of a monitoring program would be put in place if these changes do eventuate: what will be proposed about monitoring and reporting.

**The Hon. HENRY TSANG:** In the earlier inquiry was the Lane Cove Tunnel Residents Action Group. In a discussion they were saying whether the tunnel helps with pollution or will it reduce it. There was some discussion about if there is no tunnel the traffic will be jammed and therefore more pollution would nevertheless affect the Basin. With the tunnel, in fact, you might even have some reduction in pollution. Dr Sheppard, in your opinion, if we have no tunnel are we better off for the health of New South Wales or is it better to have the tunnel? What is your opinion about whether the tunnel contributes to a reduction of pollution?

**Dr SHEPPEARD:** This is something we look at fairly carefully in the assessment phase, and to do that one has to consider how many vehicles might be induced onto the roads because of the tunnel, what kinds of public transport initiatives might be facilitated by having a tunnel and things like speed and what the optimum speed for the traffic is and how that might affect emissions. All these things were looked at during the assessment phase and what was indicated for the Lane Cove Tunnel was that the net effect of all these contributions was that there was no significant increase for any of the people in the area of Lane Cove associated with the tunnel.

**The Hon. HENRY TSANG:** But for the net effect, do you take into account that if there is no tunnel there will be more pollution? It is the net effect on the residents rather than if there were no cars.

**Dr SHEPPEARD:** If there were no cars at all? There were, I think, about four scenarios looked at and one of them was not providing a tunnel and what the exposures would be then. In fact, for the people in the area of Lane Cove they would be quite high if in 10 years time there was no tunnel installed. So, yes, I think there were about four different scenarios considered, including no tunnel.

**The Hon. CHRISTINE ROBERTSON:** We heard some evidence at the previous open hearing from the Western Sydney Clean Air and Water Action Group. The group was asked if they had contacted the local public health unit in relation to their issues and what had been the response and they claimed there was no response whatsoever. Can somebody fill us in on that please?

**Dr ROBINSON:** We did hear that was the case and we specifically made contact with the area health service to determine why that had happened. We received advice that in fact there had been two responses that had been provided from the chief executive of that area health service in relation to those concerns. So I am not clear why there was this indication that there had not been any response because that was not the case.

**The Hon. CHRISTINE ROBERTSON:** Further, we had evidence, and I forget from whom, about issues are in relation to indoor air pollution. I understood that not all that many years back but some years back a division of public health did a study on this specific issue. I should have put this question on notice, I apologise, but is it possible for this Committee to have a copy of that study?

**Dr ROBINSON:** Yes, I am advised that that is possible.

**Ms SYLVIA HALE:** I am interested in some of the answers provided to questions on notice. Answers to questions 9 and 12, in response to diesel locomotive emissions, state that the Department of Health requested that the local impact of diesel locomotive emissions be considered in health risk assessments, for example, the Port Botany expansion and the Enfield intermodal logistics centre. You say that NSW Health requested the proponent to estimate the health impacts of those truck and train diesel emissions on the local community. Were those estimations provided?

**Dr STAFF:** As I have outlined, we certainly did request that and that is part of the process when we do consultation on these things. The estimates were provided in terms of the likely increased impact that they might have. We consulted and got evidence at both a local level and regional level. When we are talking about a large piece of infrastructure, like the Port Botany expansion, there is a need, obviously, to move the cargo further around. There were two options for looking at that: further truck movements or diesel locomotive use. Essentially, it would be important to look at both local impacts and regional air shed impacts.

**Ms SYLVIA HALE:** My question was: If those suggestions, as you suggest, were provided, was any critical analysis done of the accuracy of those assessments?

**The Hon. CHRISTINE ROBERTSON:** From whom?

**Ms SYLVIA HALE:** From NSW Health, since it asked that the assessments be made. Did it then turn around and look at the accuracy or reliability of those assessments?

**Dr STAFF:** NSW Health does not have expertise in looking at impacts of the measurements of emissions out of diesel locomotives or trucks as such. We see that the source of information is credible and we need to take that on face value as such.

**Ms SYLVIA HALE:** You take the proponent's word, you assume that they have provided credible sources? You do not then request the Department of Environment and Conservation to critically analyse the information that is provided?

**Dr STAFF:** There is no need to do that. The Department of Environment and Conservation is integral in the process and it also has the same access to the information that we have. It looks at what part of the information that has been provided that it has expertise on, and provides that information. I am sure that if it felt that there were flaws in what was produced by the proponent, it would highlight that in the overall process and NSW Health would become aware of that.

**Ms SYLVIA HALE:** In answer to question 19, about the outcome of the investigation of nitrogen dioxide levels in the M5 East Tunnel, you indicate that two investigations were undertaken. You said that the second investigation of nitrogen dioxide levels in the M5 East Tunnel arose from the interagency process recommended in 2003. You said that the outcomes of that investigation are awaiting finalisation by the RTA. If there is an investigation independently of the RTA why should the finalisation be dependent upon anything that the RTA might say?

**Dr STAFF:** My understandings referred to two studies: one was the NSW Health study, which was independent of the RTA; and, second, one done with an interagency working group and the RTA is part of that interagency working group.

**Ms SYLVIA HALE:** Your actual words are, "The outcomes of this second investigation are awaiting finalisation by the RTA". What is involved in the RTA finalising the outcomes?

**Dr STAFF:** The outcomes are the outcomes or the report on the interagency working group and part of their deliberations is considering the results of the monitoring study that was commissioned by that working group.

**Ms SYLVIA HALE:** You are saying that the working group has commissioned a monitoring study, but its findings go to the RTA and then the RTA can, presumably, modify those findings in some way. What can it do other than read the findings?

**Dr STAFF:** The RTA is part of the interagency working group. As I said, the study was commissioned by the working group. The results will go back to that working group, which has a series of agencies involved in it. It has the Department of Environment and Conservation, the Health Department, the Department of Planning, and the RTA. The committee or working group will look at the findings of those results and produce a report.

**Ms SYLVIA HALE:** I can understand it if the whole working group was looking at finalising.

**Dr STAFF:** Well it is.

**Ms SYLVIA HALE:** But your answer says that the RTA is the body on whom the working group is now awaiting.

**Dr STAFF:** Dr Vicky Sheppard is on that working group. She may be able to add more useful information.

**Dr SHEPPEARD:** To clarify that, there are a number of tasks undertaken by the working group. The RTA funded the monitoring program within the tunnel. As such it has ownership of that part of the tunnel's work.

**Ms SYLVIA HALE:** Given that the RTA has ownership of that part of the tunnel's work—

**Dr SHEPPEARD:** The tunnel's investigation.

**Ms SYLVIA HALE:** —or the investigation, does that mean the RTA has the right to withhold the results of that investigation. Does the RTA have the right to modify the investigation's findings. Does the RTA have the right to say that it will investigate one aspect but not another?

**The Hon. CHRISTINE ROBERTSON:** That is a statement of fact.

**Dr SHEPPEARD:** The scope of the investigation was agreed in consultation with the working group. Obviously when a body funds something it has certain control over the process. It is my understanding that it is a collaborative process between agencies and they will be providing that final report and finalising the working group's report in the near future.

**Ms SYLVIA HALE:** You are saying that the final version of the report will be subject to RTA oversight?

**Dr SHEPPEARD:** Of the monitoring of the report? There are two different reports. A variety of tasks was undertaken, one of which was a monitoring study and there is a report on that study that is needed. There is also a report of the working group, and that is to be agreed by all agencies.

**Ms SYLVIA HALE:** Would you agree that there appears to be something of a conflict of interest? It might have been appropriate for the RTA to pay for the monitoring, thereafter it should have not participated in any way in commenting—it might comment, but not in a significant way—as it was involved in the final report that was to be released?

**The Hon. HENRY TSANG:** It is their work, they have to be involved.

**Ms SYLVIA HALE:** Sorry, I was not addressing the Hon. Henry Tsang.

**The Hon. HENRY TSANG:** That is sensible.

**CHAIR:** Order! Dr Sheppard, do you wish to answer the question?

**Dr SHEPPEARD:** Yes. Given that the RTA is the agency that has to implement the outcomes of the working group's findings, it is important that it is involved.

**Ms SYLVIA HALE:** Surely that goes to the heart of the conflict of interest. The RTA is the group that has to implement it, but it is also the group that pays for it. It now appears to be the group that is involved in the finalisation of the report. It seems to me that there is an extraordinary conflict of interest between the RTA, which is interested in having to spend the least amount possible in responding to the report and is also interested in not having a report appear that is excessively averse to the way in which the tunnel is operating. I think the whole thing is a complete conflict of interest.

**CHAIR:** I will not ask the officers of NSW Health to respond.

**Ms SYLVIA HALE:** It was an expression of interest, not a question.

**The Hon. HENRY TSANG:** Madam Chair—

**CHAIR:** I have ruled that the officers will not be asked to address that statement.

**Ms SYLVIA HALE:** Of course, my point has been made.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** To take the point that I dealt with before, why does the Health Department not produce a report on how many people Sydney's air is killing, and what are the component parts of that, in a simple and readily digested form?

**Dr ROBINSON:** As you are aware, we produce a Chief Health Officer's report every two years, that looks at the health of the population overall. Within that report we include chronic illness, admissions, deaths from cardiovascular disease or respiratory disease for asthma, and a range of information. To the present we have not explored a special section that looks at air pollution and any effects that might be had on the health and wellbeing of the people of New South Wales. We are continually modifying our reports in any new sections. I am happy to take that on board to the department in terms of looking at it moving forward.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Certainly if we look at the trends in epidemiology, at first it looked at deaths and gradually it should get towards looking at preventing deaths, which is the next conceptual step. Surely the Health Department should be able to do that?

**Dr ROBINSON:** Yes, we certainly have the capacity to look at what we call "avoidable admissions", and that is the issue we are working on with many people with chronic illness. We are looking at helping them manage their own disease better by providing them with better information as to how they might avoid exposure to whatever it is that happens to precipitate their illness and allow them to determine the early triggers so that they seek support early. Avoidable admissions are the type of thing that you are referring to, I suspect.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Yes, it is. Could you produce a graph which shows the number of deaths related to the amount of air pollution, so we can get a unit of deaths per tonne or gram of pollution, or per unit of air volume?

**Dr STAFF:** Certainly there are well-established international relationships between air pollution and mortality, and air pollution and hospital admissions, and those sorts of things, as well as Australian ones. The sorts of evidence I would love to see are very large cohort studies over prolonged periods. They are very difficult and complex to conduct and are very expensive. Even with the might of what the United States of America has invested in this issue, they have some cohort studies but not necessarily all the answers to the questions they would like. We are dealing with a relationship between air pollution and health effects. We have an idea of what that is. We have, perhaps, a more precise measurement of the air pollution in Sydney and that may be the appropriate way to move forward. We are looking at about 1 per cent, the rough figure in developed countries. It moves.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You mean 1 per cent of all deaths?

**Dr STAFF:** Yes. Earlier this morning I heard people say that 20 per cent of lung cancer is caused by air pollution. That is simply not correct.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** It might be in non-smokers.

**Dr STAFF:** The figure is actually 3 per cent, because it is a population-based level and that has been done by some of the leading epidemiologists in the world and published in *Lancet*. We need to be precise about what we are talking about. There is a wealth of international data and we would like to put that into the local context. However, I think we can learn a lot from what is around. The important issue is that we are looking towards reducing air pollution in Sydney. If you compare Sydney's air pollution to other developed countries they are much lower.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You should be comparing it to what can be achieved rather than what other jurisdictions are doing. As long as everyone else has pollution so will we, is not a sound policy basis, surely?

**Dr STAFF:** I was not alluding to that. I am saying that we need to have this in context. Certainly it is a matter of looking at reducing pollution to a level that is manageable. As part of that we need to be explicit on the health costs it has. We have heard "let us not have any cars", but if we do not have any cars there will be lots of other problems around.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** That leads to another question. The Alcoa plant is about to be approved, which deals with polyethylene—

**CHAIR:** I am sorry to interrupt the Hon. Dr Arthur Chesterfield-Evans, I would like to follow up on earlier issues. Dr Staff, you gave a figure of 1 per cent of deaths. The Committee's terms of reference relate to the Sydney Basin. If I were to compare that figure not to other developed countries but to other parts of New South Wales—people in country or coastal areas—how would that 1 per cent relate? Are you talking about a specific figure of the population generally or for the Sydney Basin?

**Dr STAFF:** What we are talking about is looking, perhaps, in an urban setting. It is very hard to translate it to a rural setting.

**CHAIR:** What would be the statistics you may use if you were talking about a rural-based population?

**Dr STAFF:** I think that the rural area is not homogenous. There are lots of other things around. Some rural areas have problems with particles from slow combustion stoves and some are perhaps closer to electricity generators. We cannot consider the rural areas as one specific area; we need to look at it on a case-by-case basis.

**The Hon. TONY CATANZARITI:** Do you have any statistics of urban areas versus rural areas?

**Dr STAFF:** Certainly we have a lot of statistics looking at rural and urban areas. Let me take the example of asthma. A number of factors can cause asthma and the overriding factor may not necessarily be pollution. There are pollen and allergens and other things in some rural areas that may not exist in urban areas. If you were living in a rural area where there was no pollution source created by vehicles and industry, certainly a typical fraction of that would be zero. We are looking at a complex interaction here of underlying factors causing illness, and the sorts of illnesses we are talking about are ischaemic heart disease, chronic pulmonary disease and asthma. They all involve a lot of different aetiological factors and vary on a case-by-case basis.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** There has been a request to retrospectively approve and prospectively approve some changes to the ALCOA plant at Yennora, which will presumably produce polyurethane and plastic residue as it recycles its aluminium. How many deaths are likely to be due to that extra pollution load in the Sydney air shed?

**Dr STAFF:** I am not aware of the specifics of that. If we are talking about a point source spread over the Sydney basin, I would rather not speculate, but I am sure if it were at a level that could cause problems then it would be licensed by the Department of Environment and Conservation [DEC].

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** How could DEC licence it if there is no data on that? Obviously you would be putting more pollutants in. You said in answer to the question before last that there is quite good international data relating the levels of pollution to the number of deaths. If you know that there is going to be extra pollution in that air shed—which, I gather, is a low point in the Sydney basin—surely you could make an estimate of how the extra pollution would affect the number of deaths?

**Dr STAFF:** I think we would need to number will how much pollution has been generated from that plant.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** We know what the licence requirements are and areas monitoring of the pollution output, so that data relating to pollution output into the air, should be known. If it is not known, obviously you would chase DEC or someone to obtain the data. If someone is seeking to increase output, you would have the amount they have sought and what the development consent will permit. In that instance you would have a finite amount. Surely you could then comment on how many deaths might cause. You should be able to do that, should you not?

**Dr STAFF:** As I said, I need to have some data in front of me of the particulars of the specific case you are talking about. My general comment would be that it would be unlikely, I would have thought, to have a measurable impact upon mortality across the Sydney basin.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** If you do not measure it, it will not be measurable! Dr Robinson, do you think you should get that data? Will you get the data relating to the amount of increased pollution and its likely effect, and then get Dr Staff to calculate the health effects?

**Dr ROBINSON:** I am not familiar with the proposal, but I understand that the Department of Environment and Conservation has advised that the plan will comply with the required level of controls for emissions. I would have thought that question should be better directed to that department.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But if the amount of pollution is to be increased—and it would appear so—that will have health effects. Surely it is up to you to quantify that effect?

**Dr ROBINSON:** As I said, I am not familiar with the proposal at all. I do not have any advice about the emissions, and I am not in a position to make a comment at this time.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Will you undertake to find out and then make a comment, as opposed to saying you do not know and do not want to know?

**Dr ROBINSON:** The regulatory authority rests with the Department of Environment and Conservation.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** And you are not going to rattle the cage, is that the bottom line?

**CHAIR:** The question has been answered.

**Dr ROBINSON:** I think I have answered the question.

**The Hon. HENRY TSANG:** There are approximately 1,000 deaths per year from pollution, mostly related to asthma and heart disease and so on. People are living longer, to 85 years of age when once it was probably only 70 years of age. What kinds of diseases will principally affect those people when they get older? Are they more likely to die from asthma or heart disease than, say, younger people?

**Dr STAFF:** Certainly, if you look back over the past century or so the number of deaths caused from infective causes as decreased dramatically. People are living longer and the diseases they



get are the chronic diseases, diabetes, ischaemic heart disease or whatever. Those sorts of people are likely to have general heart or lung problems and those sorts of things. As a result then you are more likely to get people living longer to when they will be exposed to pollution that could cause some illnesses. We have made some changes to smoking laws and that has decreased as well. So it does change the aetiological mix of these diseases. But, as I said people these days will have chronic long-term diseases as they get older, which is a very big challenge to the health system. The other point, of course, is if we are looking at absolute numbers here, we are looking at Sydney being a lot larger than it used to be. People are being exposed more to air pollution. You cannot just look at absolute deaths; you would need to look at population-based rates and those sorts of things when answering these questions.

**The Hon. CHRISTINE ROBERTSON:** This might be just a philosophical question to which there is answer. The members of this Committee take their task seriously and work hard on the outcomes for the reporting structure. The submissions that have come forward to this inquiry are a litany of experts, often from private companies, with difficult to define credentials. I wonder if, from public health epidemiological prospective, you could give some advice about the way the Committee needs to look at the issue?

**Dr STAFF:** In the area of air pollution there are a lot of different experts and people with different expertise. I think the most difficult thing is to get someone with a balanced view of the whole lot. There are certainly experts in modelling, for example, who can look at exposure and stuff like that. There are experts in the technologies involved in putting together, say, diesel emission technology and those sorts of things. There are experts in epidemiology, who are good at looking at the way these patterns occur. If you start looking across the spectrum you can quite readily appreciate that it is a very broad area. That is mimicked a lot in government, in that we have agencies with different expertise. My way of sorting out the uncertainty that may be around and balancing the differing views is to see what is the predominant view.

There will always be some views that are different from the mainstream and I think at times they need to be looked at, but certainly they need to be viewed in that light. I believe if someone is an expert they should have a track record in their area of expertise, they should have publications and some experience in that area. Quite often people try to transfer their expertise from one area of science to another. They say, "I am a scientist, therefore I can take the same principles and use them in another area." I think that has happened to some extent in respect of this issue and, whilst there is some validity in doing that, I think you also need to appreciate the difficulties and perhaps the concerns that it would have with that approach. When trying to digest all this information I think you need to put it into compartments, as best you can, look at the expertise that is around and then put it to the commonsense test.

We have heard a lot about tunnels and about the way they disperse air pollution. It seems to me relatively commonsense. I am no engineer and I am no traffic predictor, but if you have a stretch of road that has a lot of traffic lights on it with cars getting stuck on it moving slowly, with exhaust pipes that are only a matter of centimetres above the road, the dispersal is not going to be particularly good. If you can put in a tunnel that does not induce any extra traffic, say, but allows cars to move smoothly through, and also catch the pollution and put it into a state that disperses far better than it does at a motor pipe, that would be a sensible thing to do it. There can be a lot of discussion about impacts that area, but if you are looking at the same amount of air pollution, or perhaps less being better dispersed, I would regard that as a positive thing.

That is the sort of commonsense approach I am talking about. We can be blinded by a lot of science and people who will always say, "This potentially could cause a problem." That is right. We are dealing with pragmatic issues here and we need to look at what we have. We acknowledge our limitations and sometimes that leaves you open to criticism, which I do not think is necessarily warranted. We have been explicit and upfront with everything. There are experts who are saying those sorts of things that I think their view should be seriously considered.

**Ms SYLVIA HALE:** With regard to dispersal into the atmosphere, is it not a unique factor of Sydney's geometry that pollutants and particulates, whatever they are, even if they are dispersed into the atmosphere, go out to sea and are then blown back and settle, through temperature inversions,

over much of the south west areas of Sydney? Is that not contributing to the poor quality health outcomes in those areas—the dispersal, through stacks, of unfiltered emissions?

**Dr STAFF:** I will make a quick comment and then I think Vicky wants to say something. We are talking about dispersing from a stack and that dispersal is for the local community. That is to prevent build-up in the local community that would otherwise happen from a surface road. A stack will not look at the dispersal in Sydney basin; that is a far bigger issue.

**Dr SHEPPEARD:** It is complicated, but the issue we are talking about of recirculation of pollutants over to the south west, is about ozone. That is quite different from roadside pollution of particles and air toxics that we are talking about removing into the atmosphere. That ozone pollution would happen anyway. That is from the whole basin. That would not occur close to a road or through a stack. They are really two quite different issues and, unfortunately, they have to be separated out when you are trying to understand the impacts.

**Ms SYLVIA HALE:** But filtration would prevent the release of those potential carcinogens into the general atmosphere, would it not? Would filtering not have a positive outcome for the health of all residents of Sydney, not just the people in the immediate vicinity?

**Dr SHEPPEARD:** Yes, when we are talking about particulates. If they were removed from the tunnel, that would reduce the load of particulates some and carcinogens, but, in fact, only a very small proportion of the particulates could be captured from tunnels. The more cost-effective policy response is to try to reduce emissions overall, rather than spend a lot of money reducing a small amount of particulates.

**(The witnesses withdrew)**

**GILLIAN BARNES**, Executive Director, Strategy, Communication and Governance, Department of Environment and Conservation, 59-61 Goulburn Street, Sydney; and

**CHRISTOPHER RAY EISER**, Manager, Atmospheric Science, Department of Environment and Conservation, 59-61 Goulburn Street, Sydney and

**NIGEL LAURENCE ROUTH**, Manager, Air Policy, Department of Environment and Conservation, 59-61 Goulburn Street, Sydney on former oath:

**ROSS MALCOLM CARTER**, Director, Metropolitan Branch, Environment Protection and Regulation Division, Department of Environment and Conservation, 59-61 Goulburn Street, Sydney, sworn and examined:

**CHAIR:** Do you wish to make a brief opening statement?

**Ms BARNES:** I noted that the last time we were here Committee members were very interested in how the department regulates industry to actually lead to reductions in pollution. I have brought Ross Carter who is the Director of Operations in the Sydney region with us. Would you allow Ross to run through exactly how we regulate industry in the Sydney region.

**CHAIR:** Yes.

**Mr CARTER:** I will run through a generic proposal that may come into the department for assessment, so a new proposal. When a proposed development which is scheduled under the Protection of the Environment Operations Act comes in the Department of Environment and Conservation [DEC] works with the Department of Planning or the local council, whichever is the consent authority, to provide the requirements of the director general that need to be assessed as part of the environmental assessment for consideration by the consent body. The department highlights known issues that are specific to the proposal from its knowledge of those sorts of industries and the location that the proposal may be in.

Broadly the department requires that the proposal meets all of the concentration limit requirements that are set out in the Protection of the Environment Operations Act Clean Air Regulation, and also potentially any more stringent concentration levels that are necessary to prevent adverse impacts on any receptors within the area. The impact assessment criteria that apply at specific locations, and the procedures for impact assessment, are set out in 'Approved Methods for the Modelling and Assessment of Air Pollutants in NSW', which was last updated in August 2005.

We also examine the nature of the plant that is being proposed at the site. All plants are required to be operated efficiently and effectively so sometimes that can affect the limits that may be imposed on an industrial plant to check that it is being operated in the way that it is meant to be. So impact assessments, as appropriate, need to also consider assessment and management of odour from stationary sources in New South Wales, which is a 2001 publication by the Environment Protection Authority [EPA]. We also have technical notes on assessment and management of odour from stationary sources, and also a load calculation protocol for holders of New South Wales environment protection licences when calculating assessment of pollutant loads.

We examine the local impacts of a proposal through that modelling process which sets what we call ground level concentrations. Ground level concentrations are based on national and international standards that come out of those processes for setting health-based standards for acceptable levels of exposure at a ground level. The modelling process models what the emission from an industrial proposal will be in the local area, compares it with those ground level concentrations and if that is acceptable then the DEC would recommend licence conditions that take that ground level concentration back calculated to a limit that would be imposed on the stack.

Once the Department of Environment and Conservation is satisfied with the environmental impact assessment that appropriate modelling has demonstrated the proposal can meet all of the standards that are appropriate for it, it will recommend conditions to the consent authority or what we

call our general terms of approval which would be, if the consent authority granted consent, conditions that we would impose on the licence for that premises.

The Protection of the Environment Operations Act is one of our key pieces of legislation in this regard. It provides you with a great range of powers and tools for regulating industry once it is in operation. So if consent is granted we would then issue a licence which contains conditions relating to administration, limits, monitoring and reporting. The range of tools that we also use under the Act, in addition to licences, are pollution reduction programs which attach to licences. For example, if we receive complaints from the community or are concerned about a particular aspect of an operation we will negotiate pollution reduction programs with the licensee and impose those as a condition of licence for investigations or improvements to works at that premises.

We also undertake environmental audits and inspections in quite a range of ways. We will undertake unannounced inspections. We will also undertake broader cross industry audits and approaches like that to make sure that we are keeping a check on how industry is operating within the licensing framework. At the local scale we have gone through a process of assessing what the emissions from the premises would be, what the local implications of that would be and whether that will meet safe standards that are, as I said before, national or internationally adopted standards. There is also a broader issue which is what happens in the air shed. What we heard in some of the questioning preceding us, there is a broader atmospheric air element to air quality in the greater metropolitan region and the Sydney air basin.

Load-based licensing is one of the mechanisms under the general regulation to the Protection of the Environment Operations Act that provides an economic incentive framework to continually try to reduce overall pollutant loads from industry in the basin. Additionally we also examine other aspects of various premises that operate in the basin, either based on complaints or our own analysis of risk, to see if there are other opportunities to continue to reduce pollution from sites. One term that we use is "fugitive emissions" which can be emissions that come out of an operation that are not going through a stack so we can examine whether or not fugitive emissions may be an issue from a particular premises. Currently we are examining the ceramic industry and areas of chemicals industry for those sorts of approaches. We will often do international and national benchmarking, best industry practise and then do a range of audits across premises that might be in the Sydney Basin.

The other aspect that quite often comes up is how do we keep an eye on whether premises are complying within their licences? Within each licence we require monitoring and reporting of performance in terms of both monitoring the outcome from the stack but also a number of other things that we normally incorporate in monitoring which go to the operation of that particular facility and quite often are very good indicators of whether the plant itself is being operated appropriately. Air quality management can be a complex regulatory task for us. Because measuring stacks is an expensive undertaking, and sometimes we need to examine the engineering design and look at things like the feed stock and the way that the operation of the plant is done, to satisfy ourselves that the outcomes from the plant will be being achieved. That covers the broad regulatory framework.

**CHAIR:** In a comparison of national and international standards are Australian standards at the highest level of world's best practise?

**Mr CARTER:** I might ask Nigel Routh from our policy area to comment on that. My understanding is that we generally examine standards that we feel are most appropriate for Australian circumstances but we rely quite heavily on international work because of the cost involved in deriving those sorts of standards.

**Mr ROUTH:** You cannot always make direct comparisons but I think it is fair to say that Australia does have standards that most pollutants are up there with the best. There is one instance where Australia actually has the tightest standard in the world.

**CHAIR:** What is that in relation to?

**Mr ROUTH:** That is in relation to PM2.5. It is tighter than Europe. It is a reporting standard over an eight-year period gathering data that will then potentially lead to the setting of an actual compliance standard. The standard setting process in Australia is conducted nationally. The key

pollutant standards were set in 1998 and there is a review process that commenced last year and it is under way through to 2008. It is a very rigorous and extensive process. It also involves a number of opportunities for public input into that process, as the process leading up to 1998 did as well. There is a range of experts who are involved in input into that. For instance, there was a July workshop of health experts this year inputting into a vital element of the national environment protection standard. It is a very extensive and rigorous process. But as I said, you cannot necessarily directly benchmark, but Australia is very mindful of international standards and the need to have the best standards.

**CHAIR:** Mr Carter, 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?

**Mr CARTER:** We do compile data on our activity in that regard so we can certainly provide information on that. For the Sydney Basin?

**CHAIR:** Yes. 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?

**Mr CARTER:** Yes, I will provide that.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Have you read the submission of Weston Aluminium to this inquiry?

**Mr CARTER:** I have not read all of the detail, but I have read some of it.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Weston Aluminium state that the licence requirements for Alcoa in the Sydney Basin are much less than stringent for it outside the Sydney Basin, presumably with better air dispersal. Is that the case?

**Mr CARTER:** Overall we think that the Alcoa licence limits are tighter than Weston Aluminium but because they use different processes and different technologies it is very difficult to make a direct comparison of them. I am aware that in the submission of Weston concerns have been raised over fluoride levels, in particular, as being more stringent on Weston's premises. I understand that the level that is applied to Weston was from a Land and Environment Court hearing in 1996 and related to two primary concerns, that is, the impact of fluoride on vineyards in the area of Weston's proposal and also potentially cumulative fluoride emissions because of the primary aluminium smelter at Kurri Kurri which is in a similar area.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Weston's submission is that there are a higher lot of toxics from Alcoa than from Weston. Is that not so? Are you disputing that evidence?

**Mr CARTER:** I think there are a couple of issues that I would seek to explain. Firstly, there are limits which apply to licences which relate to concentrations. One of the issues that has come out a lot through the submission from various parties on the Alcoa and Weston is the difference in loads that are emitted and that comes down to the scale of the plants. The Alcoa plant is a significantly larger plant than Weston's plant. When we examine the loads per tonne of product produced there is some variation between the two plants but overall Alcoa is equivalent or slightly tighter in some areas, and Weston's is tighter in some other areas and that relates to both the technology and the local issues involved.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Alcoa is in the middle of Sydney and certainly its total load must be quite important in terms of the effect on the health of the population?

**Mr CARTER:** As we have heard discussed earlier, and as I was trying to allude to in the assessment process, there are two issues that relate to regulating individual premises. Firstly, and one that we focus very heavily on, is the local impact of any licensed premises in the State which is, what are the concentration levels within that local community and are they acceptable? The broader question is then what sort of pollutant loads are there in the broader air shed, and what implications does that have? We heard from the Department of Health about statistical analysis on what fatalities that may contribute to. The air shed issues are different to the local issues. We focus very heavily on

the local issues through the assessment and regulatory process. At the global scale across the air shed, we look at reducing the total loads within that. Load-based licensing is one approach to industry to do that. Proportionately, I have not done the numbers on Alcoa, but I would suggest that the proportion of total pollutant loads in the airshed would be an extremely small proportion of that total load.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** That may be so in the broader area of Sydney, if you have a large number of motor vehicles presumably producing the lion's share of your pollution. But locally, you have a point source that is, in a temperature inversion situation, coming down on a relatively small area, do you not, and you have to consider how many deaths would be caused among that population?

**Mr CARTER:** The ground level concentrations are set quite conservatively; that is my understanding of how those standards are derived, to protect the health of local communities around those sorts of plants. The modelling and assessment we have in place is also very conservative. It examines worst-case meteorological conditions for those ground level concentrations in assessing what the impact will be and whether those ground level concentrations will be met.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Do you say that the amount of extra pollutant coming from the Alcoa plant to people living close to it, as opposed to those living far away from it, is minimal?

**Mr CARTER:** I think they are two separate issues. The issue of what is occurring local to the plant is one that has been assessed and demonstrated that it can achieve the levels that are appropriate for that plant. More broadly, it contributes to the air pollution that is in the basin and is considered in terms of the strategies we take on that broader basis.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** When you say "considered for that plant", do you mean for that plant technologically or do you mean for the population around the plant?

**Mr CARTER:** For the quality of the airshed, and the sort of strategies we put in place to try to reduce pollution, and continue to reduce pollution, in the airshed over time. I mentioned load-based licensing, which is an economic incentive mechanism to try to drive down those sorts of overall loads. We also heard earlier about some of the behaviours of the airshed, that once pollutants are dispersed into the broader airshed they move around significantly within that airshed and it is no longer relevant in terms of the way it will impact. That is considered through the ground level concentrations process, and then we move into: What are we doing about the broader airshed and the strategies we have in place for that?

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Do you look at how many people are affected, measure the increment to their load, and what the health consequences will be? Do you have the expertise to do that?

**Mr CARTER:** In terms of an individual proposal?

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Yes.

**Mr CARTER:** As I indicated earlier, we look at the ground level concentrations to ensure that the plant will operate in a way that meets the standards that are set, so that nobody within the receptor area is exposed to unacceptable levels from exposure.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Presumably there is a linear relationship, so that even if it is underneath the level, if you go from X to 2X the incidence of disease will rise by a factor. Perhaps it will not double, but it will go up depending on the slope of the dose response curve. Do you look at how many people are moving up that dose response curve and what the effect is likely to be on the population as a whole?

**Mr CARTER:** We look at the ground level concentrations. The assessment process does take into account background levels that occur at the site, so that we examine cumulative levels that may have been experienced, to check on ambient levels that are in that area and make sure that they apply to national standards. But we do not do health studies specifically.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But, presumably, you could do health extrapolations from known data. Do you do those, or do you give the data to the health department to do them?

**Mr CARTER:** I implement the standards that are in place through those national processes.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You do not look at the extra disease that might be caused by that increment in pollutants in that area?

**Mr CARTER:** No, we do not examine the health impacts of that; we apply the standards.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You do not give that data to the health department and request that the department conduct that epidemiological study?

**Mr CARTER:** The standards themselves are derived from a health-based standard approach, and that is where the health experts have input into the standard.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** They set the standard. But as long as you are below the standard, you do not look? If it were zero, presumably it would cause zero disease. If it is at the standard that would cause an incidence of disease, if it works within that range, it will cause disease increments for each increment in pollutants, presumably?

**Mr CARTER:** I am not an epidemiologist, so I cannot comment on that. Clearly, the standard process is one that is reviewed very regularly to examine advances in the science.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But you must understand the concept I am talking about, do you not?

**Mr CARTER:** I understand the concept.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Given that you understand that concept, should you not get the experts to look at that concept, if you do not have such expertise in your department?

**Ms BARNES:** I think we need to reaffirm that we implement the standards and we use the standards that have been set through, as Mr Routh said, national processes, where there are times and places for input from health professionals. Those standards are looked at with respect to the health outcomes, the economic outcomes, and the social outcomes. As you heard earlier today, there are balances and trade-offs that need to be made. Those standards are set, and our job is to assess those particular developments with the standards that have been put in place.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But you do not want to look at the changes in disease incidence in response to increased loads?

**Ms BARNES:** Through the standard-setting process, I am sure the right people will do that.

**CHAIR:** Perhaps you could give us a broader overview of the relationship between the Department of Environment and Conservation, NSW Health and the Department of Planning in looking at this overall issue of the health impacts of air pollution.

**Ms BARNES:** Certainly. I will pass over to my colleague Nigel Routh, who will speak about the policy perspective in setting the standards. If you like, we can once again talk about, from an operational perspective, how we approach that throughout the standard-setting processes.

**Mr ROUTH:** As I have mentioned, there is a national standard-setting process, which is extremely extensive and really draws in the best-available national and international health expertise. That is the foundation on which we operate; they are the standards that are applied by the environment agencies. So it is very much a joint exercise between the health sector and the environment sector. The environment sector applies what is determined, if you like, out of the health sector's expertise.

As I have said, there is a regular review, with extensive opportunities for public input. That is the framework we operate under. That is how all jurisdictions in Australia operate. Those standards are set through the Environment Ministers Council nationally, and all jurisdictions are represented on that council. They are the parameters. We do it as all other jurisdictions do in Australia.

**Ms BARNES:** You may be interested to know that a number of health studies are being undertaken at the moment to underpin considerations of the new standards. I will ask Mr Routh to give you an insight into those studies, if you like.

**Mr ROUTH:** Regularly, health studies and other studies are undertaken with that process of review of the national standards. A number of studies are currently under way which have been funded out of the Commonwealth equivalent, the Department of Environment and Heritage. They are looking at, for instance, health issues, and ozone and climate change, which is another dimension that is starting to come into play. There is also a longitudinal study looking at the health impacts of air pollution on children.

There is a proposed similar study of the health impacts on the elderly, those aged 65 and over. The children's study is a very extensive national study that is already under way, and the elderly study could be an equivalent level of study. They are multi hundreds of thousands of dollar studies over a series of years. That information is directly feed into the standard-setting process. As I said, it is a partnership exercise between the environment agencies and the health agencies, and NSW Health is closely involved in them as well.

**Ms SYLVIA HALE:** I am looking at some of the responses to questions that were taken on notice. First, could you advise the Committee whether the incidence of PM10s in the Sydney Basin is increasing or decreasing?

**Ms BARNES:** In terms of particle pollution?

**Ms SYLVIA HALE:** Yes.

**Ms BARNES:** We have a number of programs in place to try to reduce the levels of particle pollution. Currently we are pretty close to meeting the standard that comes into place in 2008 on particle pollutions, but we still want to keep reducing that because we want to keep reducing the exposure of the population.

**Ms SYLVIA HALE:** Is that in relation to PM10s, or to the finer particulate matter you are talking about?

**Ms BARNES:** I will ask Chris Eiser, our science person, to answer that.

**Mr EISER:** In relation to PM10, we are generally meeting our air quality standards and goals. We are allowed five exceedances per year in the airshed at our monitoring stations. We generally meet those, except where we have extreme events, which can be dust storms, bushfires, or hazard reduction burning. But generally we are not too bad in terms of PM10.

**Ms SYLVIA HALE:** You are saying that the presence of PM10s is not increasing?

**Mr EISER:** The trends are really difficult to see. We have certainly had a number of control programs that have been targeting particles such as controls on diesels, motor vehicles, controls on industry. We generally see a lot of noise in the data, because of the extreme events that come through. But generally we are more concerned about the ozone side of the equation than we are about particles. We do not dismiss particles—we have a number of programs running on them—and we are keeping an eye on the finer particles of PM2.5.

**Ms SYLVIA HALE:** In terms of what you can ascertain from the data you are receiving, is the presence of ultrafine particles, the PM2.5s or the PM1s, increasing or decreasing?

**Mr EISER:** We do not measure those ultrafine particles; no-one around the world does it on a routine basis. They tend to require a fairly sophisticated level of instrumentation. Currently we have



an environmental trust project. The CSIRO is looking into the size, distribution and composition of particles in Sydney to better inform our policy processes as to the various size fractions, how much of PM10, PM2.5, PM1 and below there are, where they are from, and whether there is a signature of particular size ranges so we can identify the sources of those pollutants. Generally, the lowest we go in terms of fine particles is PM2.5, as we are required under the ANEPM.

**Ms SYLVIA HALE:** The Committee has heard evidence that the very fine particles, the ultrafines, are particularly damaging to human health because of their ability to be absorbed into the lung. Are there any plans to start monitoring for the presence of PM2.5s and below?

**Mr EISER:** On a routine basis, no, but certainly on a research basis there are plans to look at the ultrafines and very fine particles. The focus of our air quality monitoring program is looking at the NEPM pollutants and how we are going against the NEPM standards.

**Ms SYLVIA HALE:** Which pollutants?

**Mr EISER:** The NEPM pollutants. It stands for "national environment protection measure". They are our national ambient air quality standards that were set in 1998, with a goal to meet them by 2008, and they cover pollutants such as carbon monoxide, nitrogen dioxide, ozone particles as PM10, lead, and carbon monoxide. We now report against those standards; we have a monitoring network that covers those standards. When the national process looks at the review of particles, as they are doing now in terms of a review of all the standards we have nationally, we will see whether we are required under the national agreement to monitor ultrafines. Until then, we will be looking at campaign-type research investigations to give us the information.

**Ms SYLVIA HALE:** Are the standards set as the national average, or do they vary from region to region? Presumably the standards might be easier to exceed in an area like Sydney than they are at Broken Hill.

**Mr EISER:** They are set nationally, so they are national environment protection measures. They relate to the protection of air quality and peoples health across all of Australia. So it is the same number in Broken Hill as it is in Sydney. With particles in particular, there is a recognition that extreme events that we cannot control will give us high levels of particles, so we are allowed up to five exceedances per year per station under the national standards. But certainly the standards apply all over Australia.

**Ms SYLVIA HALE:** Were you saying that the presence of ultrafine particles is increasing or decreasing, or that you cannot measure it?

**Mr EISER:** I was saying that we do not know because we do not have the information. There is certainly work in Queensland looking at particles by roadsides. We certainly will look at that information as it comes through. We do not have a lot of information locally, and that is what we are planning to do to the Environmental Trust Project to add to that data bank. With other people's studies that will then feed into the national process to see whether we need to go finer than PM2.5, and that relies a lot on information from the Department of Health and health studies around the world and, if so, how far do we go and what type of monitoring would we undertake. Measurement of particles in the environment really is something we are learning more as we measure the particles.

**Ms SYLVIA HALE:** You say that is dependent on research and that is being undertaken both here and overseas. How long do you anticipate it would be before you come to a conclusion as to whether you should monitor finer than PM2.5?

**Mr EISER:** It is part of the NEPM review. When that is completed in 2008 or 2009 we will have a better idea as to what will be required. To put it in perspective, no-one in the world is routinely monitoring ultrafine particles. They tend to do it on a research basis. They have gone as far as PM2.5.

**The Hon. MELINDA PAVEY:** That is the second time you have used the word "routinely". Will you inform the Committee who is leading the world in this type of research and what you know about what is happening in other parts of the world?

**Mr EISER:** There is really no one country that is leading. A lot of work is being undertaken in Europe and there is a lot of interest in the United States in terms of ultrafine and fine particles. The difficulty with particles is that they are not one piece of element. We can measure sulphur dioxide as a molecule and you can have a range of instruments that will measure it and give you the same essential concentration. Particles, by their very nature, are quite large in terms of size, composition and a whole lot of other properties. To properly define a particle you can use mass, you can use number, you can use the surface area, or you can use its composition, which is what makes up the particles. We have found that particles are different in different locations. For example in Sydney, Earlwood is different to the CBD is different to St Mary's, and it varies at different times of the year. The composition of the particle that you are measuring changes at different sources. It makes it very difficult to get a handle on what precise part of the particle is the one thing we need to measure that gives the health impact. No-one around the world has got down to that yet, but they are working towards it.

**Ms SYLVIA HALE:** In answer to one of the questions on notice the response was that there was no monitoring of emissions from aeroplanes. But in answer to question 17 I was told that emission sources in the Sydney basin are currently under review. What sources of emissions are currently being reviewed and when will that review be finalised but you?

**Mr ROUTH:** The DEC is conducting what we call a comprehensive air emissions inventory. In the early to mid 1990s the EPA conducted the Metropolitan Air Quality Study, which was the inventory at the time that determined where all the pollution comes from—every source, natural and man made. Currently we are undertaking an entirely new inventory exercise that will benchmark exactly what the emissions are for 2003. It takes quite a bit of time to collect the data, analyse it and put it together. We anticipate we should have that data publicly available by at least next year, and obviously that will be a key element in informing and refining our policies and programs, and targeting those towards sources. Obviously, there has been some shift in the relative importance of sources over the last 10 or more years. For instance, the motor vehicle sector has become relatively less significant. However, it is still very significant and the projections are that it will continue to change over time. We will have the best science in terms of understanding where those pollution sources come from. We could also look at the type of pollution that is emitted by particular sources. We can divide it up, for instance, from the tailpipe or from stacks of individual sources.

**Ms SYLVIA HALE:** Is the current reporting annual standard for PM2.5 exceeding the reporting standard of 8 micrograms per cubic metre?

**Mr EISER:** Yes, as a reporting standard we are above 8 micrograms per cubic metre on an annual basis.

**Ms SYLVIA HALE:** For how long has it been exceeding that?

**Mr EISER:** Basically since we started monitoring it has been just above. It has varied according to when we have bushfire years. We have fire impacts, of course, as we do for PM10. But, generally, we have been above that 8 micrograms per cubic metre level.

**Ms SYLVIA HALE:** For long?

**Mr EISER:** Our monitoring goes back to 1997.

**Ms SYLVIA HALE:** For all that time have we been above it?

**Mr EISER:** Yes, and if you look at our appendix 6 you will see the figure there in terms of the annual average. That is a reporting standard. It does not have the same status of a true NEPM standard. It is there to gather information to inform the standard-setting process that is going to be under way over a period of time.

**Ms SYLVIA HALE:** But presumably if you say for every year since the standards have been in place it has exceeded them, that must indicate that the presence of PM2.5 is increasing.

**Ms BARNES:** Can we just clarify that there is not a standard in place for PM2.5. This is a reporting standard to gather information that will then lead to the setting of PM2.5 standard.

**Mr ROUTH:** It is different to the other National Environment Protection Measures in that the ambient air NEPM sets standards for the six criteria pollutants that Mr Eiser outlined. This one was introduced in 2004, and given the paucity of information in the field its explicit intent is to gather data nationally with a mid-term review in 2008 so that over that eight-year period we will have a bank of information nationally that will better inform where to move in terms of setting compliance standard. As Mr Eiser said, it really is an emerging field. International standards are not something that you can readily pick up and transplant to Australia.

**The Hon. CHRISTINE ROBERTSON:** Can you tell us what the State Government is doing to promote the use of ethanol biofuels?

**Mr ROUTH:** There has already been reference to the fact that very recently the Government set a policy to have ethanol E10 introduced by 2011. I understand that a task force will be established to look at things such as supply and whether there are any potential operability issues. That is a recent public policy commitment by the Government. We are also working with the Commonwealth on the impacts of E10 as well.

**The Hon. CHRISTINE ROBERTSON:** Will you tell us what action has been taken by the DEC to manage the impact of petrol volatility on air quality?

**Mr ROUTH:** New South Wales has the tightest standards in the nation for petrol volatility. In summer petrol is more evaporative and, therefore, it is necessary to limit that evaporation. We have 62 kPa set as our limit with a maximum of 64. To give you an idea, I think Victoria has 64 or 66 as its average. That is the next highest nationally. That regulation was introduced in November 2004 and it applies to the summer period, which is defined as mid November to mid March. Most other jurisdictions have summer volatility levels in Australia, but, as I said, we have the tightest in Sydney. A review of that is due over the next couple of years. Like all of our policies and programs there is a regular review process in place that will look at the signs to see whether it is necessary and justifiable to tighten those limits further. Part of that exercise is, as I referred to, working with the Commonwealth to look at the effect of emissions if there is to be a greater proportion of E10, but the key point is that the level of petrol volatility was initially set through a voluntary Memorandum Of Understanding with industry in the late 1990s; but in the end we felt, and I think all players felt, that it was best to set it by regulation as a level playing field.

**The Hon. CHRISTINE ROBERTSON:** Will you tell us how the DEC works with the industrial sector to curb emissions? This is a big issue for us.

**Mr CARTER:** When Mr Routh talked about the inventory work that is being done, my job is looking at the regulatory implementation of some of that information, and we are quite excited by that work because it will allow us to look at the sorts of industry that we need to target for improvement. Some of the other approaches that we have been using are examining industries that we feel are contributing significant amounts of certain pollutants to the air. The inventory will help us to better tighten that. One of the projects we are running at the moment is on chemical industries. We have 14 of those in the Sydney basin that come within the category we are looking at. We are examining those for emissions of volatile organic compounds. Quite often this comes down to some of the best practices that could be employed within factories, rather than looking at stack emissions. Another area we are having a close look at is brick companies. We have eight brickworks in the Sydney basin.

A number of those are in areas that are proposed for future growth, so houses will come closer to them in the future. We have wanted to get on the front foot with those industries to ensure that by the time that development gets closer to them they have improved their practices to a point where there will not be local issues. Once again, we have had a look at the best practice they might employ, auditing them to see what standards they are up to and then working through pollution reduction programs to improve them to modern standards. One of the other things that drives our regulatory work significantly is the complaints that come through. We have a 24-hour environment line and we receive something in the order of 10,000 calls a year. Some of those indicated immediate or chronic issues that we need to investigate immediately, but the information generally provides us with some statistics on what sort of industries and what sort of locations are causing concern in the

community. We then use that to look at where that we want to mount particular campaigns or audits of either a specific industry or a geographical area.

**CHAIR:** How many staff is involved in the audit process?

**Mr CARTER:** That can vary quite a lot because the metropolitan branch includes the Illawarra. We have two operational offices and they work in teams across the Sydney basin. We also involve other teams from our waste area as well as our specialist compliance audit areas. The overall numbers can vary quite significantly. Around 30 or 40 operational staff in the metropolitan branch are involved in the auditing processes on a day-to-day basis, but that can increase depending on the campaign that we might run at any one time.

**The Hon. TONY CATANZARITI:** How does the DEC consult with the public in developing programs to address air quality?

**Mr ROUTH:** The Action for Air, which is the primary policy framework document, has a regular three-yearly public forum. The document was released in 1998, there was one major public forum at the end of 2001 and a further one was held in November 2004. Those forums are very public. They include speakers across the board from academia and from non-government organisations, and those forums have had quite a bit of publicity. For instance, at the last forum at the end of 2004, we had a bit of a theme with a number of experts looking at the interplay and the likely future impact of increasing climate change on air quality issues.

The documentation from each of those forums is publicly released, which includes the proceedings and public workshops that are held during the sessions. We have also had released now two updates to the Action for Air primary document that came out in 1998. There was an update in 2002 and an update released in 2006. The policy document is a bit unusual in that it has that regular benchmarking every few years in a public policy review sense. There are workshops that we have held in the lead-up to the 2004 forum that were broadly representative of stakeholder groups, so we had 30 or 40 or more people in three or four workshops as a precursor to the actual forum itself in November 2004.

**The Hon. TONY CATANZARITI:** How does the approach of the Department of Environment and Conservation [DEC] to monitoring and reporting emissions from licensed premises compare with the Victorian approach?

**Mr ROUTH:** That is something that we checked because I think it came as a question earlier in previous appearances. We checked with our Victorian counterparts. In essence, their approach is essentially the same as ours in that the industries themselves are required to do that monitoring of emissions. They are then required to report that back to the regulatory authority—ourselves here, or the Victorian EPA in Victoria—and that information can be analysed and assessed by the regulatory authority. So the Victorian system and ours are essentially the same.

For the monitoring that is undertaken, the cost of that is borne by the industry. The industry can either do that themselves, if they have in-house expertise, or, if they have not, they may have to contract it out to consultants who have the expertise. The important thing is that that monitoring has to be undertaken in accordance with our prescribed methods for monitoring of air pollution. So there is a very comprehensive document that we updated as recently as August last year that actually spells out how that monitoring is to be undertaken. That is very detailed in terms of the technical side as to what needs to be done in order to do it and comply.

**The Hon. TONY CATANZARITI:** Mr Carter, can the Department of Environment and Conservation explain the framework for regulating emissions from industry?

**Mr CARTER:** Yes. I went into some of that earlier where essentially we have the industries that the DEC is involved in regulating directly. They are in the schedule to the Protection of the Environment Operations Act. Those industries are required to have an environment protection licence. That licence provides us with the regulatory framework for regulating, but we have a number of other tools that we use in conjunction with the licence, which are our inspection and auditing approaches to examining industry. As I was indicating also, we look at a number of data sources, such as the

inventory work and compliance, to help us target which industries we need to be examining. Additionally, as Mr Routh has just indicated, when an industry goes through monitoring and reporting on its monitoring, it has to provide an annual return to us which is signed off by the chief executive officer of the organisation. So they are taking direct accountability for the factual nature of their reporting to us.

We examine that material in a number of ways. We specify very tightly the process that they have to go through to monitor and report, but we audit it from quite a few directions. So we examine the way in which they are operating the plant, some of the inputs that they may have in their process, to make sure that all of that tells a very consistent story. The other aspect that we use very significantly are the pollution reduction programs. For example, if an industry reports to us that they are having difficulty complying with a particular limit on the licence, one of the tools that we use quite frequently is to talk to that industry and negotiate a pollution reduction program to improve their management of the site, such as by installing new technology, et cetera, to ensure that they can come into compliance with the limit.

**The Hon. CHRISTINE ROBERTSON:** Mr Eiser, can you please let us know what DEC is doing to improve public access to information about air quality? We have had a considerable amount of evidence that indicates that there is not a lot of good public access to information.

**Mr EISER:** We have got a fair amount of information already. We have a twice-daily regional pollution index [RPI]. We publish that for three regions in Sydney, the south west, the north west and the east. That also includes the lower Hunter and the Illawarra in that twice-daily process. We have our 24-hour summary that is posted on the web. We have our core reports which are posted onto the web as well and we do an annual compliance report for the national environment protection measure [NEPM]. In fact we are spending a great deal of money at the moment. There is a major project under way worth approximately \$1 million which is looking at improving the speed and the extent of the data that is available to the public. That is a 12-month project. We have just signed the contracts for that. That will allow us to manage the data and manipulate the data much more effectively. That updates the system that we have had for the past 15 years and it will also allow us to put more data on our web site.

We have twice daily regional pollution indexes and we will be hourly updating the information that people can access through the web. We have also worked with the Department of Health on health alerts where we forecast high pollution levels, and they are variable according to the weather conditions and the conditions around Sydney. Overall, we are looking to improve it with a process of continuing improvement as we have done with the technology in our stations—the technology that goes with acquiring that data and the technology that goes into giving that to the community.

**The Hon. CHRISTINE ROBERTSON:** Just to follow up on that, do you think that there is a solution to the issue of "But it is worse in our backyard"? Excuse my using that sort of up in the air expression, but that is a lot of what we are hearing during this inquiries—"But it is worse in our backyards."

**Mr EISER:** Just to clarify that, our air quality monitoring data looks at regional air quality, so the local issues that are brought up here are dealt with by a separate process and that is the function of the NEPM. In terms of any industry impacts, there is the licensing process that we go through and that assessment process that looks at point source modelling. What we are looking at is the protection of the community at large, so we are looking at what the general community is exposed to that goes into the overarching programs that are not just in Sydney but are all around New South Wales and in other States as well. So it is important to recognise the differences between those two programs.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I want to come back to the issue of the pollutant loads which you said are higher in the Weston Aluminium submission. You said fluoride was higher. It is the only one that is in that table. Coarse particulates are nine times higher in Alcoa than in Weston while volatiles and organic compounds are 36 times higher. How could you licence something that has 36 times higher volatile organic compounds in the middle of Sydney than you have in Weston?

**Mr CARTER:** As I indicated earlier, there are two aspects of the question. The first is ensuring that ground level concentrations are acceptable so that health impacts on the local community are not caused by ground level concentrations exceeding the health standards that we put in place.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** So 36 times higher is okay, is it?

**Mr CARTER:** But we are mixing loads with concentrations. Loads are what go into the general atmosphere of the Sydney Basin. The Alcoa plant is larger than the Weston plant and contributes higher overall loads, but the concentration issues, which relate to the local community, are ones where we are confident that the performance of Alcoa is meeting the required standards.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But you know that you have a temperature inversion situation. Alcoa is very low. I gather it is on a tributary of the Parramatta River which is one of the lowest point in the Sydney Basin, and you have a very high load there. The idea that this is not going to affect very much is surely a bit of wishful thinking.

**Mr CARTER:** The assessment process that we use does take into account the worst case scenario modelling. One of the other effects of meteorology and getting inversion effects can actually be the visual effect as well. Quite often at night you can have steam cleans that appear to be worse at night. Indeed we have received quite a number of complaints and concerns from the community around the Alcoa premises and we have been inspecting it at all hours of the night to try to see if we can see anything that may be occurring which might be causing those concerns. We have not been able to.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I know this monitoring is very self-regulatory, as I think Mr Routh was saying.

**Mr ROUTH:** No.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** In Victoria, the monitoring is all done by independent people. Why is that not the case in New South Wales?

**Mr ROUTH:** That is the case.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Could they not measure when they have a furnace charge of less polluting contents, and monitor when they have more polluting contents?

**Ms BARNES:** In the last hearing, when you raised the issue around how Victoria does its monitoring, we were very interested to follow that up because that was not our understanding. In fact we have been in contact with the Victorian EPA to follow up how they do monitoring of industry. We found that is the same as the approach we take in New South Wales. I might ask Nigel to expand on that.

**Mr ROUTH:** Thank you. I did briefly refer to this. We followed that through in Victoria and they have the same system there as we have. I think Ross Carter has added to that answer by pointing out that the chief executive officers have to sign off on that. They are legally bound to verify that the information there is accurate and we are able to audit that information. While the monitoring itself may either be undertaken by the licensee or by a contractor of the licensee, that information firstly has to be gathered in accordance with our methodology, which is a very detailed procedure that is set out, as it is in Victoria. Secondly, that information then has to be signed off by the chief executive officer, so they are culpable if it is not accurate. Thirdly, we are then able to audit that information to establish its accuracy. So it is not a case of the industry just—

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** They are all good chaps, and, if that is not right, you would not have measured it to prove that it was wrong anyway, would you?

**CHAIR:** I do not know that you need to answer that.

**The Hon. CHRISTINE ROBERTSON:** No, I would not answer it.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I think it is a perfectly reasonable question.

**CHAIR:** I think it is a very subjective way of asking the question. Why do you not frame the question differently?

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** When you say they are signing off on it, do you have any independent monitoring if the figures and the monitoring times are not as they say and they are? Do you have any independent way of checking that, apart from their signing off on it?

**Mr ROUTH:** We are able to verify and audit that information. I do not know if Ross Carter wants to add to that?

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You can audit it, but can you verify it?

**Mr ROUTH:** Yes.

**Mr CARTER:** There is a range of ways. I guess that, firstly, as a regulatory authority, we have a regulatory relationship with those that we regulate. Part of our job is to make sure that we are examining their operations from a number of different perspectives to ensure the integrity of that regulatory framework, and we do that. So we examine both the data and information that they submit to us, which has a number of very specific chains of how they need to go through that, including the status of the laboratories that they use and the nature of the process they go through. So we can check that side of it and we can also correlate that with our understanding of the premises and their operations.

It is extremely difficult, if not impossible, for someone to fudge the air quality data. I have seen one attempt at doing that with water quality information and it was very easy to discern that. In air quality information, it is extremely difficult for someone to put all of the effort into all of the calculations and processes that involve other parties and quite strictly-set-out procedures to come up with a set of results that would stand up to scrutiny. As I said, we also satisfy ourselves by doing unannounced inspections and audits to see that what is occurring on the site correlates with what is being recorded.

**Ms SYLVIA HALE:** In relation to the specific topic of tunnel ventilation, from what I can glean from your answers to questions on notice, DEC's role is to provide advice on environmental outcomes to be achieved, but it does not prescribe the way in which those outcomes will be achieved, nor does it have the power to regulate the air quality within the tunnels. The Department of Health has similarly given evidence that its role is purely advisory in relation to many of these issues. Surely we are faced with a situation where one government department can give advice, but other government departments, namely the Department of Planning and the RTA, if they wish, can ignore that advice, put it to one side or allow tunnels to operate in non-conformity with the advice that has been given. It may be a good outcome in terms of passing the buck, if you like, but surely when we have seen the concern of residents is with the impact of tunnels on health and their operation, this is presumably not a reasonable or desirable division of powers.

**Ms BARNES:** I would like to unpack that question and first of all talk a bit about why we do not specify technologies, why we actually set outcomes, and environmental outcomes first. Then we will talk about the regulation of tunnels, if you like. I might ask Ross, from an industry point of view—because it is very similar—why we do not set technologies and why we set outcomes and leave it to industry to come up with the best way of meeting that outcome to stimulate innovation.

**Mr CARTER:** For the areas that we regulate—and we regulate over 80 industry sectors within the organisation—for us to be in a position to be providing technical expertise on the technologies that should be applied in any circumstance, we would need to have a huge range of experts on board. I guess there is a practical issue in how we look at technology, so we set outcomes and then allow the particular industry or business to look at what is the best way of achieving that outcome. Also, we have in the past—15 to 20 years ago—got a lot more involved in prescribing the

sorts of technologies that should be used to solve problems. We got into quite a lot of difficulty as a regulator where we had said, "You should do X", and then X did not actually solve the problem, or only solved it to a certain extent.

So, as a regulator it is a lot more effective for us to set the outcome and then industry demonstrating what is the best technology that they need to employ to do that. The other aspect of it is that this encourages innovation in industry to come up with different approaches and techniques to meeting outcomes in a way that is most cost-effective for their particular circumstances.

**Ms SYLVIA HALE:** If outcomes are not met, or they are met in an inadequate way, it seems to be beyond the ability or the powers of DEC to enforce in any way the requirements that have been put in place.

**Ms BARNES:** Are you talking about industry here or tunnels?

**Ms SYLVIA HALE:** Tunnels specifically.

**Ms BARNES:** With industry we have great powers to keep enforcement action until the outcomes are met. When it comes to tunnels, the tunnels are not on the schedule and DEC does not regulate the operation of tunnels.

**Ms SYLVIA HALE:** So tunnels should be on the schedule therefore? It would be desirable?

**Ms BARNES:** If the government has decided it is not on the schedule the appropriate regulatory authority is the Department of Planning.

**CHAIR:** Thank you for appearing before us this morning. As I said last time, if, as a consequence of hearing any other evidence, you feel you need to make a supplementary submission we would be pleased to receive it, although I think we are going to commence writing the report shortly.

**(The witnesses withdrew)**



**MICHAEL JAMES McKINSTRY**, Managing Director, Alcoa Australia Rolled Products, P. O. Box 460, Point Henry Road, Geelong, affirmed and examined:

**CHAIR:** In what capacity are you appearing before the Committee? Are you appearing as an individual or as a representative of an organisation?

**Mr McKINSTRY:** A representative of an organisation.

**CHAIR:** Are you conversant with the terms of reference for this inquiry?

**Mr McKINSTRY:** Yes, I am.

**CHAIR:** If at any stage you consider that certain evidence you wish to give or documents you may wish to tender should be heard or seen only by the Committee, please indicate that fact and the Committee will consider your request. Do you wish to make a brief opening statement?

**Mr McKINSTRY:** Yes, if I may. Thank you for the opportunity this morning to appear in front of you. I know there was a briefing document but I thought I would pull out some of the key points. First of all, Alcoa is Australia's largest recycler of aluminium and we make all of the flat-rolled products here in Australia for things like beverage cans and construction and building materials. Alcoa's plant at Yennora also recycles used aluminium products and aluminium waste. This significantly reduces greenhouse gas emissions and preserves important finite resources such as energy, metals and landfill space.

In December 2005 Yennora also earned ISO 14001 accreditation for its environmental systems and management, and it is also at the forefront of sustainable manufacturing here in Australia. Alcoa Australia Rolled Products [ARP] is a proud member of the Yennora community as well. We employ approximately 350 people in that region and are considered an important contributor to the local and regional economy. Since 1996 Alcoa ARP has invested in production and environmental management improvements to secure the future of the Yennora facility that was procured by Alcoa in 1996 and was previously owned by Comalco.

Over the past two years alone we have also invested a further \$30 million in new equipment at the Yennora site. In June this year Minister Tripodi opened a new \$17.5 million cleaning and cut to length line: it is the first of its kind in Australia. It will also lead to the establishment of new export markets for high-quality aluminium sheeting and coil, and that will help reduce imports. Products are currently imported and it is to the value of about \$60 million per year. Alcoa ARP is engaged in a diverse range of partnerships that contribute to the economic, social and cultural fabric of the Western Sydney community. As part of the community we established a community consultation network. We believe that is very important. We do not limit invitations and anyone can attend that forum. We also have site open days and we have a quarterly newsletter, and that is sent to local households and businesses. We have another range of other community capacity building activities.

Through engaging with the community we believe we have developed a good understanding of the issues and concerns of the local area, and ARP is committed to good environmental performance and management. We believe that is a critical aspect of a business sustainability program. This is reflected also in the targets that we set for 2006-07 in the Yennora Environmental Improvement Plan. The environmental improvement plan was developed in close consultation with the local community and other stakeholders. It represents the company's ongoing commitment to go beyond regulatory compliance. The Yennora site is also periodically audited by members of Alcoa's global audit team, and Alcoa puts the environment very much on the top of the agenda and it is assessed against regular global criteria for performance. As such, the Yennora site consistently ranks highly amongst Alcoa's best environmental practice companies.

Last week Alcoa globally was again selected for inclusion in the Dow Jones Sustainability Index. The selection is based on a thorough assessment of the company's economic, environmental and social performance. I think that is an example at the global level that Alcoa do try and lead in the environmental field. The site at Yennora consistently complies with the requirements of the Environmental Protection Licence [EPL] and it continually monitors air emissions with the help of independent accredited specialist consultants. The results are routinely reported to the Department of

Environment and Conservation [DEC] and Environment Australia for the national pollutant inventory. The development consent current to that for the scope of the site's activities is currently subject to litigation. I think you know there was an issue there by Weston Aluminium—that is a competitor of Alcoa ARP—and a development application is now before the Land and Environment Court. Just to clarify, the courts have not directed Alcoa ARP to cease or curtail any current operations in any way, nor has Alcoa been fined for underreporting regarding a generation of waste.

On the specific issue of the development application itself, I would like to clarify a few points for the record. The initial development application did not specify the source of dross and the current application does that. Regarding dross, some of which we import from Victoria, I would also like to make three points. Firstly, Victoria allows the processing of dross; Yennora's sister plant in Victoria cannot consume all dross that it produces at the Victorian smelters. Secondly, the dross produced and used in Australia has a different chemical composition to that used in the United States and, as such, it is not carcinogenic. Thirdly, the assertion that Alcoa's salt dross residue sent for reprocessing by a Queensland company has somehow damaged the Great Barrier Reef is totally rejected and is without foundation.

It is also important to place the Yennora site air emissions in the context of total emissions within the Sydney region. The Yennora plant's most significant emissions are particulates, oxides from nitrogen and volatile organic carbons. Overall, Yennora is responsible for less than 0.1 per cent of these emissions categories in the Sydney Basin. These figures were verified independently by Sinclair Knight Merz [SKM], who are one of the most reputable international environmental consultancies, and they also prepared a submission to the inquiry, which you have. According to the 2004-05 national pollutant inventory, Yennora ranked 61st, 30th and 28th in the Sydney air shed for the three emissions categories that I mentioned: particulates is 61st, oxides of nitrogen is 30th and volatile organic carbons is 28th. In other words, we believe Yennora is a minuscule part of Sydney Basin's air emission profile, and compared with other sources it is very small.

An independent evaluation of the site's contribution to air quality in the immediate area was undertaken in 2005, and the study confirmed that the site consistently complied with the obligations under the EPL. Secondly, it makes very little contribution to air pollution in the Sydney Basin and the local area. Thirdly, it is very unlikely to give rise to health impacts on the surrounding community. We have developed what was once a struggling operation into a well run and valued business focusing firmly on sustainability in Western Sydney. We do make a contribution to global sustainability through recycling: we believe that is important. Alcoa's Yennora operations provide the type of environmental, economic and social dividends that local communities want to see from modern industries.

In summary, I am proud of our operations at Yennora. I would certainly like to extend an invitation to all members present to visit the site—we would welcome that—and also join one of the committee meetings if they had time.

**CHAIR:** One of the submissions we have received suggested Alcoa gets some sort of easy ride from the EPA in effect giving Alcoa some unfair advantage. How do you respond to that?

**Mr McKINSTRY:** The new development application will place even more stringent conditions on Yennora's operations. Even with those, it aims as a matter of course to better those. I mentioned before that we have benchmarked the standards that Yennora comply with and have compared that to environmental standards in both Europe and in the United States of America. These are broadly similar comparisons. With comparisons, for example, to Weston Aluminium in the Hunter Valley, it has to be recognised that there are different ambient air quality issues in different locations. The main difference is that Yennora clearly is not located near the Kurri Kurri smelter and, as such, the location would naturally entail different standards in comparison to the Western Sydney air basin. That is how our sophisticated air emissions standard would be determined, as DEC would have outlined far better than I would.

**CHAIR:** You mentioned a moment ago that in terms of impact on overall emissions, I think you said it was a minuscule part and you suggested that it was unlikely to be a source of any major health impacts on the population. Given all of that, why do you think Alcoa has been singled out compared with other submissions?

**Mr McKINSTRY:** Just to recap on what I mentioned: the facility, we believe, is a minuscule part of the Sydney Basin's emissions. The less than 0.1 per cent was validated independently by SKM, who are a very highly reputable international company. The conclusion of that survey also showed that the Yennora operations were very unlikely to give rise to health impacts in the local area. We think another factor at work here might be a commercial motivation. One of the submissions we know was from a competitor of Alcoa ARP—Weston Aluminium—who opposed ARP's operations. The commercial relationship with Weston Aluminium ceased at the end of 2003 and since then that is when there has been opposition.

In January 2005 we know that Weston instigated legal action against Alcoa ARP against the development consent and this case is still before the court. We also know that the Western Sydney Clean Air and Water Action Group was established immediately after a public meeting that was run by Weston Aluminium in June 2005 in Guildford's leagues club. We also know that Weston's solicitors have actively supported the action group led by Mr Len Stephens in gaining the status of the LEC in relation to the Yennora DA. Submissions of Weston Aluminium and the action group we believe also demonstrate that they are broadly similar. The submissions also use the exact text. For example, there are some comments in Weston Aluminium's submission on page nine that use the exact wording as the Western Sydney Clean Air and Water Action Group on page 22, which states "Weston Aluminium understands that older plants are permitted to operate under low performance standards and higher emission rates" and the Western Sydney Clean Air and Action group states "Older plants are permitted to operate under low performance standards and higher emission rates". From our perspective, Weston has a clear motivation to oppose Alcoa and, to some extent, we also believe that Weston may be using this inquiry to promote its commercial interests.

**CHAIR:** To clarify that, what are the environmental standards that Alcoa operates to?

**Mr McKINSTRY:** The site does comply with the requirements of the environmental protection licence [EPL] No. 642 as issued by DEC. The EPL requires with air, noise and a number of other general environmental issues. The site monitors air emissions. For example, we do a quarterly stacking monitoring, which are reported to DEC and Environment Australia for MPI reporting. Sampling and analysis is also undertaken by independent accredited specialists and consultants. The site also holds a dangerous goods licence and is regularly audited. Beyond that Alcoa is committed to good environmental performance. We see that as a critical part of our sustainability model in Alcoa. That is why Alcoa moved to the point of establishing its own environmental improvement plan that goes beyond the requirements of EPL.

We have set some target improvements to 2006-07. The most significant emissions are particulates, oxides of nitrogen and volatile organic carbons that I mentioned before. Yennora is responsible for less than 0.1 per cent of those emissions. Earlier I mentioned the rankings in the MPL. We are committed to the environment, and we work beyond the standards. That is why we developed our own environmental improvement program.

**CHAIR:** Do Government members have questions?

**The Hon. CHRISTINE ROBERTSON:** Not at this time, thank you.

**CHAIR:** Ms Sylvia Hale, do you have any questions?

**Ms SYLVIA HALE:** Yes. Mr McKinstry, you said that the dross that is presumably processed at Yennora is not carcinogenic and that it differs from that produced in the United States of America. What compounds or chemicals are different in the dross used in Australia from that used in the United States of America?

**Mr McKINSTRY:** I could not comment on that personally. I would need to get a technical expert.

**CHAIR:** Will you take that on notice? The Committee will inform you which questions are to be taken on notice.

**Mr McKINSTRY:** Absolutely.

**Ms SYLVIA HALE:** Whilst one can recognise that Weston may have a motivation in supplying information, nevertheless it is appropriate for the Committee to inquire into whether the submissions—particularly from affected residents—have any basis. One submission states, "In May 2006 Alcoa had to supply corrected pollution values for the years 1999 and 2000 to the EPA. Originally the data supplied in November 2005 showed only one-twentieth of the data supplied later. Alcoa had no explanation for the reason that they underreported so blatantly in November 2005". Would you comment on that?

**Mr McKINSTRY:** Yes, that was to do with a change in the measurement process. The measurements after that time were different.

**Ms SYLVIA HALE:** Who instituted the changes in the measurement process?

**Mr McKINSTRY:** I believe it was DEC. But I would have to clarify that.

**Ms SYLVIA HALE:** So DEC said, "You are using the wrong basis for measuring emissions"? Is that correct?

**Mr McKINSTRY:** No, I do not believe so.

**Ms SYLVIA HALE:** Can you report back to the Committee as to why those changes had occurred?

**Mr McKINSTRY:** Absolutely.

**Ms SYLVIA HALE:** In the corrected base limits for Alcoa between 1999 and 2003, published by the EPA on 12 July 2006, it shows that emissions in every case, whether coarse particulates, fine particulates, fluoride, nitrogen oxide, sulphur oxide or volatile organic compounds, have all increased. For example, volatile organic compounds—

**CHAIR:** Ms Hale, where are you reading from?

**Ms SYLVIA HALE:** From the submission by the Western Clean Air and Water Action Group.

**CHAIR:** One of the submissions?

**Ms SYLVIA HALE:** Yes. On page seven it states, for example, that volatile organic compounds have gone from 87,323 kilograms, up to 103,826 kilograms. That seems about a 20 per cent increase. Why has there been a consistent increase in the emissions?

**Mr McKINSTRY:** We are fortunate in the sense that the business has grown. The reason why emissions have grown is that the business has grown. The volume produced has grown, the level of exports has increased, and the overall business has prospered. However, if you look at it per tonne, the actual emissions have come down.

**Ms SYLVIA HALE:** From the point of view of residents in the vicinity of the plant, they are concerned that they are breathing in, or exposed to, a greater load of pollutants. Do you agree?

**Mr McKINSTRY:** I think Mr Carter from DEC earlier clarified the difference between loads and concentration levels at ground level. We have certainly done some monitoring and independent studies that show that at ground level concentrations that comment would not be founded.

**Ms SYLVIA HALE:** Page 12 of the submission, in relation to events at other Alcoa factories in Australia, in 2003 it states that Alcoa lost its self-policing rights for dust after it was disclosed that an employee had falsified dust level recordings on a database and Alcoa was fined for breaching dust emissions. Can you supply the Committee with further details? Obviously, if that is the case, it goes to the whole question of whether Alcoa should be its own policeman?

**The Hon. CHRISTINE ROBERTSON:** Excuse me Ms Hale, is that claim from Western Sydney? They know there is an industrial issue right across Australia, that little group?

**Ms SYLVIA HALE:** I am just interested in finding from Mr McKinstry whether that is accurate. If it is accurate I ask him to supply the details of that event. I mentioned it because it goes to whether Alcoa is the appropriate body to monitor pollution emissions from the site.

**Mr McKINSTRY:** I could not personally comment regarding the Western Australia operation. My division is based in Victoria and New South Wales. I will defer that question to Western Australia.

**Ms SYLVIA HALE:** Could you get back to the Committee on that?

**Mr McKINSTRY:** I could.

**CHAIR:** Are you talking about something that has happened in Western Australia?

**Mr McKINSTRY:** Correct. To me it seems outside the scope of this inquiry. I am happy to respond to that.

**CHAIR:** I am not sure it is within our terms of reference. The extent to which you think it may go to broader policies of your company, you may want to answer. The Committee needs to be conscious of the fact that it is possibly not relevant to the terms of reference.

**Mr McKINSTRY:** I welcome the chance to respond to that. You are right, it is outside the scope of this inquiry. If the question is about Alcoa generally, I do not believe that Alcoa would be recognised internationally for its environmental management if that were the case. We would not be a forerunner in Dow Jones, for example, and their awards, if there were any question regarding Alcoa's ability to manage that process.

**Ms SYLVIA HALE:** A consistent complaint from residents is the release of large clouds of emissions late at night. Do you have a policy of releasing material at night? Why should that be a persistent aspect of residents' complaints?

**Mr McKINSTRY:** No, we do not have a policy to do any particular operation at night. We have a continuous operation, 24 hours. Mr Carter from DEC clarified that many visible emissions under certain climatic conditions can be water vapour. We have a large coolant tower that sits right beside some of the casting facility. In the evening, there is no doubt you can see what appears to be a cloud of smoke, but it is water vapour. Having said that, we take any complaint seriously and track back. We also have stack monitoring and a camera system. We can go back to any specific time given by any complaint and play it back and look for ourselves to verify whether it is or is not an issue. We take seriously any complaints or comments from the community. We do not dismiss them. Quite often they are water vapour.

**Ms SYLVIA HALE:** On page 9 of their submission they say that on around 60 per cent of days in a month, presumably 18 days out of 30 days, there has been significant smoke emitting from the rotary furnace building and the remelt building, so much so that it pours out of eaves of the buildings and the whole area is shrouded like a fog, and that that activity is very often observed at night. The submission further states that Alcoa has also revealed in correspondence to the Western Sydney Clean Air and Water Action Group, dated 3 March 2006, and confirmed verbally during the community network meetings, that fumes have escaped through the eaves of the building and the use of wooden pallets, plastic filming and scrap metal also cause fuming. Is that correct? Have fumes escaped from the eaves of the building?

**Mr McKINSTRY:** Any fumes that have escaped from the eaves of the building would be contained within the figures that we quoted earlier. They would not be excluded. They would be within the number I quoted earlier from 1 per cent.

**Ms SYLVIA HALE:** Are the fumes supposed to go up the chimney, rather than out through the eaves?

**Mr McKINSTRY:** No. I think they are referring to dust emissions. There was a potential for dust emissions from that particular buildings. We did take on board that feedback and relocated the area, we moved the dust around the forklift trucks. We now do that totally enclosed, indoors, it is no longer exposed in any way, shape or form. It was a partly open building, it is now an enclosed building. We take on board that feedback. We want to eradicate any possibility of dust.

**Ms SYLVIA HALE:** You are saying that now if anyone were to go out there at any time there would be no evidence of dust being created or emitted from the plant?

**The Hon. MELINDA PAVEY:** From the eaves.

**Ms SYLVIA HALE:** Where else would it come from, if not from the eaves? Could there be any other source of dust emission?

**Mr McKINSTRY:** No, that would be the main source. We handle these things through the consultative network. Any comments that we have, we do take seriously. We go back to the consultative network.

**Ms SYLVIA HALE:** Are they correct when they say that the use of wooden pallets and plastic filming and scrap metal creates fumes?

**Mr McKINSTRY:** Actually, that would have the potential to do that. We do not have that in place. Because we are a major recycler, we buy-in used beverage cans, which are compressed and stacked in a square box. We often buy that from outside companies such as scrap merchants. Some of the scrap merchants, when they deliver to the facility, actually deliver on wooden pallets. We have had to be very stringent on our supply base to go back and say we no longer want them on wooden pallets. The main thing is not so much the delivery on the wooden pallet, it is more of a concern that if any form of wood got crushed in the centre of the cube and we could not see it. That is why we have had to go back to all of our scrap merchants and reinforce the importance of the environmental issue all the way down the supply chain. It is not just an Alcoa issue. We have been very stringent on our suppliers.

**Ms SYLVIA HALE:** How do they arrive, are they in metal cages?

**Mr McKINSTRY:** No, they are on a wooden pallet, but they are actually compressed themselves and we have steel banding which is recyclable.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** The Weston Aluminium submission points out that the load limit in kilograms of your plant is hugely greater than theirs, nine times greater in coarse particulates, five times greater in nitrogen oxide and 36 times greater in volatile organic compounds. They say that is a bit rich, given that you are in the middle of the Sydney Basin and they are out in the sticks. What do you say about that?

**The Hon. CHRISTINE ROBERTSON:** Is the Hunter in the sticks?

**The Hon. MELINDA PAVEY:** Kurri Kurri does not think it is in the sticks.

**Mr McKINSTRY:** Even the local sticks, and that is what I will talk to. Earlier I touched on the different measurement standards between one area and another. I commented that comparison with Weston Aluminium and the Hunter Valley has to recognise that the core issues are different. They are closer to the Kurri Kurri smelter and Yennora is not located there. Therefore, the emission standards are different. The key issue from Alcoa's point of view is that we have certainly worked within our licence, and beyond it. We are transparent, we are open, whatever feedback we have from DEC and the local community we take on board and act on.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Why are your volatile organic compounds, according to an answer from DEC, and your limit per tonne, almost 10 times worse than

Weston Aluminium's? You are using far more volatile organic compounds than they are, even per tonne? Is that not correct?

**Mr McKINSTRY:** I would not know the detail of Western Aluminium's process.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Certainly the licence figures from the Department of Environment and Conservation [DEC] suggested that you were allowed to produce far more volatile organic compounds [VOCs] than now.

**CHAIR:** I am not certain that we need to sit here and do a comparison between one commercial outlet and another.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I think it is a question of the load on the Sydney basin and if we have high levels being produced then people are going to have to breathe it.

**CHAIR:** We have asked questions about the standards, and that is the issue that we have been focused on.

**Mr McKINSTRY:** I would have thought that question would be referred to the previous group, DEC.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I did my best with DEC. I noticed also in your 2004-05 annual report that you have doubled the amount of hydrochloric acid, triple the amount of mercury, double the amount of polycyclic aromatic hydrocarbons [PAHs], and that you are slowly increasing VOCs. Is that the case?

**Mr McKINSTRY:** As I mentioned earlier, ALCOA has been in the fortunate position to grow the business. More volume has gone through, more sales have gone through and more production has gone through. Naturally you will see some growth in particulates, for example. But, as I mentioned, per tonne it is less.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** In every case?

**Mr McKINSTRY:** I could double-check every case. I believe so.

**CHAIR:** Would you take that question on notice? That is a relevant question and I think the answer to it would be insightful for the Committee.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You have asked for retrospective approval on some of your activities. Does that mean you acknowledge you were not operating within your licence provisions before?

**Mr McKINSTRY:** We are not asking for retrospective approval.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You have variation in your furnace charges—in other words, what you put in your furnaces from time to time. Presumably there would be a difference in the amount of plastics, polyurethanes or gunmetal going into those furnaces?

**Mr McKINSTRY:** No, they would not have plastics or polyurethane going in them.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** What lines the drink cans?

**Mr McKINSTRY:** That is controlled through the emission stacks. That would not be an issue.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But the lining of the drink cans is plastic, is it not?

**Mr McKINSTRY:** No. It is a chemical compound, but it is not a plastic.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** It is not a plastic?

**Mr McKINSTRY:** I do not believe so. Again, I could check from an engineering point of view.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Do you have polyurethane from powder coating, or anything like that?

**Mr McKINSTRY:** Not as far as I am aware.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** So, there are no polyurethanes going into that furnace?

**CHAIR:** I believe Mr McKinstry has effectively taken that question on notice.

**Mr McKINSTRY:** What I was saying is that we do process used beverage cans and everything we process is signed off within our licence and agreed with DEC.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I am asking about what you are producing, because you do play down PAHs in your annual report, and PAHs are quite toxic.

**Mr McKINSTRY:** The processing of used beverage cans is something that is done throughout the world, and it is done within standards throughout the world. We comply with those standards.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** But you are doing it in the middle of the Sydney basin in an inverted air situation?

**CHAIR:** I do not know that you need qualify that. Mr McKinstry answered that question.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I think the question is: Do we want plastics burning in the Sydney basin?

**CHAIR:** No The question is: Are you meeting standards?

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Is the operation desirable as it is being proposed?

**Mr McKINSTRY:** We are recycling aluminium; we are not burning plastics.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** Is it in the sense that the temperature you get to is only sufficient, presumably, to melt the aluminium. Plastics cannot be burned, or some of the aspects that may be attached to the aluminium may not be able to be burned safely at that temperature. Some of the degradation products of chemicals decay depend on the temperature at which they are burned.

**Mr McKINSTRY:** As I said earlier, if that were the case we would not be operating within our licence, and we are.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** You have externalised the problem in the sense that it relates to the licence.

**Mr McKINSTRY:** The licence conditions are taken into account for our operating conditions and work not only within them, but well within them.

**The Hon. Dr ARTHUR CHESTERFIELD-EVANS:** I understand you have stayed within the limits.



**The Hon. MELINDA PAVEY:** Part of the evidence from the Western Sydney Clean Air and Water Action Group was to the effect that your communications officer or community relations officer at Yennora was sacked for giving out information that was harmful to your company. Were you aware of that testimony and do you have any comment on that? Is it true?

**Mr McKINSTRY:** I am aware of that testimony. It is untrue. That was not the case. Those comments were not made. Far from being sacked, in fact she was promoted. She is actually working in a Melbourne office and she refutes any commentary in that regard.

**CHAIR:** You have taken a number of questions on notice. Thank you for that. The Committee will, when providing you with those questions, also indicate a date on which we would like the answers returned. Obviously, we will be mindful of the company's needs in that regard. I thank you and your company for your submission. We do not wish this to be a sort of tit-for-tat between commercial enterprises, but your company was adversely named and we felt it appropriate to give you an opportunity to respond.

**Mr McKINSTRY:** Thank you. I was happy to participate.

**(The witness withdrew)**

**(The Committee concluded at 1.00 p.m.)**