REPORT OF PROCEEDINGS BEFORE

JOINT SELECT COMMITTEE INTO THE TRANSPORTATION AND STORAGE OF NUCLEAR WASTE

INQUIRY INTO THE TRANSPORTATION AND STORAGE OF NUCLEAR WASTE

At Sydney on Wednesday 22 October 2003

The Committee met at 10.00 a.m.

PRESENT

The Hon. P. T. Primrose (Chair)

Legislative Council
The Hon I. Cohen
The Hon. C. J. S. Lynn

Legislative Assembly
Mr M. J. Brown
Ms D. V. Judge
Mr A. M. McGrane
Mr I. L. Slack-Smith

SARA HELEN MURRAY, President, Local Government Association of New South Wales, 215 Clarence Street, Sydney, sworn and examined:

ROBERT JOHN VERHEY, Strategy Manager Environment, Local Government and Shires Association of New South Wales, 215 Clarence Street, Sydney, and

PHYLLIS JUNE MILLER, President, Shires Association of New South Wales, 215 Clarence Street, Sydney, affirmed and examined:

CHAIR: We have received a submission from you. Is it your wish that the submission be included as part of your sworn evidence?

Dr MURRAY: Yes.

CHAIR: Do you wish to briefly add to or elaborate on it, or to make an opening statement?

Dr MURRAY: Yes. The Hon. Peter Primrose and members of Parliament: Thank you for the opportunity to attend and address this hearing. This is the last in a series of hearings, and at every hearing local government has been at the table speaking on behalf of their communities. In these hearings you have been addressed by Blacktown City, Fairfield City, Holroyd City, Liverpool City, Sutherland Shire, Blue Mountains City, Broken Hill City, Dubbo City and Orange City councils, and the Southern Sydney Regional Organisation of Councils, representing the councils of southern Sydney. I understand that later today you will be addressed by Gundagai Shire Council. Further, you have received many written submissions from councils all along the proposed route for nuclear waste.

Today, as presidents of the associations which represent all of the 172 councils in New South Wales, we address you on behalf of all of those councils and their communities. You have been getting a consistent message from those councils at every hearing, and you will get the same message today: Local government and the communities of New South Wales are not comfortable, reassured nor relaxed in any way by the assurances we continue to receive from the Commonwealth or the nuclear industry, specifically the Australian Nuclear Science and Technology Organisation [ANSTO], about proposals to transport nuclear waste, whether it be low-grade, medium grade or high-level nuclear waste, across our councils.

Ms MILLER: Let me say at the outset that we in local government are not technical experts on the science of nuclear reactor operations or waste management. If you want to catch us out on technical points, or trip us up with questions about medical isotopes and their relative benefits and

radioactivity, go right ahead, because that is not why we are here today. The real issue we bring to this inquiry is that government, whether it be State, Local or Commonwealth, has as its first responsibility a duty to serve and protect the community and, importantly, to ensure that the community is completely satisfied that their health and environment are not being compromised by activities undertaken or sanctioned by government. It is abundantly clear that the community are not satisfied. And we do not just refer to the community around the reactor; we are referring to the community across New South Wales.

We suggest that this inquiry and this issue go to the very heart of some fundamental constitutional issues and the fundamental question: Who speaks for the community? Local government does. But, frankly, we our not speaking from a position of power on this issue. We cannot pass legislation, for example. You have asked previous local government presenters: What is the status of the many councils who have declared themselves nuclear free? The fact of the matter is that we do not know, because it has not been legally tested. We applaud the New South Wales Government for conducting this inquiry. It reflects a genuine wish to ascertain the views of the community on this issue. But it begs the fundamental question: Why is the State Government doing it and not the Commonwealth, given that it is the Commonwealth's proposal? Given our system of government, the proponent, the Commonwealth, is neither compelled nor inclined to appear at these hearings to answer for itself or provide the assurances that are clearly sought.

We imagine that the New South Wales State Government, as the next closest level to the people, is caught in a similar bind but is somewhat less directly exposed to the clearly expressed community disquiet on this issue. You can pass legislation, but this can effectively be overridden by Commonwealth law unless you are prepared to mount a constitutional challenge. Does this leave the New South Wales Government completely powerless? We suggest not. The State Government has no less a responsibility to the people of New South Wales than we do as councils to our communities, and this means being persistent and vocal and on record in the requirements on the Commonwealth and ANSTO to address the issues we raise.

Dr MURRAY: It is not our intention to go through our submission in detail, because it is on the record. You know from our submission how it was developed and who it speaks for. It was developed in a fully consultative way, and we would argue that this is in stark contrast to the way in which the Commonwealth has dealt with this issue, which has been in a somewhat arrogant and clandestine manner. We do, however, wish to stress a few points from our submission. If nuclear waste is to be transported, the emergency response capability must be provided by the transporter of the waste and it must travel with that waste. The inquiry seeks an indication of the likely impact on council resources of nuclear waste transport. The simple answer is

that there should not be any impact, because it is not local government's job to respond.

Dealing with a nuclear waste incident is not like dealing with an oil spill or a paint spill; it is a specialist's job. Simply beefing up local or regional emergency response capability along the route is ad hoc and inconsistent. Please do not be swayed by opportunistic State emergency response agencies who may see an opportunity to pad out their budgets. We do not want money; we want a cast-iron assurance and a no-risk situation for our communities. Secondly, there needs to be a provision, again by the transporter, of complete transport security, including an ability to deal with theft or sabotage, and for terrorism incidents. This is not alarmism or paranoia; it is just a precautionary approach. We want a clear provision, again by the Commonwealth, of complete and indisputable indemnity for damage or contamination of private and public property along the transport route. The Commonwealth must take complete responsibility for this activity and anything that may go wrong, and we believe this should be enshrined in legislation.

The Commonwealth licence to operate the new reactor should be contingent on full resolution of the transport and disposal issues associated with both a low-level waste repository and a longer-lived intermediate level store. Simply put, the Commonwealth needs to close the loop on this product before committing to produce more. Notwithstanding our previous comments about security, we challenge the clandestine nature of the industry—the need for secrecy of transport movements. As previously stated, consultation and liaison should be undertaken in all local government areas along the proposed route, and should be ongoing. This liaison should also fully cater for the cultural, ethnic and social fabric of the community all the way to Woomera. Councils and their communities have a right to know if and when materials are being moved through their neighbourhood. The Commonwealth, as proponent and regulator, has a clear conflict of interest on this issue and should put in place genuine transparent independent assessment and consultation processes on the increased production and proposed transport of nuclear waste.

Ms MILLER: In conclusion, councils have made it quite clear to us that they are concerned about the social, environmental and economic implications if anything goes wrong while nuclear waste is being transported. Councils and their communities have a right to be completely satisfied that there is no risk at all. Transport of nuclear waste across our councils, our communities, should not occur until that satisfaction has been provided.

CHAIR: The first question I want to ask picks up from what you have just said. We have been advised on a number of occasions that the transport of, in this case, low-level nuclear waste—and we are not only concerned about low-level nuclear waste—is safer than the transport of petrol or other volatile toxic substances. Would you agree?

Dr MURRAY: That is a somewhat technical question, but no, we would not agree. We are not sure. We do not know, our communities do not know and, at the very least, we should be assured by proper, easily accessible information being provided to our communities. We could not answer that question. I would suggest that Councillor Phyllis Miller and I are more in the know than the average person out in the communities across which this waste will be transported, and if we cannot answer it, they cannot, hence the very real concern out in the communities.

Mr MATT BROWN: Councillors, thank you for being here. I thought your submission was pretty much on the money. I also have been concerned at the level of consultation throughout this process, so thank you for your evidence in regard to that issue. The Federal Department of Education, Science and Training in its submission advised this Committee that there are well-established procedures to manage an emergency involving radioactive materials, in New South Wales and elsewhere in Australia, which would enable an appropriate response, in the unlikely event of an accident. Specialists in managing radioactive materials would attend an accident, if required. On the other hand your submission states that the Commonwealth waste transport proposal falls well short of the standard that would be applied to private hazardous industry development in New South Wales, and has serious implications for New South Wales services and the public. I noticed in your opening statement that you suggested probably the best way to go forward is to actually have emergency services personnel travelling with the truck. Would you care to expand more on that?

Dr MURRAY: We just think that is the safest and, from the local government point of view, the most cost-effective way, obviously, to deal with the problem. As you acknowledged in your opening remarks, it is a specialist field. We do not have the faith that those specialists would get to the scene on time to do the right thing by the community. You do not have much time in a nuclear accident before dire consequences occur, obviously. We just think that, yes, it would be an extra cost, which we think that the Commonwealth should pick up, but if this was an emergency response escort, then everybody's problems would be solved. It just seems to us to be a very neat solution to what is otherwise a very real risk for our local communities.

In Wingecarribee about a year ago we had a contamination incident on the freeway between Mittagong and Sydney and it took three days for that to be cleaned up. People were sitting around. In my other life I am a psychologist and I know a lot of people in the community. The experts were sitting around and talking to each other about what they should do. I believe that would happen in a nuclear accident. I do not think that these so-called specialist teams would come and immediately do the job. I think there would be all sorts of questions asked and afterwards there would be all sorts of

further questions asked. I think we need a specialist team right there, with the transport, at all times.

Ms MILLER: I can elaborate on that. Forbes also had the same experience. We had some type of gas leak and Hazmat of course came out to look at that leak. Businesses were closed down for three weeks.

Mr MATT BROWN: Wow.

Ms MILLER: They did not know what the gas was for two and a half weeks. AGL had a hole in one of its gas pipes, and that was all that was. For three weeks businesses were closed down and that cost a fortune to those businesses. The whole of the town shut down in that area. Council had financial implications because people in a small rural town are part of the Rural Fire Service plus the New South Wales Fire Brigade. They were all on stand-by. We had to set up an emergency control unit, which was an extreme cost to a council.

The Hon. CHARLIE LYNN: Councillor Murray, I think you outlined in your submission a lack of consultation and arrogance on the part of the Federal Government. Could you outline what consultation you are aware of that happened between the Federal Government and councils?

Dr MURRAY: To my knowledge, none, but I will ask Mr Verhey to elaborate.

Mr VERHEY: Nothing specific to councils along the route, as far as we are aware.

The Hon. CHARLIE LYNN: I put it to you that we have had a submission in Dubbo from Dr Perkins who is a director of radioactive waste management. In her submission, Dr Perkins stated:

> From 1992 when the project first started, there has been extensive consultation. In 1992, 1994 and 1998 the Government put out three discussion papers. In its discussion papers it called for public submissions and it responded to issues that were raised in these submissions.

Dr Perkins said that she had the discussion papers with her. She went on to state:

> In relation to that consultation, advertisements were placed in all local and national newspapers from 1992 onwards. We tried broadly to indicate to people that this project was ongoing and we were asking for submissions. Similarly, with the environmental impact statement, we advertised nationally and locally. We had information days associated with the environmental impact statement in South Australia and also in Broken Hill.

Are you aware of those consultation processes? If you are not, do you think you should be?

Dr MURRAY: I am not personally aware of them, and I suggest that they are now five years old. The most recent is 1998. It is a vexed issue, getting through to your community, but you certainly do not through ads about environmental impact statements [EIS] and so on in the local paper. Nobody responds to that. That means nothing to the average person in the community. That is not, in my view, a genuine dispersal of information or a consultation process. People are actually worried. If I live in Dubbo, what is going to happen if there is a nuclear incident or a nuclear accident here? What will happen to my children? What if I am next door to it? If I am 10 miles way, what will that mean? They are the sorts of questions that people want to know the answers to.

The Hon. CHARLIE LYNN: We have to cut through emotion and fact, if you like, in regard to the process we are going through. To come here representing all shires and say that there has been no consultation when there clearly has been consultation indicates to us a lack of homework.

Ms MILLER: I will comment on that. If the Commonwealth Government wants to have consultation with communities, it should come directly to the peak bodies of local government. We will go forward and we will organise that consultation process. Putting advertisements in newspapers has not got the sign off or the support of people who represent the communities of New South Wales. That is not good enough. Local government is there to represent their communities, and if there is going to be consultation, they should be the major part of promoting that consultation.

The Hon. CHARLIE LYNN: Do you think that it would be incumbent upon the peak body, when it sees advertisements or becomes aware of advertisements calling for public submissions, to make that submission?

Ms MILLER: We are worthy of more than an advertisement. Peak bodies are worthy of more than an advertisement. We should have direct contact with the Commonwealth Government if it wants us to represent or consult with our communities. We should not have to read anything in a newspaper. We are elected by our people, and we are entitled to direct consultation or information.

The Hon. CHARLIE LYNN: They put out three discussion papers in 1992, 1994 and 1998. Do you not think that that is a fair and appropriate way of seeking feedback?

Ms MILLER: No.

Mr VERHEY: I think this comes down to the definition of consultation. While technically there may have been discussion papers put out, in fact we have done rather a lot of homework on this in the past two weeks and it is abundantly clear to us that even the councils are not aware of what the proposal is. Mainly we have had to tell them what it is. If there had been general consultation, you would think that at least the councils would be aware of what the proposed route is and what the frequency of movements is. We have had to give them that message so I guess it is a little bit frustrating to be told we haven't done our homework and to have to do that when we would consider that it is the proponent's clear duty to make sure the community is fully aware of that.

Mr TONY McGRANE: Following on in regard to consultation, some councils have indicated to us that they have had consultation with the Federal Government while others are saying that they have not taken notice of the advertisements. Those councils that have had consultation with the Federal Government, have they come back to your peak organisations and asked your opinions on any aspect of this matter?

Ms MILLER: I think so. We have had quite a bit of—I am not sure what councils have had that consultation.

Mr TONY McGRANE: Dubbo City Council has indicated that it has had consultation with members of the Federal department that is controlling this matter.

Ms MILLER: I do not know. Rob Verhey would have taken those inquiries, so I will have to hand over to him.

Mr VERHEY: We set up a reference group and invited all councils onto it, but we specifically targeted councils along the proposed route. The message came back to us quite clearly that there was not a high level of knowledge about what the proposal was.

Ms MILLER: I think the emotive side of nuclear waste is important, like with medical isotopes. I am not an expert on any of that, but when you have got a council sitting and a couple of people have suffered cancer or whatever, and this is put before a council meeting, that council is not looking at any of the other more serious nuclear wastes; they are looking at isotopes, and they are thinking that we have got to have this, so we have to agree with it. I believe the education process about nuclear waste as a whole is very, very minimal. I believe that we are entitled to understand it. I have tried to get my mind around it and I am finding it quite difficult. I have had to try to learn about it, so imagine what communities are like. It is okay to brush it over and say that there has been consultation, but people do not understand, per se, nuclear waste in all shapes and forms.

Mr TONY McGRANE: In regard to the Local Government Association, at your annual conference in 2002 in resolution 131, you accepted the principle that Lucas Heights, Sydney, should not be the de facto repository for Commonwealth nuclear waste. That means in a sense that your organisation is for the transportation of this waste to another location, either in New South Wales or interstate.

Mr VERHEY: We accept that the waste needs to be transported. However, we are not reassured by the manner in which the process has been undertaken. We still want a full investigation of rail, road, air and ship options. We would argue that going across the Blue Mountains on the Great Western Highway is probably the highest-risk option, but it is the only one that has been put to us. We are not saying that it should not be transported, but we want to be reassured. Our communities should be told about it and it must be safely transported. We would then be able to accept it. We do not think the Commonwealth has done any of those things yet. The other thing we have made reference to in passing is that, if there are all these transport issues, we should start looking at whether the location of the reactor is appropriate in the first place.

Mr TONY McGRANE: Was the proposition put to you that it has been safely stored there for 50 years? Why not make it safer where it is now? Is that part of the debate?

Mr VERHEY: Not specifically. We would probably suggest a long hard look at the location of the reactor and the plans to upgrade it. There should be strategic plans to move those operations to a more appropriate location over time, including the management of the waste. There may be some transport issues. Again, that would have to be after full consultation. We should be working towards specific objectives to minimise risk to the community in the longer term.

Dr MURRAY: We are not expert in this, but if we look at other solutions, such as linear accelerators and so on and the importation of radioactive material, we may eventually be able to do away with sites like Lucas Heights. We argue that the way waste is dealt with at Lucas Heights at the moment is far from satisfactory.

Mr IAN SLACK-SMITH: Mr Lynn was correct when he said that we must get away from the emotion and get to the facts. You are saying that you do not know the facts and that there is a lot of scaremongering. You do not know the level of radiation in this transportable waste. If the level of that radioactivity with this waste in microsieverts were the same as or less than levels in the natural environment, would that give you a different opinion about the transportation of waste?

Ms MILLER: You do not have to be a rocket scientist to know that the route they have chosen is one of the worst options.

Mr IAN SLACK-SMITH: If it can be proven by scientific measurement that the amount of radiation emitted from this waste is less than or the same as the natural level of radiation, for example, in this room, in the Blue Mountains, in sand and groundwater, in Finland or any other place in the world, would that change the association's attitude to the transportation?

Ms MILLER: Who will employ the scientists—the Federal Government?

Mr VERHEY: Are you saying that the nuclear waste being transported has a lower level of radiation than the surrounding earth and rocks?

Mr IAN SLACK-SMITH: We have been informed that that is the case.

Dr MURRAY: Are you saying that you could stand in the truck and receive a lower dose of radiation than we are getting in this room?

Mr IAN SLACK-SMITH: And what you would receive in the Blue Mountains granite area. We have been informed that that is the case.

CHAIR: We are talking about low-level waste. As I keep saying, the committee is looking at all levels of waste, including proposals relating to intermediate-level waste. Some people tell us how dangerous the low-level waste is and Mr Slack-Smith has referred to the contrary opinions. It is a contested point. The committee will have to grapple with this issue. His point is valid. If it is no more dangerous than background radiation—

Dr MURRAY: Have you had that level of contradiction between so-called experts? Have different scientists told you one thing and others told you something else? If that is the case, how can the community grapple with these issues? We are seeking reassurance that world's best practice will be implemented in transporting this waste. That is what we are after. Making the Commonwealth responsible for escorting it and providing safety mechanisms, along with the security safeguards—which in the current climate are a real issue—is a neat solution. That would suit everyone. It should not be a State Government responsibility to beef up budgets to deal with hazardous material incidents.

CHAIR: I am interested in your comments as a psychologist, Dr Murray. When the committee was in the Blue Mountains people raised physical safety and health issues. They also raised economic and psychological effects, particularly in relation to tourism. You mentioned a gas leak earlier. The evidence presented to the committee by the Blue Mountains council suggests that physical safety is an issue, but people are also concerned about a range of other possible implications, such as potential

spills, the effect on land values and so on. The psychological implications are also an issue. Have you considered that?

Dr MURRAY: Only in the sense that we represent the councils rather than the communities. We have a flow-on effect from the grassroots level. It is a psychological and fear-driven issue. That happens on both sides. When I asked what would happen 10 kilometres away and next to my children, Mr Lynn suggested I was becoming emotional. I was not, I was simply asking for answers to questions. When people at council meetings say that they would be dead now if it were not for medical isotopes, others say that that is emotional. We are seeking facts. This will always be emotional. We have grown up with events such as Chernobyl and mushroom clouds. If we could cut through it with clear facts, communities would feel much better. Having said that, as I pointed out, experts are giving contradictory evidence. We want a precautionary approach. Even if it turns out to be unnecessary in 50 years when we all know better, let us keep our communities safe until we know. The Blue Mountains and other tourism-related communities are concerned about being clean and green and world heritage listings. The idea of a radioactive spill is very much at odds with what they are trying to promote.

Mr IAN COHEN: I also want to get away from the emotion and into the facts. Mr Verhey, in your role as strategy manager environment have you received any conclusive information about the transport of this material? Has your organisation been given scientific reports? Do you have some basis from which to work?

Mr VERHEY: Although we have access to that level of technical detail, our organisation is a political representative body for councils. We are guided on this matter by the concept of ecologically sustainable development, and particularly the precautionary principle. It is abundantly clear that our member councils have concerns. They may be based on ignorance, but they are concerns and they should not be devalued for that reason. The economic, social and environmental impacts of what is being proposed should be considered. We have received letters from the western part of New South Wales referring to the fact that the grain belt is the only thing that keeps their communities economically viable. There are serious concerns about what might happen if things are shut down for three weeks. We have not delved into that technical area.

Mr IAN COHEN: Has the Federal Government provided information about the bona fides and safety of these transports so that you at least have its scientific position?

Mr VERHEY: We have received letters from the Federal Minister and assurances that the safety provisions are more stringent than for the materials moved across councils every day. That does not provide much assurance. The emergency response measures for other materials are well known and in

place, but for this material there is a lot of confusion, ignorance and fear in the community. There is a difference. Although the Minister may be right technically, we are conscious, for example, that in New South Wales there are things called chemical control orders for specific products. The controls require an escort with an emergency response capability to travel with that material. The same sort of thing has not been proposed for nuclear waste. That seems at odds to us.

Mr CHARLIE LYNN: What does a "nuclear-free zone" mean? Many councils on the route have declared themselves to be nuclear free. Does that preclude the transport of medical and industrial isotopes? If it does not, are councils declaring nuclear-free zones being somewhat hypocritical if they allow the transport of medical and industrial isotopes through their jurisdictions but do not allow the transport of waste from those products?

Dr MURRAY: In most cases the declaration of a nuclear-free zone is more a statement of principle. That community does not want to be exposed to an unnecessary level of risk. In some cases, for example, at Warringah, councils specifically exclude medical isotopes. I would argue that that is not hypocritical; it is a decision that community has made in full knowledge. I understand that medical isotopes are lower dose and shorter lived and are generally transported over shorter distances than the waste we are talking about. I do not think it is hypocrisy; it is a choice freely made by that community.

Ms MILLER: I totally agree.

Mr VERHEY: If you were to take a closer look at that nuclear-free status you would find that it often has accommodation for medical isotopes. There is a recognition.

The Hon. CHARLIE LYNN: And industrial?

Mr VERHEY: Not to my knowledge.

The Hon. CHARLIE LYNN: If putting up those signs and mentioning the word "nuclear" is adding to the perception that there is something dangerous about this when we have been told that there are a couple of thousands movements though Australia every day of medical and industrial isotopes—

Ms MILLER: So you do not believe that nuclear waste is dangerous.

The Hon. CHARLIE LYNN: I am not saying that. There is the perception in the community in regard to nuclear—

Ms MILLER: I think the perception is right.

The Hon. CHARLIE LYNN: There are also facts. This committee must decide what are the fears and address them.

CHAIR: Do you have a question Mr Lynn?

Ms MILLER: We could make it an argument.

CHAIR: Would you care to comment?

The Hon. CHARLIE LYNN: I am trying to gather information.

Ms MILLER: Councils that declare a nuclear-free zone have consulted their community and made that decision because that is what the community wants. There should be some respect for that. If the Federal Government has a problem with councils declaring nuclear-free zones, let it sell the notion that nuclear waste is fine. At the end of the day, the Commonwealth Government has a responsibility to sell it. If areas all over the State are declared as nuclear-free zones, the Commonwealth Government has a serious problem with the way it has communicated, wrongly or rightly, about nuclear waste.

CHAIR: I refer to an article in yesterday's *Daily Telegraph.* The committee has spoken to ANSTO and others who confirm that it is true. The article states:

> SPENT fuel rods from the Lucas Heights nuclear research facility could be transported through Sydney on road trains and shipped from Port Botany to France for treatment as early as today, *The Daily Telegraph* has learnt. ... The whole process is likely to be turned around within six hours, and will cost the taxpayers, through ANSTO, the Australian Nuclear Science Technology Organisation, an estimated $14 million.

Has there been any consultation with your organisation that you are aware of about the transport of spent fuel rods already through the streets of Sydney and through Sutherland?

Ms MILLER: Not to my knowledge.

CHAIR: There is actually debate about whether this is waste or not. So we are into the arcane issues about whether someone sending fuel rods which they do not want overseas is waste. The New South Wales EPA says that it is waste, so therefore it comes under the ambit anyway of this Committee. Quite clearly this is transport that is already happening now and it would seem to me to provide some sort of algorithm or protocols of dealing with local councils and with your peak bodies. Quite clearly what is not necessarily relevant to the Shires Association I imagine would be to the Local Government Association.

Dr MURRAY: As I said, we are not aware of that but it may well be, for example, Sutherland is and it might be good to ask that question of them. I think they are appearing later today. They are very closely aware of the transport movements.

CHAIR: But there are other councils.

Dr MURRAY: Yes, and in fact Botany Council would be one that would be greatly affected obviously, but we do not know of that situation.

Ms MILLER: I think that is a concern to rural communities too. Sydney is our capital and our city. So there is the concern out there too. I think there would be support broadly across New South Wales, not just the city.

CHAIR: We appreciate you taking the opportunity to speak to the Committee and thank you for your excellent submission. We have always said that as a State committee we are non-experts and we are well-meaning amateurs collecting information. We appreciate the information you have provided to us.

Ms MILLER: We are too.

Dr MURRAY: Thank you for the opportunity.

(The witnesses withdrew)

BARRY JOHN ALLEN, Professor, 5 Muneela Place, Yowie Bay, sworn and examined:

CHAIR: I understand that you have not put in a submission and you do not wish to make an opening statement, so I invite the Committee to ask questions as they wish.

Mr TONY McGRANE: We have been informed at previous hearings that 60 per cent of nuclear medicine material comes from one reactor in Canada. As a member of the Committee I felt that it was an enlightened comment that has been verified by other witnesses since then. In a sense that means that in all countries that have nuclear reactors there are a lot of people saying, "We have got to have a nuclear reactor for the nuclear medicine side of our activities", yet 60 per cent of the world's supply comes from one reactor in Canada. Would you comment on that?

Professor ALLEN: Certainly. I am not sure about the figure but I would not disagree with that figure. The United States in particular imports a lot of their isotopes from this reactor. The particular generator that is used is the molybdenum/technetium generator which in Australia probably accounts for about 90 per cent of diagnostic procedures. That generator has a long enough half-life that it can be sent around the world. There is a reactor in Holland which is a major supplier for Europe and there are a few other reactors around the world. In Australia most of our molybdenum/technetium comes from the existing Lucas Heights reactor, although in the past that generator has been imported—and is probably still imported—from overseas by the multinational companies.

The Hon. CHARLIE LYNN: There has been some debate during the course of the inquiry as to what constitutes high-level waste. The Australian Nuclear Science and Technology Organisation [ANSTO] and others argue that Australia produces no high-level waste and that spent fuel is not regarded as waste. This view is rejected by others who claim that this is simply a "definition of convenience", and they cite a Canadian atomic energy team from 1990 in support of this view. Given your previous work with ANSTO and the Atomic Energy Commission, could you throw any light on this for the Committee?

Professor ALLEN: Again I should give you my qualifications. I have worked in the nuclear field virtually all my professional life, but it is a very big field. One has limited knowledge or acquaintance with many aspects but it is a little bit of semantics about spent fuel. I think you said the EPA recognise spent fuel as being waste. Normally in a kitchen you use stuff and what you do not use is waste, and that gets recycled or whatever. So I think in normal everyday parlance spent reactor fuel would be regarded as waste: it cannot be

used again, it cannot be recycled unless it goes somewhere and undergoes treatment for recycling.

There are different levels of waste: spent reactor fuel is very high level, then there is medium level and low level. Low level we have heard about. In the old days when the companies used to go through sand mining they would generate a lot of low-level nuclear waste which actually did not get too much publicity, but it was always there in the sand. There is really no basis for worry about low-level waste, as has been described already. Australia has to have its own low-level waste repository, it has to have its own medium-level waste. Whether we have a reactor or not there are lots of activities which involve nuclear radiation in one form or another and this, as I said, can arise from just processing normal materials. Uranium mining is a particular case. As I said, sand mining for ilmenite and so on was another case. There are lots of old medical devices which have radio isotopes in them and so on.

I would have to say it has been a farcical situation that Australia still does not actually have its own low-level nuclear waste. This should have happened 10, 20, 30 years ago. High-level, of course, is a very big problem in the United States which generates most of the high-level waste. It still has problems about where to put it, and the "not in my backyard" syndrome is very prevalent in western countries. I am rambling on a bit, but there are these three levels. Intermediate levels are probably the ones that I deal with. I import radioisotopes from Europe. These have like a 10-day half life so every 10 days their intensity of activity decreases by a factor two. So in a few weeks or months the activity is negligible. During that time we have a medium-level problem. We can use these isotopes for a couple of weeks but then they are not usable so they become our waste. We just keep them in the lab and let them decay away. Medium level waste—I am not quite sure of the exact definition but it probably relates to a lot of the practical uses of radiation in this country today.

Then there are things like cobalt sources and the old radium needles that used to be inserted into cancers. These are located in some hospitals or in EPA storage facilities and they are here for a long long time. Not to have a place to put those and get them out of the system I think is highly inappropriate management. Now that could be at Lucas Heights, because these things are not going anywhere, or it could be somewhere else. It is really ridiculous to imagine a country like Australia cannot find a nice out-of-the-way spot to put this stuff and take it out of the system.

CHAIR: I presume that the transport of any high-level nuclear waste should be a major concern because it has severe physical and medical implications from exposure. Am I correct in saying that in your view in terms of low-level nuclear waste there really should not be too much of concern about physical and medical background?

Professor ALLEN: It just depends on the form of that waste. If it is in a liquid form or in a gaseous form, something that can be ingested, then in principle it could be a problem in an accident situation. Coming here today I saw what I believe was a petrol tanker with a trailer as long as the tanker itself. I thought, "God, if that went off somewhere this would be a major problem". In terms of relative risk factors, the transport of, say, low and medium radioactive waste is way down in the relative risk factors that we face every day. The biggest danger of a truck carrying some radioactive waste is the truck itself. The truck is a far more lethal instrument.

CHAIR: Would you be satisfied for someone close to you to handle and breathe in low-level waste?

Professor ALLEN: No, not breathe in.

CHAIR: I am just trying to get this clear.

Professor ALLEN: And not handle without gloves in the future, things like that.

CHAIR: I think this is a very important point. It is a really contested issue. One of the issues that is raised with us constantly is an accident with something like a petrol tanker and the fact that even concrete burns and would lead to exposure. That is a contested point. What about intermediate level waste? Are there any extra concerns that you would have?

Professor ALLEN: With intermediate-level waste I could not tell you what those levels are off-the-cuff but we are dealing with substantial amounts of radioactivity in a localised place. If for some reason that escapes, it gets exploded, and you have an envelope of contaminated air or product going into a local area, then this would pose serious health problems.

CHAIR: We have been advised that included in the proposal for the material to be transported to the repository in South Australia, included in that mainly low-level waste would be also intermediate-level waste. Is that something that would lead you to be more or less or not concerned?

Professor ALLEN: I would not be more concerned; I would expect there would be a higher level of protection with medium-level waste. Just this week we received an isotope from Europe. It comes in a lead shield in a cardboard box. It is just carried around. It comes by plane. Sometimes you might need a marked car to transport it after it is taken off the plane. It is quite high activity but it is in a very confined space and it is easily shielded. But if that shield was broken and the stuff got out and people were contaminated or if there was ingestion, because this is an alpha emitter—alpha particle radiation is more toxic in terms of inducing cancer—then you

would have a serious local problem. But I guess it has all got to do with the balance of probabilities and expenses and so on and the relative risk.

The thing that I find is really inappropriate in modern society, modern government and many organisations is that they do not have a concept of relative risk. No-one asks how something compares with what is being accepted every day. We are really living in a very risky social environment. Decisions have to be made with respect to the existing risks we face. When you talk about spending millions of dollars on controlling a low-risk problem when you do not spend much more than that on controlling high-risk problems such as the natural incidence of cancer then this is a perversion of our value system and our expenditures.

Mr MATT BROWN: Professor, we have been told that in the day-to-day work of ANSTO low-level protection, which is the bulk of it, generally will be facemasks, gloves and gowns. I can picture that and understand that. I am not too sure what intermediate-level wastes and isotopes are. Do they generally come in a liquid form or are they solid pellets? We heard that there were thorium and maybe some radium pellets that would be described as intermediate-level waste. For transportation those pellets would be encased in concrete. Could you please inform me—some other members of the Committee may also benefit from this—what we are actually talking about when we are talking about radioisotopes and low-level waste so that I have a mental picture of the physical stuff we are talking about?

Professor ALLEN: Most of the radioisotopes that are used in nuclear medicine are unsealed sources. So they are in a liquid form. It is injectable into the human body. In industry, most of the sources used are solid sources. They will be encapsulated in stainless steel, titanium or something like this. In radiotherapy and now in brachytherapy solid sources are implanted into the body. Again, these may be metals or encapsulated in stainless steel. So if something is encapsulated for its use it is pretty safe. The radioactivity inside is unlikely to escape. But gamma radiation still comes from it. If it is an unsealed source this is something that can be ingested or inhaled. It is used in humans for cancer therapy. But the people who use these isotopes need to be careful that they are protected from accidental spills and things like that.

Mr MATT BROWN: How would the liquid types be transported and stored in waste? I understand that the pellets are encapsulated in concrete if they are intermediate-level waste. Would liquid also be encapsulated in concrete?

Professor ALLEN: What is in the liquid form would be relatively short lived. In the case of the molybdenum-technetium generator, and in the case of the generator we use, which is the actinium-bismuth generator, the mother, the long-lived isotope, is a solid and we elute the daughter product from that by passing a liquid through it. A solid is still left. But what we get out of it is

now in a liquid form, but this is short lived and then this becomes injectable. We label an antibody or protein with it. So I would not have thought that there would be too much liquid waste involved. I stand to be corrected on that. There might be other applications of which I am not aware. But in the medical area I would not think that there would be any liquid waste.

Mr IAN SLACK-SMITH: Professor, all through this process, as Mr Lynn said a while ago, there is an emotional problem and a fear with this topic. I think the biggest problem is that people just cannot get the facts. Is there a way of actually measuring radiation with a machine which is foolproof which can be taken to the components to determine the level of radiation in containers?

Professor ALLEN: Yes, certainly. There are a number of different techniques for measuring different types of radiation. These are well established. In terms of being foolproof, or fooled with, that is another problem. The International Atomic Energy Agency does this sort of thing all the time in trying to monitor reactors, fuel elements and so on. This is what they are having a problem with in Iran at present. Basically, if you have access to a radiation source then it can be characterised with precision.

Mr IAN SLACK-SMITH: And would it be difficult to give these measurements out to the general community comparing the readings with everyday occurrences in life? There is a huge fear of "nuclear". Can that be done? Can we compare apples with apples, compare that with something with which we are all familiar—for example, a heater or sunburn or whatever?

Professor ALLEN: With a little bit of care to make sure you are comparing apples with apples you can talk in terms of natural background radiation, as you have already done today. But it does require a bit of care to make sure because natural background radiation is mostly gamma rays arising from radioactive materials and cosmic rays from the sun. Now we have nuclear medicine procedures that are another component included in the average radiation that people receive. But that is generally outside the body. If that radiation is put into the lungs or digested it may have a probability of inducing a secondary cancer because of where it is located in a particular organ. So we have to be a little careful about what we are comparing. But that is like comparing apples and oranges. So if you are talking about natural background radiation and the radiation emitted from most of these shielded sources it is gamma radiation. That can be quite easily compared because it is not something that can be ingested.

Mr IAN COHEN: You mentioned past processes in sandmining. Would you not agree that there has been a history of poor reporting on these nuclear issues, particularly with sandmining? Whilst the residues are relatively low-level radiation, there is that unknown quantity that you mentioned yourself—inhalation, ingestion, embedding of even relatively low level radiation particles

in the dust. Radon can have significant health implications despite being technically low-level and reading on a Geiger counter as a minute dose.

Professor ALLEN: I have worked at Lucas Heights, for many decades. The procedures there have always been, to my knowledge, spot on. It is professional handling of radiation. That is an entirely different situation from sandmining on the beaches. I do not even know whether in those days it came under the control of the EPA.

Mr IAN COHEN: But you did mention that was low level. Perhaps we could equate sandmining on the beaches a bit with transport in that it is out in the environment. Accidents do happen. We have had a lot of discussion in this Committee about that. This leads me to another question. You said that it is less dangerous than petrol tankers. We are agreed on that. We have had the discussion about petrol tankers hitting one of these trucks. It is a possibility. But is it not a demonstration of the pernicious nature of the material that a petrol tanker accident can be a disaster in the short term but this material could be a long-term disaster?

Professor ALLEN: If we are talking about low-level waste and you had the explosion of the petrol tanker it would be dispersed and I would be fairly confident that the worst activity would be still low level.

Mr IAN COHEN: Does that not contradict what you were saying before in that you say that you are fairly confident that it is low level but if it is dispersed in the environment where people are—

Professor ALLEN: Yes, sure.

Mr IAN COHEN: In many industries there is that inhalation factor—I referred to underground uranium mining. It is relatively low level but it accumulates. People do not have to inhale a lot of this material. We cannot really quantify the impact because it will hit people many years later. That is the sort of thing that worries people regardless of the level. Would you not agree with that?

Professor ALLEN: I would not disagree with it.

Mr IAN COHEN: That means you agree with it. The Committee takes your point about containment within medical and science situations in the laboratory, but is it not a fair call that accidents do happen and the material is being transported through the environment so we are dealing with a different scenario very much in line with what you were saying about sandmining?

Professor ALLEN: I should make the point that if you ingested some radioactivity that will have a really low probability of inducing secondary

cancer in your lifetime—1 per cent or 0.1 per cent, or one in a million—then this is not a significant event. It still depends on the probability of inducing a secondary cancer. If you have a low-level source, in this explosion it will be dispersed more. My answer to your first question really was that I would have expected the dispersion of the activity would make it very unlikely to have that concentration. On the other hand, if it is just broken up and a kid comes along and picks up something and sucks on it then that is a different thing.

You are not having aerosols and vaporisation. The containment is broken, bits and pieces of stuff are left lying around. Someone can pick it up and put it in their pocket. This is a different situation. The transport should be controlled in terms of the maximum possible accident. Under those terms you try to work out what can happen in the maximum possible accident. You work back from that to establish what containment you need to have. You should be able to drop a container from a height above the ground without its breaking. You should be able to put it into a fire without its melting. These are the international standards set up for transport of radioactive waste at different levels.

Mr IAN COHEN: Obviously, you have been involved in the transport of medical isotopes?

Professor ALLEN: Yes, just at a small level.

Mr IAN COHEN: Still, have you experienced accidents, losses, any issues—maybe they have been contained and dealt with properly?

Professor ALLEN: No. The biggest problem we have is if the source gets offloaded and is sitting at the airport and is costing us thousands of dollars.

Mr IAN COHEN: Professor, could you perhaps enlighten the Committee on the alternatives to the reactor for medical purposes? Is there an opportunity there that the Government could take in an effective alternative direction?

Mr MATT BROWN: Yes, do we need the new reactor?

Professor ALLEN: I have expressed my views on that previously.

Mr IAN COHEN: For the Committee and for the record, if you would.

Professor ALLEN: Medically I do not believe the new reactor is essential. But there may be other reasons why the Government wants a reactor. Having said that, it is fallacious to say that all those isotopes can be produced on accelerators. The reality is they cannot. The molybdenum technetium generator for the foreseeable future has to be produced in a

reactor. That can be and has been imported from all round the world. I believe there is at the present time and in the short-term future excess capacity to produce that generator. So, I do not believe that is a particular problem. Accelerators can produce other types of isotopes which have a role, a role of increasing importance, like positron emission tomography.

Mr IAN COHEN: You said it was not necessary for medical purposes as such, given imports and alternative means. What other purposes would you see this new reactor as being most effective for?

Professor ALLEN: What the real reason for the new reactor is really is a matter for the Federal Government. I believe I know what the reason is and in that sense I probably concur with it, but I think it was inappropriate to claim that it was required to save lives with nuclear medicine.

Mr IAN COHEN: Then what would be the reason?

Professor ALLEN: I am sorry, I am not prepared to say that.

Mr IAN SLACK-SMITH: Industrial-medical, what is the breakdown, percentage wise?

Professor ALLEN: I probably really cannot answer that. Just off the cuff I would say probably 80:20, or something like that, 90:10.

Mr IAN SLACK-SMITH: Medicine?

Professor ALLEN: Yes, predominantly it is in medicine. Again, if you want to specify given isotopes like cobalt, that would be 100 per cent industrial these days. That used to be used in medicine but today it is industrial.

The Hon. CHARLIE LYNN: You said that Australia must have a low-level and medium-level storage facility whether we have a reactor or not. We can look at the need for storage of low-level and medium-level waste, and whether we should have a reactor and the implications it has for high-level waste is really a separate argument? Could I have your comment on that?

Professor ALLEN: The generator really generates high-level waste. Its products then go into the community where they become medium or low-level waste. But if we are having accelerated produced radioisotopes, that normally develops very shortly but high-level waste. If for some reason you have to come into the accelerator and remove the target and get in—if there has been some disaster—where do you put this stuff? There is activity all around us and any industrial process that happens to aggregate that activity into a smaller volume, then it becomes waste. As I said, we still have things like radium needles, cobalt sources, smoke detectors. Everybody has a smoke detector in

their house, or they should have. There is a little radioisotope up there and what you do with the old smoke detectors?

The Hon. CHARLIE LYNN: The reason for that question is that we have heard from various people that there is a perception out there and a fear of the word "nuclear" and "nuclear waste", and there has been a call for more education as to what it is. Do you think it would help that perception if we were to tell them somehow or some way in layman's terms that there is a need and a national need for a low-level and medium-level waste storage facility separate to the issue of the reactor? It seems to be the reactor and the high-level waste, and the possible reasons for the reactor and so forth, that cause a lot of this community concern.

Professor ALLEN: I think it would be quite appropriate to take that view. Radioactivity is part of the environment. It always has been and always will be. We need to be able, as required, to dispose of that activity in appropriate disposal sites. The smoke detector thing is a classic one. Most of us do not realise we have a radioisotope up there. They break down, and what do you do with old smoke detectors?

CHAIR: What would you do with the high-level nuclear waste that is produced in Australia?

Professor ALLEN: I am probably a little bit of a hawk on this, not because I am naturally a hawk, but we export uranium. I think politically it would be to Australia's advantage to have complete control of the uranium fuel cycle. This is pretty hawkish and I do not work at Lucas Heights anymore, I just work in a little hospital department, but in terms of technology, employment, economy, we are still the biggest uncommitted source of uranium in the world, I believe. If we were doing the enrichment, if we were doing the fuel element fabrication, exporting, taking the fuel elements back—this is very hawkish—treating those fuel elements, separating the waste, putting it into the incinerator or whatever, putting it into deep-level waste disposal units in this great continent of ours—and this is a great continent we have, it is really big, believe it or not—this would be bigger than tourism.

CHAIR: What about the high-level waste we have now?

Professor ALLEN: We have now?

CHAIR: Yes.

Professor ALLEN: I believe there are contracts for that to be exported to overseas countries for treatment. The thing about our own waste, if we export our own uranium and then we bring it back again as waste, we are controlling that and it cannot be taken out of the cycle and used for other purposes. That is my point. For ultimate security, for Australia's ultimate

nuclear security, to completely control our own uranium movement from the beginning—from the alpha to the omega—would be to my mind economic and secure. We do not have the capability at Lucas Heights to do that, so it has to be exported. Transporting high-level reactor waste is a serious business. It is done all the time. The International Atomic Energy Agency has its codes, and so on, and everybody has to abide by those codes. It is still open to a bit of terrorism here and there, and that is the cause of the problem.

(The witness withdrew)

COLIN STEWART KEAY, Retired Associate Professor of Physics, 241 St James Road, New Lambton, and

GRAEME LINDSAY HANNA, Former employee of the Australian Nuclear Science and Technology Organisation, 39 Kiwong Street, Yowie Bay, affirmed and examined:

CHAIR: Thank you both for appearing today before the Joint Select Committee on the Transportation and Storage of Nuclear Waste. We have received submissions from both of you. Is it your wish that those submissions be included as part of your sworn evidence?

Dr KEAY: Yes.

Mr HANNA: Yes.

CHAIR: Thank you. Would either of you like to add to or elaborate briefly upon your submissions or make an opening statement?

Mr HANNA: We have agreed that I will lead off. Mr Chairman and Committee members, thank you for this opportunity. It is my view that Australia's radioactive waste should be placed in a small number of facilities where the sole operational focus is the safe and secure management and control of those wastes rather than in a multiplicity of sites where the primary objective is not the care of the waste but the utilisation of the radioactive materials from which the waste derives. This could also have further benefits in the long term because the single operational purpose will remain in the sight of both government and the community, whereas the multiplicity of sites, where wastes are currently produced and stored, might be subject to program and operational change and even closure.

My opening statement is much longer than I have time to present so I will address the major issue. I had not met Dr Keay until this morning and it is interesting that our two submissions both start from the same point: namely, we both have a real concern that over many years anti-nuclear groups have endeavoured to engender in public opinion an exaggerated fear of ionising radiation. In fact, these groups are now accusing the pro-nuclear groups of minimising the hazard associated with radiation. But is this really a case of minimisation by the pro-nuclear groups or exaggeration by the anti-nuclear groups? I believe it is important to ask and to consider to what extent is it true or to what extent, if any, do the claims of anti-nuclear groups exaggerate or misrepresent the level of public concern over radiation issues?

I raise these questions because Sutherland Shire Council, in hearings before this Committee, in its own publicity documents and in the press, has

been a major voice in opposition to the replacement reactor and the continued generation of nuclear waste at Lucas Heights. To this end, it has recently given publicity to a poll of residents taken in June this year, which, the council claims, shows high levels of public concern about radioactive waste and the replacement reactor. According to the mayor of Sutherland, this poll was conducted with rigorous methodology. I am not the first to challenge this claim, and I think the Committee should be aware of certain aspects that call into question both the mayor's claim and the purported implications of the results.

First, the poll was devised and conducted by the council's own strategic planning unit, not by an independent polling organisation. Secondly, the "concern" is a complex psychological reaction. It can be entirely subjective and it depends closely, and perhaps even inversely, upon how well the poll respondent understands the issues in question. In this case proper understanding also involves technical aspects. The poll sample size was okay but an attempt was made to weight the sample to lower age groups by requesting that the household respondent be the person nearest to, but older than, 16. This could have biased the sample away from older groups, who have lived in the shire during the life of the Australian Atomic Energy Commission and the Australian Nuclear Science and Technology Organisation [ANSTO] and who believe there has been no impact on their safety. In any event, this attempted weighting did not work but there was a quite significant gender bias, which has not been admitted to in council publicity of the poll, with 125 females questioned for every 100 males.

When asked what percentage of Australia's nuclear waste is stored at ANSTO, 68 per cent of respondents got it wrong and 20 per cent said that they did not know—that is a total of 88 per cent. When asked where waste generated at ANSTO is now stored, 55 per cent got it wrong and 9 per cent did not know—that is a total of 64 per cent. The analysts then adjusted these figures by discarding the "don't know" answers, which pushed the results more in their favour. For questions exploring levels of knowledge, to discard such answers is completely unacceptable. The results of these questions about where waste is stored at present reveal a very low level of knowledge. Therefore, if we, the public, know little about that is it not likely that we know no more—and probably less—about the more technical aspects?

In questions seeking respondents' levels of concern about certain waste issues, the polling procedure drew almost entirely on the respondent's own knowledge of the issues and made no attempt to assess this. My final observation about the poll is that one result shows—I quote from the council's report—that: "Overall, the levels of concern are higher for the on-site storage approach relative to the transport approach". This means that a majority of people are in favour of moving it away from Lucas Heights as opposed to keeping it there. This result is opposed to the now-revised council policy—compared with its policy prior to the replacement reactor—and has not been

mentioned at all in council publicity of the poll. What, then, do expressions of concern really mean in a poll such as this? In contrast with the council's poll, Mr Bruce Baird, MHR, has reported that private polling done for him by a leading market researcher found that only 2 per cent of respondents saw the reactor as an issue of concern.

I understand that when asked to list their issues of major concern, only 2 per cent of respondents placed the reactor among their top five. It can also be asked: If there are such high levels of concern about nuclear issues, why has the population of the shire increased steadily from 183,000 in 1986 to 215,000 in 2002—the years over which the nuclear debate has been vigorous? In conclusion, I earnestly ask that if the Committee wishes to consider this council poll in its deliberations it does not do so without having the methodology and the results reviewed and assessed by a professional independent body that is competent in formulating and conducting opinion polls. That is the end of my prepared statement but I have a few comments that I could make about several issues that have been aired this morning. I would also dearly love to tell the Committee about how ANSTO saved this building from collapse many years ago through the use of radioisotopes.

CHAIR: Mr Hanna, I will ask you to finish your opening statement and then I will invite Dr Keay to speak.

Mr HANNA: My first comment relates to the issue of moving fuel rods from Lucas Heights. The press report that I saw in the *St George and Sutherland Shire Leader* said that all councils affected by the movement have been informed. Secondly, my understanding is that waste will be solid when transported so the chances of ingestion and inhalation are very small. That risk and probability is far greater with the everyday transport of radioisotopes, which we are currently living with. As I said, I think the form of waste will be solid but I do not think the Committee has had the opportunity to consider the code of practice that the Australian Radiation Protection and Nuclear Safety Agency [ARPANSA] is still developing regarding the preconditioning of solid waste for storage and disposal.

I think it is called predisposal management for the storage and disposal of nuclear wastes. I think the Committee, if it can, should contact ARPANSA about that to see what it entails. Regarding Mr Ian Cohen's concern about the hazards of dispersal from wastes, I think this is possibly answered by the attachment to waste will be solid when transported so the chances of ingestion and inhalation are very small. That risk and probability is far greater with the everyday transport of radioisotopes,

CHAIR: Dr Keay, would you like to make an opening statement or any comments before the Committee takes questions?

Dr KEAY: Thank you, Mr Chairman. I should perhaps explain why I am involved in this. As I said at the outset, I was an associate professor of physics at the University of Newcastle for a quarter of a century. Among other things, I was required by the head of the department to teach nuclear physics, which I taught as a theoretical subject. In 1977 I was somewhat polarised by some quite outrageous claims in the *Newcastle Herald* from the Ecology Action Group of the Trades Hall in Newcastle. I had the task of trying to explain the situation to my students, who were naturally curious about this. I finished up by writing a rebuttal of the claims. This continued for a couple of exchanges, until the editor called a halt.

I said to the students that as they were graduating in physics, having had some nuclear physics there were a lot of these questions that they would be required to answer. They came right back at me and said, "Look, you have taught us about theoretical nuclear physics—alpha, beta, gamma radiation and fission processes—but you have not said anything about how reactors work. And that is the nub of the issue: how reactors work, what they produce, and so on." So I took the opportunity, while on leave in Canada, to visit a major nuclear power station at Pickering near Toronto, and came back with a complete set of handbooks and guides. I then commenced a 10-lecture elective to honours students, that is year 4 students, on applied nuclear physics—in other words, reactors and how they work. It proved to be a very popular course. I continued with that until I retired in 1993.

My purpose in doing that was to try to get across a few points about reactors, radiation and so on that are not usually covered by the university curriculum, apart from in a few places like the Australian National University, and Melbourne and Sydney universities, principally New South Wales. Of course, some members will be aware of the legacy there from Sir Philip Baxter and his influence in the early days. That led me to start challenging the claims of the antinuclear people. Just over two years ago I published a book called *Nuclear Fallacies* in which I drew attention to 40 of them. I followed that with the orange-covered booklet that you all have, trying to give the facts about radiation. I have written two books since then. The latest one, *Nuclear Common Sense*, encapsulates the closing remarks of Professor Allen. But I will not go into that, because it is getting highly controversial.

I am making the same point as Professor Allen: that Australia should stop exporting raw uranium as yellowcake and should get into the nuclear fuel cycle where we have control over it from A to Z—in other words, we can comply with the provisions of the Nuclear Non-proliferation Treaty and occupy the moral high ground on this issue. To get back to the inquiry of this joint Committee, having just given you some idea of where I stand on these issues, in the space of three pages I have tried to point out some of the problems and hazards that this Committee faces in trying to arrive at its judgment on the issue. I support the transport and storage of nuclear wastes provided sensible

precautions are taken. When I say "sensible", I consider that they should be no more stringent than current practice, which is far too stringent.

I quoted Professor Jaworowski in this regard. In other words, the amount of money that is spent on overprotecting nuclear waste in the transport of it cannot be justified. As Professor Jaworowski points out, to comply with the United States regulations, which are similar to our own—or I hope they would be similar to our own, in the sense that they will not be exceeded—each life that is hypothetically saved costs about $2.5 billion. This is a staggering sum, and it can't be justified. When you start looking at the facts of the matter, the number of lives that have been lost through the transport and disposal of nuclear wastes is essentially zero. When did you hear of an accident that caused loss of life through radiation from the transport of nuclear wastes? There are millions of examples of transporting nuclear wastes around the world, and I have yet to read in the newspapers any claim to the contrary.

There have been some accidents, such as those in Goiánia, in Brazil, where scrap metal people cracked open a nuclear source. There was a similar accident in Juarez, in Mexico. These are deliberate tampering is not with nuclear waste but with nuclear sources that have been cracked open to get at the radioactivity within them. Nobody can take into account the fact that people will crack open a cask, a drum or whatever in order to expose the wastes. People try to keep money safe in a big steel safe. Safe crackers will come along and have a go at it because they want to get at the contents. When you have people who are willing and want to create a nuclear furore, one of the ways of doing it is to take what otherwise would be adequately protected wastes and expose them.

Notwithstanding that, one has to keep in mind the fact that we live in a radioactive environment. By world standards, the background radiation here is low, only about two millisieverts per year. When you go up to the granite highlands—Inverell, Glen Innes, Armidale—it is much higher. When you go to other parts of the world, it is more than 100 times higher. Yet, we are worried about the trivial one millisievert or so of excess radiation. If there is an accident with a nuclear waste shipment, the concern of Dr Murray as to the lack of time to deal with the danger is rather nonsensical, because the level of exposure of people nearby would be so low that even if it took several days to assemble the investigatory team it would scarcely do any harm to bystanders and people even quite close to it—provided, as I said, the regulations were complied with as far as containment and the proper provisions for shipment are concerned.

I am going to be a bit hawkish here, to use Professor Allen's expression. I am going to make a claim which has been so adequately supported by research over the last couple of decades that I feel I hardly need to air it, because it was in the newspapers last February. Moderate doses of radiation—

that is, up to 100 times the natural exposure—can be positively healthy to human organisms. Of course, that flies directly in the face of the claims by the antinuclear people, but it is emerging as a fact. Last February there was a headline in the *Sydney Morning Herald* quoting an article on nature which spoke of an effect called hormesis. Calabrese and Baldwin, two researchers in Massachusetts in the United States of America, have worked on this and they have actually uncovered more than 5,000 examples of chemicals and agents otherwise considered to be toxic which actually are, in moderate doses, healthy.

What we are doing here is turning full circle. It is really quite amazing. Before the Second World War, when nuclear physics got a bad name due to the bombs, many people believed that exposure to radioactive materials in health spas and so on was positively health giving. People flocked down to Victoria, near Daylesford—I think it is called Hepburn Springs—to partake of the healthy radioactive emanations. Within reasonable limits, radiation is health giving. In fact, studies of a completely unintended accident, if you like, in Taiwan were discovered about 20 years ago to be quite alarming, in that the steel used in the construction of a lot of flats and apartment buildings was steel that had been accidentally contaminated by cobalt 60. That made the steel radioactive, and it meant that the people living in the apartments were getting a much higher background radiation dose.

What has happened? It has been found that for that given population of 10,000 or so, instead of about 200 cancer deaths there are only seven. In other words, the incidence of cancer was reduced greatly by the additional radiation. That is in accord with this process I have referred to, called radiation hormesis. The evidence for that now is quite overwhelming. Books have been written on the subject. But it takes a long time for people to come to grips with something as revolutionary and mindboggling. I deal with that in the orange-covered booklet, which I hope you have all had a chance to read. It is called "toxic biphasic response". When you start looking at it carefully, particularly in light of trace elements and so on, it then becomes quite sensible.

This has been the life's work of Professor Peter Parsons, an emeritus professor from La Trobe University. He has spent all of his life investigating the effect of toxic doses of various agents in biology. He is an environmental biologist. He has written papers which show that excess radiation can be health giving. He concludes that the LNT premise, which is the one that has been held for many years, that danger is proportional to dose—in other words, there can be no health-giving effect—is quite wrong. He is now firmly on the side of hormesis effects. He says that the LNT premise is invalid for all environmental agents, including ionising radiation.

One of the people who spoke earlier referred to the so-called experts, while disclaiming great expertise on her own part. When you have people who

have devoted their lives to serious studies of these matters, to rather disparagingly refer to them as so-called experts when they have established their expertise over several decades of long and dedicated hard work is rather insulting to them in my view. Sidetracking a little if I may, that is one of the reasons why I feel so strongly on this issue. Having taught students nuclear physics and nuclear reactor physics, many of my students have gone on to work for ANSTO, and in hospitals and places where they are dealing with radiation. To categorise people who speak out on these issues as so-called experts is insulting to the students I have taught and for whom I have the greatest respect for their intelligence and integrity. That is one of the reasons why I feel so strongly on this issue and have appeared before this Committee.

CHAIR: I ask this question so that the information is clear in my head. From what you are saying, immediately opposite the Lucas Heights reactor is a large tip, and, rather than transported low-level waste all the way to South Australia and go through all the problems, would you regard it as being reasonable to simply put it on a truck and dump it across the road in the Sutherland tip?

Dr KEAY: In the light of what we know about the effects of radiation, I would say that one would hardly notice it, from the point of view of radiation danger to the surrounding people. In my view it could be dumped there pretty safely because the radiation levels in the vicinity would be no greater than those that the inhabitants of Glen Innes and Armidale enjoy every day.

CHAIR: This is not a facetious comment. I am just trying to get it clear in my head. Taking that one step further, given the health promotional aspects of the waste, would it in fact be possible to actually allow residents of Sutherland or maybe surrounding areas to gain access to that, and maybe put it in their gardens rather than waste it in a tip?

Dr KEAY: Even if they made their bed on it and slept on it, I think it would still add to their health, or contribute to their health.

CHAIR: So in fact it would be wasteful to transport it and not make it available to local residents?

Dr KEAY: I would go so far as to say that what has been discovered about radiation hormesis over the past couple of decades would certainly underscore the truth of that situation.

CHAIR: I will open the discussion to general questions.

Mr HANNA: I have some figures which may be of interest. These are figures that were given to me the other day, made independently of the Australian Nuclear Science Technology Organisation [ANSTO] by the Australian Radiation Laboratory, which is the precursor of ANSTO. Average

radiation levels in the Australian Capital Territory in microsieverts per year was 1,055. In Western Australia, it was 1,120. In New South Wales, the Northern Territory, Queensland, South Australia, Tasmania and Victoria the levels were all lower than that. On the ANSTO site within 200 metres of the reactor, the radioisotope processing area and the main storage for low-level waste, it was 1,240 microsieverts for the year, and that is just slightly above the Western Australian level. The average on the ANSTO site is 850. For local houses beyond the 1.6 kilometre exclusion limit, it was 880.

CHAIR: Thank you for that. That is very important.

Mr HANNA: I can table those, if you wish.

CHAIR: Thank you. That would be invaluable.

The Hon. CHARLIE LYNN: Dr Keay, earlier you heard that Professor Barry Allen said that we should be looking at the concept of relative risk; that there is no concept of relative risk. Perhaps this is something that this Committee should recommend be addressed, but where would you put the transport of low-level waste that we are talking about, that is currently stored at Lucas Heights or intended for the site, on the scale of relative risk in regard to other hazardous material that is transported across the Blue Mountains on a daily basis?

Dr KEAY: Extremely low. When you talk about relative risk, the public misconceptions in this area are quite astonishing. Generally the public has been spooked by the antinuclear people. There were some investigations of relative risks carried out in the States where people were asked the relative risks of a whole host of things, from riding a bicycle to being unmarried and this, that and the other. Nuclear fears came right down at the bottom of the list as far as scientific investigations were concerned. They were at the top of the list where students were concerned and where housewives filled in the questionnaires. In other words, the public perception in this area is totally at variance with what has been established by risk evaluation experts.

One of the leading ones is Professor Cohen who is formerly of the University of Pittsburgh and who has investigated this in great detail. If you look at the table in the centrefold of the orange booklet, you will see that the danger from living near a nuclear power station is very, very low in terms of its danger compared to other things like foods and just the sheer joy of living, which gives you more radiation than from a nuclear power station. As far as hormesis arguments are concerned, one could mount a good case that nuclear power stations should squirt out much more radiation than they are doing.

Mr IAN COHEN: Dr Keay, you have said that research reactors are some 110 per cent safe. Did I quote you correctly?

Dr KEAY: When did I say that?

Mr IAN COHEN: I do not know. I just have noticed that you actually said that, that nuclear research reactors are 110 per cent safe.

Dr KEAY: I have been misquoted.

Mr IAN COHEN: You have been misquoted and you have not ever said that?

Dr KEAY: I disclaim having said that.

Mr IAN COHEN: How safe would you say a nuclear research reactor is?

Dr KEAY: One can only evaluate safety and risk on the basis of experience. World experience as far as research reactors are concerned is that they are somewhat over 99 per cent safe, probably approaching 100 per cent safe.

Mr IAN COHEN: Are you aware of any fatal accidents associated with nuclear research reactors?

Dr KEAY: Not apart from military ones. There was a military accident in the United States where three people died and the investigation of it suggested that it was actually a murder-suicide on the part of one of the three operators of that reactor.

Mr IAN COHEN: You quote in your booklet at page 30 Councillor Genevieve Rankin stating that "the Lucas Heights reactor is another potential Chernobyl disaster waiting to happen". I understand that you have asserted that that has been said a number of times by the councillor. Can you source that quote?

Dr KEAY: Yes. In fact I have been pulled up on that one by a gentleman whom you probably know, a Dr Jim Green, who took me to task in the correspondence columns of the *Daily Telegraph* on that particular issue. If you look at the back of all of my four booklets, you will see a statement "Every effort has been made to ensure the accuracy of the material", and "If an error is detected the author will be pleased for it to be identified and be advised of the more authentic source". I stand by that.

Mr IAN COHEN: What is the source of that quote?

Dr KEAY: May I finish? I was driving somewhere—I have forgotten exactly where—when I happened to turn on the car radio and I heard a radio talkback session. I heard a woman's voice make the statement that is reported there. Later in the broadcast, I was curious to know who it was, and it was Ms

Rankin who made that statement. My recollection of the statement was very clear but I did not jot down exactly the time and place and I have since looked for it. So what I have done is, in subsequent issues of the green book—which you have obviously got, of the fallacies that have been put out by the antinuclear people—I have corrected it with a sticker.

Mr IAN COHEN: You say "fallacies by the antinuclear people". I have been informed that that statement has not been made. You have put it into print, clearly stating that the statement has occurred, in your own book. Do you have a referral point? It is not hard to find a radio station and find the actual quote from the transcripts. We do it regularly in the Parliament. Do you have a reference point for that quote?

Dr KEAY: I have looked for one and not found one, apart from the anecdotal evidence of other people who claim they have heard it, too.

Mr IAN COHEN: Anecdotal evidence is one thing, and a reference is another. Dr Keay, you are a scientist. Surely, when accusations are made against a public person such as Councillor Rankin, it is reasonable, if we are going to gain credibility from statement that you make as a scientist, that you would simply be able to reference that quote.

Dr KEAY: I wish that I could because of the 40—

Mr IAN COHEN: I wish you could, too, because if you cannot, then surely it is a reasonable thing that you do not accuse people of saying things that you cannot prove.

Dr KEAY: I have corrected that.

Mr IAN COHEN: Is that not a scientific position to take?

Dr KEAY: I have corrected that in all subsequent sales and presentations of that booklet. There is a sticker in it which corrects it to the point where I take another quotation, which I have got in print from the mayor of the Sutherland shire, and the statement made is along the same lines.

Mr IAN COHEN: You say you have a sticker. I do not have the sticker.

Dr KEAY: No, of course you have not.

Mr IAN COHEN: Dr Keay, I am concerned that you have actually misquoted somebody, have not referenced the quote properly, have not got the evidence properly, and you have made a claim like that that really calls into question other evidence that you have given before this inquiry.

Dr KEAY: Can I say that the other 39 points in the fallacies are all referenced, as you will know if you read through them all. They are all definitely referenced. For that one, I relied on my recollection.

Mr IAN COHEN: Dr Keay, I am talking about this particular quote that is here in black and white—

Dr KEAY: Yes.

Mr IAN COHEN:—and that could be considered defamatory.

The Hon. CHARLIE LYNN: Dr Keay, do you have a copy of the sticker?

Dr KEAY: It is in my bag.

The Hon. CHARLIE LYNN: I think that if it does exist, we should have it.

Mr IAN COHEN: Fair enough, but I have the quote here. For the record, what concerns me is that statements like this are made but are not properly referenced, yet we are supposed to take as appropriate evidence before the Committee other evidence.

The Hon. CHARLIE LYNN: Perhaps we could have Dr Keay table the sticker.

Mr IAN COHEN: I would appreciate having the sticker tabled.

Dr KEAY: Thank you. It is on page 30, I believe.

Mr TONY McGRANE: Mr Hanna, Dr Keay has indicated his response regarding the storage of waste where it is at the present moment. In view of the fact that in 50 years there has been no permanent solution of what we should do with radioactive waste, can you enlighten us? In your opinion, should it be transported, or should it remain where it is now with a different type of storage built for it?

Mr HANNA: I am not really concerned about low-level waste staying at Lucas Heights but my preference would be to have intermediate level waste removed to a more remote site. I would hate to think that in 50 years time we have not resolved the issues and got a proper management system going. I understand that the licensing of this new reactor will be dependent upon decisions being made on creating proper waste management sites.

Dr KEAY: Mr Chairman, if I may interrupt, it is on page 30 Ian Thackeray was looking for it.

Mr TONY McGRANE: So you are saying that you think it should be two separate sites; that you think there should be another site, outside where it is at the present moment, for medium level nuclear waste?

Mr HANNA: No, I am not saying that there should be. I am quite happy to see the low-level waste transported to a remote site as well.

Mr TONY McGRANE: What about medium?

Mr HANNA: I would prefer to see that in a remote site, not so much for technical reasons but more for public acceptance reasons.

Mr TONY McGRANE: Perception?

Mr HANNA: Yes, exactly.

The Hon. CHARLIE LYNN: I ask Dr Keay to read onto the record the correction to the statement that he was not able to source, which was referred to by the Hon. Ian Cohen.

Dr KEAY: Yes. I can present a copy for the record, if necessary. The statement is on page 30. Instead of the quotation which I was unable to positively reference, I have said:

> "A core meltdown ... would spread a health-threatening cloud of radioactive gas up to 80km from Lucas Heights."
> *This appeared in 2000 in a brochure to residents from the Mayor of Sutherland Shire where the reactor is sited.*

I then said—and this is in place of what I said about the Chernobyl comparison:

> This implies that Sydney residents are in peril, comparable with Chernobyl. Unlike the HIFAR reactor at Lucas Heights, the Chernobyl reactor was uncontained and its design was inherently unsafe. Reactors very similar to HIFAR and its replacement operate without worries near the heart of large cities like Boston and Munich. Their containment provisions and safety features make the probability of disaster exceedingly remote.

Mr IAN SLACK-SMITH: Walcha is renowned as having the best longevity in Australia. Many inhabitants are well over 100 years old. That is in the New England and Armidale area and in the granite belt.

The Hon. CHARLIE LYNN: They are non-smokers.

Mr IAN SLACK-SMITH: That may be the reason for their longevity.

Mr IAN COHEN: This is hardly a scientific discussion.

Mr IAN SLACK-SMITH: Why do they live longer?

Mr IAN COHEN: Maybe it is the clean air and water.

CHAIR: We are asking the witnesses questions. Honourable members will have their say in the final report.

Dr KEAY: Many studies have been done comparing populations in high-radiation areas and low-radiation areas. They have come out in favour of high-radiation areas. A careful study compared people living in the gulf States of the United States and those living in States such as Colorado, which is elevated and therefore gets more cosmic radiation and higher background radiation. The cancer incidence in those States is much lower than in the gulf States. That study involved hundreds of thousands of people investigated over a long period.

Mr HANNA: One of the proposed new methods for producing power is to extract the heat from deep rock or hot rock; that is, deeply embedded granite. I have had some arguments with a friend about this. I believe that if this technology were to go ahead it would also produce radioactive wastes, just as our oil industry does. It is not commonly known or recognised that a group of naturally occurring radioactive materials exist. They occur particularly when liquids are injected into the ground or brought to the surface. Radium 226 is one example. They build up in the deposits that form in those systems. It is quite likely that even though hot rock is being touted as an alternative and sustainable energy source it will produce radioactive wastes.

CHAIR: I have asked this question of other witnesses. Should the committee look at any countries or facilities, particularly overseas, that are involved in the transport of low-level and intermediate-level nuclear waste? Should it be looking at a particular model to recommend for the transportation this waste?

Mr HANNA: I cannot remember how many sites there are in the United States, but there are many. The low-level waste facility in England currently being used is at Drigg near the Sellafield plant. To my knowledge, there have been no problems with the disposal of waste at the Drigg facility, other than the fact that it is filling up. They anticipate that there will be liquid runoff from the site and they have set limits for the amount of radioactivity that goes into the nearby river and a drainage system on the site. The figures I have seen have been favourable; they have not exceeded those limits. France uses similar technology. The first low-level facility built in France is pretty well filled up. It has 500,000 cubic metres of waste. They are now constructing a second one of a similar design. They are similar to the proposal for the Woomera low-level plant. I cannot say anything about intermediate-level storage. They are based on radiation shielding for safety.

CHAIR: Thank you both for appearing before the committee today.

Mr HANNA: I will table my statement.

CHAIR: You have put some very interesting points of view. I have found them thought provoking. I will reread your submissions with great interest.

(The witnesses withdrew)

GRAEME ARTHUR JOHN TICKNER, General Manager, Gundagai Shire Council, P.O. Box 34, Gundagai, and

LEON MATTHEW PATTERSON, Manager Shire Engineering, P.O. Box 34 Gundagai, sworn and examined:

CHAIR: Thank you for appearing today before the committee. We have received a submission from you. Is it your wish that the submission be included as part of your sworn evidence?

Mr TICKNER: Yes.

CHAIR: Would you like to add to or elaborate on your submission?

Mr TICKNER: I apologise on behalf of Mayor Tozer, who is unavailable. I will cover some of the social issues, the community concerns and the matters the council addresses. Mr Patterson will deal with operational matters, particularly as they relate to his role as the State Emergency Service [SES] local controller. We are going to be parochial. We are looking after ourselves and our community. We would prefer that no nuclear waste be transported. We do not have the expertise to enter into the debate about whether nuclear waste should or should not be transported. If it has to be transported, council has to accept that and work as hard as it can to ensure it is done safely. Council's preferred form of transport is the railway. From our point of view that would be the best way to go.

There is little or no conflicting traffic with the use of railway. Given that that may not be the best way to go, and the focus is on road transport, we have a couple of local issues of great concern. The crossing over the Murrumbidgee River is a single-lane road with dual lanes at either end. We have concerns with normal transport. If nuclear waste is transported those concerns will be exacerbated. Coolac has 14 kilometres of single-lane road with dual lanes at either end. That causes conflict and confusion for ordinary motorists. If nuclear waste is to be transported through our area we must ensure that all transport procedures are clear and well communicated, particularly if there is another accident on the highway or an accident with the nuclear waste. We do not expect any diversions through the township. We have been bypassed since 1977 and we like it that way. When transports do occasionally come through the town it is horrific.

Most emergency services are provided by volunteers. We would expect them to be fully briefed. Their safety would be of paramount importance. That includes the SES, the rescue squad, the rural fire service, local fire brigades and ambulances. We do not expect our ratepayers to fund that training and education or to pay for any impact as a result of the transport of nuclear

waste, including diversion of traffic to our roads, which we must fund. Our council is fairly pragmatic; we understand that if it must be shifted, so be it. However, safety is our principal concern. Perceptions often become realities. If we cannot get rid of those perceptions, our communities will be stressed. As I said, we are focused on the safety issue for our community. We are totally parochial and we make no apology for that.

Mr PATTERSON: I am the manager of shire engineering and look after the various roads in the area. I am also the local controller of the SES. We have primary rescue unit that attends about 20 motor vehicle accidents a year on the highway. Many of those accidents involve heavy transport. The concern is that our people are not jeopardised in attending those accidents. We have enough trouble with chemical spills, even though we are not the primary unit responsible for dealing with such spills—that is the fire brigade's responsibility. However, we have a support role. Those incidents involve a significant amount of time. Our volunteers are often off the job for long periods. We want to ensure that, if necessary, appropriate training and equipment is provided and that specialist units are available to attend to these incidents quickly.

We might be considered remote—it took us about three and a half hours to get here this morning from Gundagai. It has taken that long for organisations such as the Environmental Protection Authority [EPA] to come to Gundagai to attend to chemical spills and up to 24 to 48 hours to deal with those chemical spills, in which time quite often the highway is closed, traffic is diverted through our local roads and there is a significant amount of disruption and possible damage to our roads. I do not know anything much about nuclear waste. I can only assume that if it is transported it will be transported safely, that if there is an incident involving one of these vehicles or another vehicle that causes disruption to the transport of the nuclear waste, that it is not going to cause any long-term effect to our community.

We have heard that it may not be dangerous but what about the long-term clean-up effects and disruption in the meantime? If it takes several days or a week to deal with these matters, that is disruption to us. As manager of shire engineering I have to deal with transport problems, highway traffic being diverted through my roads, traffic control, and various other matters that cause us problems. We have had problems in the past with the Sheahan Bridge which is the single bridge that goes along the Hume Highway across the Murrumbidgee River. If it gets closed we have traffic diverted through town for some period of time and it causes all sorts of problems to us; it disrupts what we are doing normally and it also causes possible damage to our roads. That is about all I have.

CHAIR: We have heard this and, once again, it is a contested point, but let us assume that we have low-level waste—I will leave out intermediate or other levels of waste—being transported safely and there are adequate

levels of accompanying emergency services people with that. Your community is told that there are to be more than 100 trucks initially with this material going through your area. What is the reaction of your community? They are told that it is safe, they are told that there will not be an accident and even if there was there would not be a problem because it is safe. I am thinking of things like any effects on tourism. Would your community feel secure with those reassurances? If they are told by all the relevant experts, let us say, are there any implications for your area?

Mr TICKNER: I believe our community would have to be convinced that it is safe, not told. We would have to run through the procedures that are in place to protect them. I suspect that most would accept that if a procedure is in place and it is foolproof they would accept that it has to happen—as long as it is not continuous.

Mr TONY McGRANE: Following on from the question of the Chairman, would you outline any consultation that you have had with the Federal Government in the past in regard to the transportation of radioactive waste?

Mr TICKNER: No, we have not had any consultation with the Feds.

Mr TONY McGRANE: You have initiated none and they have initiated none back to you?

Mr TICKNER: That is correct.

The Hon. CHARLIE LYNN: Given that one is an engineer and one is a general manager, we have to deal in facts in regard to educating and informing the community. Having heard, in particular, the submission by Dr Keay, who I think you would acknowledge is probably an expert in this area, in regard to the positive aspects of radiation and the low level of risk involved in the transport of radiation, has that changed your own view this morning on the issue?

Mr TICKNER: Personally I have not heard enough to be convinced one way or the other.

The Hon. CHARLIE LYNN: You have not heard enough this morning to be convinced by the professor?

Mr TICKNER: No.

The Hon. CHARLIE LYNN: You mentioned the term "actual safety" and "perceived safety" and the perception that it causes community stress. Would you think that education of the facts in regard to the storage and transport of low-level nuclear waste would decrease that community stress?

Mr TICKNER: I believe so, yes.

The Hon. CHARLIE LYNN: Are you aware of the figures that we have been given that there is currently stored, I think 1,080 cubic metres of low-level solid waste at ANSTO which is proposed to go to Woomera, but after that it is estimated that 30 cubic metres a year—which would be one truckload—would be going to Woomera? Would you see one truckload per year as a major concern?

Mr TICKNER: One truckload in itself, no. The emotion surrounding the substance that is being carted is more of a concern perhaps than the safety of the nuclear waste, which I cannot comment on.

The Hon. CHARLIE LYNN: You heard Dr Keay say that the low-level waste we are talking about, even if it was spilt out would just need to be contained within the current regulations, but it would not prevent any danger.

Mr TICKNER: I heard him say that, yes.

Mr IAN COHEN: Mr Tickner, on that matter, your council has not received any definitive information from scientific sources that has clearly indicated the safety of that material either, is that reasonable?

Mr TICKNER: No we have not, and we have not sought it either.

Mr IAN COHEN: And the Commonwealth Government has not delivered that information to your council body?

Mr TICKNER: No, that is correct.

Mr IAN COHEN: Mr Patterson mentioned some 20 motor vehicle accidents per year, mainly heavy trucks. How many of them would have been on the bottlenecking from two lanes to one lane? Is that a major problem in your area?

Mr PATTERSON: The Coolac area has a fair share of road accidents but we still have crashes on the dual carriageway as well. In my time—13 years at Gundagai—the Sheahan Bridge has been closed three times for some period of time. One crash involved two trucks and two vehicles and closed the bridge for several hours. Some of the others involved heavy transport as well.

Mr IAN COHEN: Have those accidents cost council in any way and could you describe the impost on council—quite apart from the injuries that can happen—just in terms of labour cost and oversight costs with your council facilities in the event of an accident there?

Mr PATTERSON: It costs council in provision of traffic arrangements for diversions around the incidents; it costs council in the long-term incremental damage to our roads; it costs council in the disruption to other works that we would otherwise be doing when we have to drop everything and go to these incidents; quite often, if it is after hours, so there are overtime costs. On a couple of occasions we have been able to recover some damage through the Roads and Traffic Authority [RTA] but there are costs that we have not.

Mr IAN COHEN: You have not broken even on the situation?

Mr PATTERSON: We have not managed to recover.

Mr IAN COHEN: Being the shire engineer, would you have a recommended plan in terms of how to convey that waste material or any hazardous material through the shire, and the ability to execute that plan to maximise safety of contentious transport of any sort?

Mr PATTERSON: I do not have a plan for the transporting of that sort of material or any other sort of material. We have plans for responding to incidents and we have plans for diversion of traffic in various areas. We are negotiating with the RTA at the moment along the whole length of the Hume Highway in our area and other areas to come up with a more integrated incident management system for the Hume Highway, which has not been achieved yet. But no, we do not have any specific plans for hazardous or other materials.

Mr IAN COHEN: Mr Patterson, could you describe to the Committee the availability, the time it takes, et cetera, for Hazmat equipped personnel to deal with a road accident in your shire?

Mr PATTERSON: We have a first response fire brigade in Gundagai that can handle the initial callout and they can do that anywhere within the shire within probably 30 minutes. Then they call in additional resources from the area and outside the area to assist them.

Mr IAN COHEN: How long would the lead time for the Hazmat equipped crew to be on site in your shire?

Mr PATTERSON: Within 30 minutes.

Mr IAN COHEN: Hazmat?

Mr PATTERSON: They are Hazmat, yes. The fire brigade has all the Hazmat gear. They have a limited capacity and if it is beyond their control they can call in additional resources from the fire brigade.

CHAIR: We heard evidence when we were in Katoomba from not only a Hazmat firefighter himself but the president of the firefighters union that they would not attend, and they have told their members that they are not to attend, if there is a spillage of nuclear waste. If that occurred, what resources could the council call on?

Mr PATTERSON: The council would not have any other resources.

CHAIR: In terms of the information that you believe council and the local community should receive on transport proposals, what is the minimum information that you believe the local community, through the council, should receive? For example, would you expect to be advised of each individual shipment of waste if it was to occur through your community or would you just like to be advised that something was happening at some point and how much? I am just interested in what the minimum level is.

Mr TICKNER: Given that the community do not know what is going past their doors now I have to try and second-guess. I think because of the focus on the nuclear waste, the community would expect to know when it is going and those who do not have faith in the system then have the opportunity to make alternative arrangements if they think it is necessary. I would hope that if it was going to be transported that would not be necessary.

CHAIR: Once again this is a contested area and I am just trying to get an idea of what information, if any, the council would require in terms of timing. What information at a minimum level would you be seeking?

Mr TICKNER: We would need to know what was going on so that Mr Patterson and his resources could be prepared if something did happen.

CHAIR: There are obvious resource implications you have referred to. Who do you believe should fund those? Would you be looking at funding them out of ratepayers money or would you be seeking subsidies, and how would those resource implications be funded?

Mr TICKNER: The ratepayers are not in a position to fund it even if they wanted to. I would have thought it was probably the Federal Government or whoever owns the waste.

CHAIR: The Committee appreciates you coming all this way today. Your evidence is very important to us and we have read the submission with great interest. I know we have only had a relatively short time but we really appreciate the opportunity of going through this information with you, and it will be used in our final report.

Mr TICKNER: Thank you, Mr Chairman. I know we have not got many specifics but our community does care.

(The witnesses withdrew)

(Luncheon adjournment)

JOHN HARRIES, Acting Director Environment, Australian Nuclear Science and Technology Organisation, Lucas Heights,

STEVEN McINTOSH, Government Liaison Officer, Australian Nuclear Science and Technology Organisation, Lucas Heights, and

GENEVIEVE RANKIN, Councillor, Sutherland Shire Council, Eton Street, Sutherland, on former affirmation:

GARRY SMITH, Principal Environmental Scientist, Sutherland Shire Council, Eton Street, Sutherland, on former oath:

CHAIR: Welcome to the Committee. Following the hearings in Sutherland on 11 September Sutherland council requested the opportunity to appear again before the Committee to respond to matters raised by ANSTO. In order to ensure fairness, ANSTO was approached to see whether it wanted to appear again before the Committee. It did. The proposal was put to both organisations that they appear together, with each allowed 10 minutes to address any issues and table a more detailed document if they wished and then answer questions from the Committee. We are grateful that both organisations agreed to do so. I remind the witnesses that they are giving sworn evidence under the oath or affirmation taken at their last appearance. I now invite each organisation to make a brief address to the Committee. We have not worked out who could go first.

Ms RANKIN: ANSTO is welcome to go first.

Mr McINTOSH: Thank you. At our last appearance before the Committee we discussed the excellent safety record of the transport of radioactive materials, including the transport of radioactive waste. However, media reports I have seen since that time have indicated that organisations appearing before the Committee, and members of the Committee, have continued to express doubts on that score. I would therefore like to add to our earlier submission on two aspects. At the recent annual general conference of the International Atomic Energy Agency antinuclear countries such as New Zealand and Ireland were happy to cosponsor a resolution on transport safety which contained the following statement:

> Notes that the Conference—

This is the July conference on transport of radioactive materials that I talked about in our last appearance—

> found that the current regulations provide a high level of safety and provide a good basis for an effective regulatory process and maintenance of a safety record which has historically been excellent;

I have copies of that resolution if the Committee would like to see them. Given that states such as New Zealand and Ireland are happy to put their names to such a statement, I would be surprised if this Committee felt that it could not. Secondly, our submission to this Committee noted at paragraph 19 that Australia's total holdings of low-level waste and short-lived intermediate level waste designated for disposal in the national repository amount to approximately 3,700 cubic metres, and that by comparison the French Government has already disposed of a total of approximately 650,000 cubic metres of similar waste in near-surface repositories. I might add that the USA has transported and disposed of almost 4 million cubic metres of low-level waste—again without impact on human health or the environment. Many other countries operate low-level repositories. Given this overseas experience, surely Australia is capable of doing the same.

ANSTO's submission focused on the transportation and storage of radioactive waste. However, much of the discussion before the Committee has focused on the need for a replacement research reactor, we understand, totally focused on its use for radiopharmaceutical production. While we are happy to discuss further the need for a reactor for radiopharmaceutical production, it is important that the Committee is also aware of the scientific and research uses of the reactor, and the area upon which it appears to have received little evidence to date. In 1994 the Nobel Prize for physics was awarded to Bertrand Brockhouse and Clifford Shull for their pioneering contributions to the development of neutron scattering techniques for the study of liquid and solid matter using a research reactor. Over the years since Brockhouse and Shull made the contributions for which they were awarded the Nobel Prize their methods have found widespread applications.

Thousands of researchers are using neutron scattering to study the structure and dynamics of new ceramic superconductors, molecule movements on surfaces for catalytic exhaust emission control, the interaction between proteins and genetic material of viruses, the connection between the structure and elastic properties of polymers, the rapidly fading memory of the atomic structure of a metallic melt, and much more. I have a copy to table of the speech given at the time that Nobel Prize was presented. It sets out in more detail the work for which it was presented. ANSTO's replacement research reactor will be at the cutting edge of such research internationally. Not only is ANSTO engaged in the routine production of radiopharmaceuticals for routine use in Australia—last financial year approximately 400,000 Australians used a radiopharmaceutical produced in the HIFAR—we are also at the leading edge of research into new radiopharmaceutical treatments.

ANSTO is a developer of novel radiopharmaceuticals and, as such, an organisation that undertakes clinical trials, a producer of radiopharmaceuticals that can be used by others in clinical trials, and a provider of services to assist in drug discovery such as molecular imaging.

Among those areas where ANSTO is presently researching is the treatment of melanoma, a priority which is clearly much greater for Australian researchers than it would be for Canadian researchers. We have heard suggestions that we should rely on Canada for our nuclear medicine. ANSTO's recent submission to the New South Wales Government's ministerial review of medical and health research is available for the Committee.

Nuclear science is also of great assistance in environmental management. I will give two current examples of ANSTO's work in this area. The first is salinity. ANSTO is using radioisotopes to conduct research into groundwater management to identify processes responsible for the salt buildup, the source of the salt and the paths of water flows that transport the salt to the land surface. This enables the identification and quantification of recharge or potential drainage areas. Where appropriate, remedial action can be implemented to lower the water table and prevent salt mobilisation. ANSTO is also using radioisotopes to investigate urban salinity in Western Sydney, where it is applying isotopic and geochemical methods to characterise urban salinity and processes caused by urban development. These represent a major issue that will cost New South Wales millions of dollars over the coming years. ANSTO's work in Western Sydney could have major implications for Australian building codes.

The second area is sustainable development in the coastal zone. ANSTO is a significant contributor to the provision of a scientific basis for the planning and implementation of sustainable multiple use management practices in our coastal environment, including marine, coastal and associated fresh waters. Natural resources in the coastal region and adjacent oceanic waters, both in Australia and in the wider Asia-Pacific region, are under increasing threat of environmental degradation from the introduction and unplanned redistribution of unwanted materials from various anthropogenic sources. ANSTO's work in this area includes the study, using HIFAR, of the movements of polluted sediments from Homebush Bay into the adjacent wetlands of Sydney Olympic and Bicentennial Parks, an investigation of the use of iridium labeled glass subsequently activated in HIFAR to determine effective water depth on sand mobility, and an investigation of the use of naturally occurring radioactive phosphorus 32 and phosphorus 33 to measure eutrification in the coastal lakes in New South Wales.

Let me conclude by raising a couple of other issues. Some members of the Committee, and members of the Government, seemed to feel comfortable saying, "Leave it at Lucas Heights", although ANSTO's experience over the years is that council might have strong views on this. Obviously, that waste has been safely managed at Lucas Heights for many decades and ANSTO has the capacity to safely managed it for years to come. But, as discussed previously, ANSTO is not the only holder of radioactive waste in New South Wales. Any decision on the State management of radioactive waste in New

South Wales needs to recognise that indefinite storage of radioactive waste by small holders is not consistent with international best practice.

Evolving international best practice involves the provision of central disposal facilities or stores by governments so that the risks of radioactive materials, particularly radioactive sources, become orphaned and minimised. Finally, let me reiterate that, after the initial campaign for the disposal of 45 years arisings of radioactive waste, the carriage of radioactive waste to the repository will be an infrequent event. ANSTO currently generates about one truckload of such waste per year. That means that if the repository is opened once every five years for a disposal campaign only five trucks would travel from ANSTO during that year and none at other times.

CHAIR: Thank you, Mr McIntosh. Would Sutherland council like to make a statement?

Ms RANKIN: I will speak for five minutes and then Dr Smith will as well, and then we are happy to answer questions. We thank you for this opportunity and also for the manner in which the inquiry has been conducted. It has shown a willingness to go out into the community and hear the concerns from various communities involved in the issue. This inquiry was set up after the last State election with broad political concern. Mr Brogden announced during the election that he was opposed to any nuclear waste dump in New South Wales. Mr Carr announced he would have an inquiry into what the Federal Government was doing. George Souris was supportive of that, as were the Greens parliamentarians. I think we started off with very good cross-party support for this and I think that is continuing in our local communities.

During the process we have also had awareness of the Western Australian and South Australian legislation—Western Australia has legislation before it at the moment to outlaw the dump and South Australia passed its earlier this year. Again, we have broad bipartisan concerns in both of those States and we are hoping the New South Wales Government will take a strong stand to support New South Wales residents on these issues. Of course, the terms of reference are much broader than just the transportation of low-level waste, as the Chair has said on other occasions in these hearings. They go to the heart of the source of the waste, which is predominantly the Commonwealth facility, the Australian Nuclear Science and Technology Organisation [ANSTO]. They go to the question of storage, emergency management and procedures within our State authorities.

The issue of sourcing was dealt with very well this morning by Professor Allen in his remarks. I would like to put on the record from council's point of view at this moment the fact that council has never been opposed to scientific activities, at Lucas Heights. We specifically agree with Professor Allen that we do not need a nuclear reactor for medicine or industry in this country and, if it

is needed for defence purposes, we should have that debate and the public should be made a lot clearer about why it is and why we choose this particular location, if that is the case. There may be many opinions on that, but certainly we do not oppose research. We have not taken an overall anti-nuclear position at council level. In fact, we have very much promoted the use of alternative—both nuclear and non-nuclear—technology for medicine and industry.

The inquiry itself has raised a number of questions that have not been answered and, as a State Government, we should be trying to pin down the Federal Government on these issues. I am sure Dr Smith will highlight some of those. Just to mention a few, we found out during the process of this inquiry that the Australian Radiation Protection and Nuclear Safety Agency [ARPANSA] is still working on its code of practice for the pre-disposal of materials. No code of practice seems to exist at the moment. We found out from ANSTO at the first hearing that even the low-level waste will include plutonium. We had statements from the Environment Protection Authority that we should not be referring to the fuel rods that are being shipped out or are planned to be shipped out from ANSTO at the moment. These are very high-level nuclear waste that need to be treated in that way.

We have pointed out the poor record of ANSTO in these matters—things like huge volumes of water in what is supposedly dry storage, the number of accidents on site and the number of issues that have not been responded to. There are still a number of outstanding emergency response issues. The Federal Government is proposing a voluntary response. The Fire Brigade unions made it very clear that one cannot run a Fire Brigade on voluntary response, and if that is the response, we will not have a response. We have done a lot of work at council on the emergency response, and that is why I take exception to people defaming me and misrepresenting our position that the emergency response needed a lot of work. Council has put a lot of time and resources into this, and the State emergency management committee is responding to those concerns at the moment.

We do have very widespread community concerns. I would like to clarify the council survey, because that is an important part of our submission. We can refer to many surveys: We can look to ANSTO's own survey. We can give you a list of those that show consistently over many years that between 75 per cent and 98 per cent of citizens across Australia do not believe that we should have a nuclear reactor in Sydney. In relation to comments made this morning on council's survey, I would like to clarify that that survey was specifically done in relation to this inquiry. It is very up to date.

Remarks were made about the professionalism of council staff. Council is a very professional, large council—Sutherland shire. We have on staff professional people who can conduct surveys. We did that not for use publicly, in particular—although it was a public document so it was debated

in the media—we did that to inform council in relation to this inquiry about whether people were more concerned about storage on-site or not on-site. We found very high levels, contrary to Mr Hanna's view—I do not think Mr Hanna claims any expertise in opinion polling—about the majority wanting to stay on-site. The Committee can have briefings from the professional staff who did this, but there was a slight increase in the amount of concern. Overall, there was extreme and very high concern about the Commonwealth's current handling and storage of nuclear waste and proposals to transport it.

Dr SMITH: I just want to summarise a couple of the key points and comment on a few of the remarks made by ANSTO today. I indicate that council's submission was crafted with the recommendations on the back of the primary submission. There are 27 of them and they are very specific and, we believe, well-researched, documented, unarguable and with expert opinion attached. We would refer the Committee to those 27 recommendations as a list of the key issues that council would like to see attended to. In brief, they go to the issues that we are not satisfied that waste management at Lucas Heights is best practice. We have asked for things like an Environment Protection Authority inquiry into emissions into our sewer that can come out of our sewer and into our local waterways with the sewer surcharge.

We have also addressed the issue of transport to other sites and said that it is also problematic, and the reasons are listed. Key among those has been the issue of jurisdiction between the Commonwealth and the State. I have some recent advice on this. In our original primary submission we noted that the Australian Radiation Protection and Nuclear Safety Agency council advised the ARPANSA chief executive officer to get further advice on the difficult and important issue of jurisdictional difficulties in transporting nuclear waste, and that he refer that to the transport competent authorities working group [TCAWG]. That advice went to the CEO of ARPANSA in December 2002. I confirmed this week at ARPANSA committee that that TCAWG has not met since that time. So, those jurisdictional issues are unaddressed by ARPANSA despite the advice from the council to the CEO. The initial reference is page 13 of our primary submission.

Further to the issue of transport, issues are raised in our submission as to what level will the State be satisfied that some of these important legal, jurisdictional and safety issues are addressed? Should the State require certification of shipments on its own behalf in addition to that of the Commonwealth, and what sort of standards and best practice proposals are required? I refer those to you. The other issues about transport include indemnity insurance for the public along the route and issues of just who bears the cost. A lot of the costs appear to be pointed to the State, with respect to hazardous materials and other tabs that the State is expected to pick up should there be an accident.

The further issue is the store. It is unclear, obscure, hardly resolved at all and, one of the few things we know, involves a higher level of radioactive waste, the intermediate level store. Planning just cannot be done on this basis. That is one of the best examples that the Commonwealth planning process of deferring planning and deferring decision-making until after Commonwealth activities are undertaken is not best practice planning and it falls well short of State hazardous planning, as we indicated earlier. We ask in recommendation 12 that this Committee recommend to Parliament the repeal of a section of a specific Act, the Uranium Mining Act, which essentially gives a waiver to Commonwealth nuclear activities. We feel that is a test, as it were, of the intention of Parliament to call the Commonwealth to account for this bad practice planning. Our legal advice to you in the first round was that the section in the Act is meaningless anyway. We commend that to you.

Finally, by way of summary, we feel that what has been quite clear in submissions to the hearings you have had is that this industry and a lot of its supporters try to concentrate on the issue of risk and dose to the public. That is an important issue, quantifiable in many cases, but it has been quite clear to us in our research, and it is in our submission, that these issues of planning go well beyond just dose and risk. They are based on those principles but there are issues of jurisdiction, law, redress if there is an accident, and just basic cost—in this case to New South Wales taxpayers. The industry does not seem to go beyond that sort of issue and the Commonwealth has not tested that sort of issue, certainly on the States' behalf or even on its own behalf, because we had no inquiries under Commonwealth legislation.

I will finish by referring to a couple of comments from ANSTO just a moment ago. The safety record throughout the world is commendable in the sense that we expected the industry to set high standards of safety, but what we are talking about in New South Wales is the poor attention to best practice, the jurisdictional problems that exist in Australia that do not occur in other jurisdictions. These are documented in our submission. Accidents do happen and will happen and our evidence goes to the fact that Australia is not currently well protected, and certainly New South Wales and other States' citizens are not well protected in law and protected in jurisdictional issues.

With respect to research, I admire the endeavour of ANSTO scientists in their scientific endeavour, but no less an inquiry than the research reactor review back in the early 1990s looked closely at the research record in Australia and found that it was not particularly compelling in the sense of justifying a new reactor. It also indicated that a new reactor could not be justified on cost. That was quite a clear conclusion. It was more of a policy issue for government. So, with respect to using radioactivity and radionuclides for industrial testing and environment protection, and so on, many of which can be imported, one can do a lot of that work for $360 million or $500 million or whatever the Commonwealth is putting into this project.

With respect to the so-called low levels or low quantities of radioactivity being considered under the these two proposals—the repository and a store—let me remind the Committee that there is evidence in our primary submission that the levels of acceptance of the low-level repository have not been set yet—a number of parties have informed you about that—but more particularly the store issue is vague and obscure. We know there will be high levels of waste but the other thing that comes through our submission is that the resolution of the spent fuel problem is still very much in the breach. There is every likelihood that in New South Wales or wherever a store goes for intermediate-level waste that will accept that spent fuel, ultimately there could be conditioning of spent fuel if that is required in Australia, either at that location or even at Lucas Heights. That has not been ruled out by ANSTO in the past. So, this is not just about taking small amounts of radioactivity and storing them somewhere; there are real planning and jurisdictional issues here about the future development of the industry and the future quality of waste. Currently, the level of protection we have under Commonwealth law as State citizens is very poor.

The final point, leaving radioactive waste at Lucas Heights, the Commonwealth Government's position clearly is that that is not the thing to do. Some experts have indicated it is and others have indicated it is not the thing to do. The key point is the production of the waste—the amount of waste being produced. The reactor produces an enormous amount of waste and the transportation in this case has to be considered. We have pointed very clearly to the responsibility of the Commonwealth to minimise its waste further by doing things like looking at alternatives to a reactor. Fundamentally, we are asking you to recommend to the Parliament that the New South Wales Government call upon the Commonwealth to account for the amount of waste being produced, based on its record, and require better practice and better inquiry based on the best practice set in New South Wales planning law.

CHAIR: Let us focus for the moment on low-level waste. We have heard evidence that the low-level waste proposed to be transported contains other materials of a higher radioactivity. However, let us assume it is only low-level waste. Why can this waste not be dumped in the local Sutherland tip?

Mr McINTOSH: As I discussed last time, as a general international principle everything is radioactive but obviously you cannot regulate everything as being radioactive. There are thresholds above which material is regulated as being radioactive. Material that is radioactive above those thresholds cannot be disposed of by regulation in the Lucas Heights tip. Radioactive materials are disposed of. For example, used smoke detectors contain americium, they still contain radioactivity and they are disposed of in the normal municipal tip. However, that material is below the activity threshold. The basic answer is that there is a rule that material with activity above a particular threshold must be treated as being radioactive material and it is not suitable for disposal in a normal landfill.

CHAIR: We have heard evidence that a truckload of your proposed low-level waste would deliver to a bystander a dose comparable with that delivered by eating a banana. Do you agree with that?

Dr HARRIES: It would depend on each individual case. Some waste will have higher levels of radiation and some will be very low.

Mr McINTOSH: That may well be the case. The difference is that you have eaten the banana rather than just stood next to it. If you stand next to a banana you will get a lower dose of radiation than you will get from standing next to low-level waste.

CHAIR: This is a fundamental issue—I will ask Dr Smith to comment on it as well. Is the low-level waste—I will not get into rods or intermediate-level waste—safe? What happens if there is an accident? We have been advised that the material that is encased in concrete burns and smoke and powder is distributed. It has been suggested that people then simply sweep it up. We have been told that the material is safe and then we are told that it is not safe. That is the problem we are grappling with. Leaving aside for the moment bananas or any other sort of fruit, is this material safe or not? Dr Smith, can you comment?

Dr SMITH: I commend to you the detail of our comments at the primary submission stage. I referred then—I think it is in *Hansard*—to table 3.1 of ANSTO's radioactive waste management policy in which there is, commendably, a categorisation of the levels of waste. The possible range of contact dose rates for low-level solids was up to 2,000 micro sieverts per hour. The industry and others refer to the "background levels" and comparisons with background. That is a lot higher that background levels. It is a contact dose. I think that answers your question. The other point is that if you look at the National Health and Medical Research Council code for near surface disposal you will see basic categories of waste—beta and gamma emissions that will last less than five years—and category B waste for which there is no limit. That is in the code, let alone the waste acceptance criteria. All the waste is not like that but parts of it are. Those doses are not trivial and you would not eat them—it is not like a banana or whatever. I think it trivialises the issue to give that sort of evidence.

Ms RANKIN: We have found in our research about emergency planning that that sort of trivialisation alarms the community greatly. It leads to statements such as "You can sit on the boundary fence for years and never be affected", comparing different types of radiation—as I think Mr Hanna may have done this morning—and tabling information about alpha emissions and so on. I think those kinds of comparisons emphasise the fact that these issues can be trivialised by the industry to an extent that is designed to be not that

informative. Even ARPANSA and the Nuclear Safety Committee have commented about this over the years.

For instance, when there is an accident on site ANSTO will issue a statement saying that there is a "teacup" of radiation instead of specifying how much it is. I guess it is an industry tactic to trivialise the matter rather than allow the community to say, "We as a community want to minimise exposure; we don't want to be exposed to unnecessary levels of artificial radiation". If people want to sit in radioactive areas they can do so voluntarily. However, it is not world's best practice to impose this on a community. It is also not World Health Organisation standards to compare with background radiation because you are talking about radiation that is additional to background radiation, and we know that there is no safe dose.

CHAIR: Does ANSTO have a response to that comment?

Mr McINTOSH: I point out that ANSTO did not raise the banana issue.

CHAIR: I acknowledge that. It was raised in evidence in a submission.

Mr IAN COHEN: Mr McIntosh, can you detail the security arrangements for the transportation of spent fuel?

Mr McINTOSH: I am not in a position to talk about that. As I said during the last hearing, we are not permitted to talk in detail about the security arrangements that surround the transport. Suffice to say, the transport is arranged in very close co-operation with the responsible New South Wales authorities, including the police, emergency services, port authorities and so on. The security arrangements must also be signed off specifically by the Federal regulator, the Australian Safeguards and Non-Proliferation Office. That has been a very detailed process—and it is even more detailed this time around than it was previously. I think everybody is satisfied that the security level is appropriate.

Mr IAN COHEN: Do you follow all State regulations regarding the transport of dangerous goods?

Mr McINTOSH: Yes.

Mr IAN COHEN: Have vehicles travelled along General Holmes Drive when transporting spent fuel in the past?

Mr McINTOSH: I am not aware of the precise transport route. I will take your word for it; it seems logical.

Mr IAN COHEN: Are you not aware that General Holmes Drive is being utilised to transport that material?

Mr McINTOSH: I am not specifically aware but it seems logical to me given the destination.

Mr IAN COHEN: Yes. Do you know any other route that can be or has been used to transport material from Lucas Heights to Port Botany?

Mr McINTOSH: As I said, I am not aware of the precise routes that are being used.

Mr IAN COHEN: So is it reasonable to say that generally the only way of accessing Port Botany is along General Holmes Drive?

Dr HARRIES: There are other routes.

Mr McINTOSH: Yes, there are other routes.

Mr IAN COHEN: Are they practical? Have those routes been used?

Mr McINTOSH: In preparing for the shipment, alternative routes are considered and the final route is chosen on police advice. One could look at a street directory and perhaps speculate on alternative routes but the police did eventually advise us, "This is the one we want you to use".

Mr IAN COHEN: I think it is public knowledge that General Holmes Drive is the route that has been used in the past. We have seen televised accounts of the shipments travelling down General Holmes Drive. I draw your attention to schedule 2 of the Road Transport (Safety and Traffic Management) (Road Rules) Regulation 1999, which details the prohibited areas for dangerous goods transporters. One of those prohibited areas is the tunnel on General Holmes Drive beneath the extension of the north-south runway of Kingsford Smith airport. Can you comment on that in terms of past and impending movements of fuel rods?

Mr McINTOSH: I am not aware of that. I return to what I said before: The route is decided not by ANSTO but by NSW Police and the hazardous materials people.

Mr IAN COHEN: But you said that you conferred with Federal and State bodies, of which you mentioned a number, including emergency services.

Mr McINTOSH: That is right.

Mr IAN COHEN: Have you had any conferences with them in relation to transporting fuel along that route?

Mr McINTOSH: We have had conferences with them in relation to transport but I have not been involved in those conferences so I cannot advise you as to which routes have been discussed.

Mr IAN COHEN: Given that we discussed in some detail when you last appeared before the Committee that casks have been tested to withstand fires of 800 degrees Celsius for 30 minutes and given that there have been cases when tunnel fires in the United States of America and Holland have exceeded that temperature and duration, do you think this poses a problem in terms of General Holmes Drive?

Mr McINTOSH: You will have to raise that issue with the New South Wales authorities responsible for determining the route.

Mr IAN COHEN: Can you comment on whether you have increased the safety risk by transporting spent fuel through the tunnel on General Holmes Drive?

Mr McINTOSH: As I said, I am not in a position to comment on the routes that have been selected.

CHAIR: There is a simple question: Has ANSTO, which is the lead agency in this area as you have indicated previously, abided by all New South Wales Government Acts and regulations in agreeing to transport this waste?

Mr McINTOSH: As I said, the transport is done in close consultation with New South Wales authorities.

CHAIR: Has ANSTO abided by all New South Wales Government Acts and regulations in transporting this waste?

Mr McINTOSH: I would presume so. I would presume that the New South Wales authorities would not advise us to do something that is illegal.

CHAIR: You are moving the stuff. Have you abided by all Acts and regulations?

Mr McINTOSH: I have to say that we rely upon the advice of New South Wales authorities. I cannot answer the question because I do not know what routes have been used previously and what standards are required.

CHAIR: So you are not able to give the Committee that assurance?

Mr McINTOSH: I can take the question on notice.

Mr IAN COHEN: Thank you, but you are the lead agency; you are central to this process.

Mr McINTOSH: We do not determine the route. We are the lead agency in terms of arranging the mechanics of the operation—making sure the containers are there, loading the containers, making sure the trucks there and so on—but we do not determine the route.

CHAIR: Who is responsible?

Mr McINTOSH: NSW Police in consultation with New South Wales emergency authorities.

Mr IAN COHEN: Given that you now have this information, does it not strike you as rather unusual that ANSTO, the lead agency and central authority in this process, is not aware of what is essentially a New South Wales regulation regarding the transport of nuclear waste such as fuel rods?

Mr McINTOSH: I am not saying that we are or we are not aware. I am saying that I am personally not aware and I will take the question on notice and find out whether the organisation is aware and how that has been dealt with in the past.

Mr IAN COHEN: If you are not personally aware would Mr Harries, ANSTO's environmental consultant, be aware of this? Who should be aware of this? Who is the officer in your organisation whose responsibilities would cover this State requirement to deal with the regulation governing the transportation of high-level waste through the tunnel on General Holmes Drive?

Mr McINTOSH: There is an officer responsible for dealing with fuel matters generally—spent fuel.

Mr IAN COHEN: Who is that?

Mr McINTOSH: The nuclear services officer.

Mr IAN COHEN: Have you received any report from him about the transport of these fuel rods?

Mr McINTOSH: No.

The Hon. CHARLIE LYNN: I suggest that we should perhaps recall representatives of NSW Police and New South Wales emergency services as they seem to be responsible for the decision.

Mr IAN COHEN: It had better happen quickly.

The Hon. CHARLIE LYNN: You are pursuing Mr McIntosh for an answer but he has already answered the question.

CHAIR: Mr McIntosh has agreed to take the question on notice because he does not know the answer. As Chair, I would be very concerned if this Committee were advised that someone was responsible for breaching a New South Wales regulation. I am not making that allegation; the issue has simply been raised. I have discussed the matter with the secretariat, who will also raise the matter with NSW Police.

Mr IAN COHEN: Mr McIntosh, although you are not aware of the regulation to this point, would you not acknowledge that the fire risk scenarios in an enclosed tunnel such as that under General Holmes Drive could reach the extreme situation where the containment of those materials is not guaranteed or assured?

Mr McINTOSH: I am not aware of that. I am aware that there were suggestions in the United States along similar lines, but I understand that the road tunnel they were talking about then was of a different nature to the General Holmes Drive suggestion. The Nuclear Regulatory Commission in the United States, after analysing the suggestions, found that they were not founded anyway.

Mr IAN COHEN: So you are able to tell the Committee that in your opinion the containment of those materials presents no risk in the enclosed tunnel situation?

Mr McINTOSH: I am saying that a similar suggestion was made in the United States within the last couple of years. As understand it, the Nuclear Regulatory Commission examined that suggestion and found that it was not soundly based.

Mr IAN COHEN: The *New York Times* recently reported that an estimated 50,000 shoulder-fired missiles are unaccounted for around the world. Have the casts used by the ANSTO to transport spent fuel ever been tested to withstand an explosion in a potential terrorist attack?

Mr McINTOSH: The casks have been tested in the United States. There have been some studies done—and we will give you the results of those studies—into the possibility of terrorist attacks on spent fuel casks. Briefly, it has been found that an explosion per se would have no impact. It is possible that if you use an anti-tank missile you could penetrate the cask, but that very small amounts of material would be dispersed into the environment. A study was done on what would happen if the fuel is six months old, which means it is very radioactive, and the release occurs in Manhattan in the middle of the day. I will provide you with that study. It came up with about 48 additional long-term cancer deaths.

Mr IAN COHEN: That relate to levels similar to the fuel rights—?

Mr McINTOSH: No. I was making the point that this is six-months-old power reactor fuel, whereas we are talking about reactor fuel, which is, on average, 10 years old. We are talking about much more reactive material in the New York case than in the ANSTO case. We applied that analysis to the ANSTO situation and came up with much older fuel, an aluminium fuel which will deform more and therefore release less than the brittle oxide power reactor fuels, which are much older, and much smaller figures relating to the time of the transport, the number of people who will be around, and so on. We came up with much smaller numbers, numbers that are comparable to air cargo flights and so on. Again, I do not want to be accused of trivialising the numbers, but they were the numbers we came up with.

The Hon. CHARLIE LYNN: This morning we heard comment on polling done by Sutherland council. It was claimed that the poll was adopted by removing the "don't know" category of responses, which had the result of increasing the percentages of those concerned. Would you like to comment on that?

Ms RANKIN: Yes, and thank you for the opportunity. As I said in my opening remarks, that survey was carried out by professional people whom council has employed as part of our strategic planning unit. In fact, the fellow who did it formerly ran his own consultancy in the Hunter region. Regarding the assumption by Mr Hanna that we were looking for a particular result, we were looking for an answer to the question of whether people were more concerned about waste stored on site or about waste stored off site.

All this information is publicly available, and that is why Mr Hanna has it. The 9 per cent "don't know" category was not reported as being a big deal. In fact, we looked at that as showing that people had very little information. In fact, when asked whether they were consulted by the Federal Government, I think 98 per cent said "absolutely not". I think it is more an indicator of the fact that people either did not know or are misinformed about the information. That was the knowledge we gained from that question, if you like. The "don't know" in a question like that is not significant in terms of the answer to the question. If you are reading something else into that, I could answer that, but—

The Hon. CHARLIE LYNN: Are you able to table that document?

Ms RANKIN: Absolutely. We have referred to it in our submission, but we could also give you publicly any notes that our team has made on the survey, including handwritten notes. I have had a look at them, and there is nothing secret about it whatsoever.

The Hon. CHARLIE LYNN: In your earlier statement you said that you have no concerns at all about the medical and scientific uses of nuclear

energy. Do I interpret that as saying that you see a need for the medical and scientific use of nuclear energy, and therefore the need to be able to safely store the nuclear waste?

Ms RANKIN: Yes. I think it is clearly an unresolved issue. The disposal of our nuclear waste has not been satisfactorily resolved anywhere in the world. I would think a responsible government would say, "What is our biggest producer of waste in this country? It is a nuclear reactor at Lucas Heights, being run by our Federal Government." If you stop that nuclear reactor tomorrow, we still have a major problem of nuclear waste that has been created by that reactor. I would think we would then need a proper national debate. I think Sutherland may well differ from some of the environmental groups, or we may well have to have a very thorough debate about whether there is a safer way of storing nuclear waste than in the middle of Sydney, near two major waterways, and so on. As Dr Smith pointed out, the current proposal—with its ad hoc planning that says, "First we will have a reactor, then we will figure out what we will do with the waste,"—and the Federal regulations which say that the problem of waste should be solved before we build a reactor, are totally irresponsible. We have industries coming to council with development applications, and they cannot get them approved unless they have a waste management plan. That is not the case in this situation.

The Hon. CHARLIE LYNN: This morning we also heard evidence that even if Australia did not have a nuclear reactor, we would still produce low-level and mid-level nuclear waste. What is your comment on that?

Ms RANKIN: We would. As Professor Allen said, you do not need the reactor for medicine, but if you are still having isotopes and waste from hospitals and other places, you will need it. But I do not for one moment believe that this is why we have the current Federal proposal. The Federal proposal is obviously being driven by the new reactor, the fact that we need to deal with the waste before the new reactor can come online. I think it is irresponsible that as a community, as a national government and as a State we do not have anywhere for this waste. I agree with you: it would have to be done.

The Hon. CHARLIE LYNN: We have been told that the storage of medical waste at various places around the State is currently below international standards, and therefore we must recommend what should be done with this waste. What would be your solution?

Ms RANKIN: I would say we should have expertise to do it. I think we do have expertise. If we were not having all this emphasis on a wasteful $500 million reactor proposal, we could get the best brains in the country to work out what we should do with this waste. I agree: it is poorly managed. It is certainly poorly managed at Lucas Heights at the moment. I am a local government councillor. I am not here to solve the national nuclear waste

problem. What I am saying is that it needs a solution, and there is no solution that the Commonwealth has come up with in the last 12 years I have been on council asking these questions over and over. I can assure you that if someone had put up an answer that looked like it was going to be a resolution for the community, I would be the first one to be supporting it. But that is not my area of expertise.

The Hon. CHARLIE LYNN: You do not think that the storage of low-level waste in a centralised facility in a remote area is the answer?

Ms RANKIN: I think it is possible, but I do not know. I have not seen a proposal that is so remote that it does not have regional communities and others concerned about it. Lucas Heights is currently the nuclear waste dump of Australia. It is clearly inappropriate and irresponsible to be creating more waste on that site until we sort out what to do with the waste. If you cannot handle the waste, even from the hospitals, why would you be producing more high-level waste? This is the nub of the problem.

The Hon. CHARLIE LYNN: This morning we heard evidence that even if we did not have a reactor, we would still need a facility for low-level and medium-level waste.

Ms RANKIN: We are not disagreeing with that.

Dr SMITH: I do not understand the logic in justifying a facility on the basis that we will have increased amounts of waste in the future, with respect to the amounts of waste produced in Australia and the difficulties we face. In that sense, it is a matter of scale. If we as communities were confronted with lower-scale problems, hopefully we could find good solutions. It is not just about the fact that we are living with, and we have to solve, some waste problems; we are compounding them, and we are ignoring the current problem. We would not rule out some storage in whatever the appropriate location is, whether it be Lucas Heights or somewhere else. It would need to be addressed and looked at, but it is a matter of scale.

The Hon. CHARLIE LYNN: With regard to scale, earlier we heard from the ANSTO that we are talking about looking for a facility to store 3,700 cubic metres of nuclear waste. We heard that America produces four million cubic metres of nuclear waste and that that waste is stored safely and there has not been an incident regarding it. Surely, in light of the fact that we have a landmass of the same size as the continent of the United States of America, we can come up with a solution for the storage of 3,700 cubic metres of nuclear waste.

Dr SMITH: There is a difference in scale between the two countries. But looking at the scale within Australia, which is the material issue, we do have different jurisdictional issues. We also have different budgetary

considerations than the United States has, with respect to the amounts of money that that country can dedicate to them. The key issue there is scale in Australia, in light of the issues we have raised. I cannot see how the key points we have raised in our primary submissions throughout your hearings have been arguable. Most of the agencies and so on have agreed with the principles, and things are not being done that need to be done.

So even on the scale that is in Australia, it is not insignificant, particularly given the obscurity of the store issue, which is the highest-scale issue. The next highest-scale issue is the spent fuel, its return from overseas and—who knows—possibly conditioning of spent fuel in Australia. These are significant escalating issues. The history of the Commonwealth Government is that it is not well planned; it plans cart before the horse, as I think we have said in an earlier hearing. Traditionally, that is the way it has been done in Australia, and the States are not protected in that respect and the scale is significant in that respect.

Mr TONY McGRANE: Mr McIntosh, you have been somewhat critical of comments from people who support the concept of low and medium nuclear waste remaining at Lucas Heights. Your argument is that it should be moved after the first initial lot of waste has been built up over a period of 45 plus years because there is only going to be movement at the rate of once in every five years and therefore it is safe to do so. If that is the case, there will always be storage facilities at Lucas Heights for low and medium nuclear waste. Why are you so critical of people who say that the whole concept or the idea of nuclear waste storage should remain at Lucas Heights now?

Mr McINTOSH: The point I made in my opening statement was that I think it would continue to be safely managed at Lucas Heights. However, we are not the only holder of radioactive waste. I am not confident that waste held by small users in industry, in research institutions and in hospitals can continue to be safely managed indefinitely. That is the point I made. We are an institution with a lot of experience and a lot of institutional history. Those other organisations are not. Overseas experience is that radioactive sources in particular—and we spoke in detail about sources at the last hearing—have become orphaned, that is, they have escaped from regulatory control, with nobody having responsibility for them after periods where users have stored them for long periods.

For instance, in Turkey a hospital or a clinic stored a source used in a radiotherapy head. The clinic closed down and the premises were vacated. A couple of years later some people were scavenging for scrap and wondered what this bright and shiny thing was, and we ended up with one or two dead people. That has not happened in New South Wales, but the absence of central facilities for dealing with that sort of material constitutes a safety risk and these days is recognised to constitute a security risk to the people of New

South Wales. As I say, from that point of view, the Australian Nuclear Science Technology Organisation [ANSTO] was not the problem.

Dr HARRIES: I wish to stress that ANSTO does responsibly manage its radioactive waste. It does meet international standards in its management of the waste and it is regulated and regularly reported.

Mr IAN COHEN: Are you including transport in that?

Dr HARRIES: I include management of the waste.

Mr IAN COHEN: Which includes transport?

Mr McINTOSH: Including transport, yes. The Australian Radiation Protection and Nuclear Safety Agency is required by its Act to have regard to international best practice in relation to its licensing of our activities, and it has licensed our waste management practices and our waste management facilities and has decided in doing so that our activities and practices are consistent with international best practice. It is easy to say that it is not, but those who are charged with responsibility for taking that decision have taken a different decision. I would also note that internationally there is a convention called—we cited it last time in the context of the definition of spent fuel—the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management.

As well as having definitions, the main purpose of that convention is that it sets up a review mechanism. It states that the parties will meet every three years, compare their practices in waste management and spent fuel management, identify areas for agreement or areas for international best practice and areas where people might improve and so on. As Australia, we have submitted our first national report under that convention. It should be available on ARPANSA's web site; certainly our reports under the convention of nuclear safety are. That will be discussed at a meeting in Geneva next month at which Australia will be represented by people from ARPANSA and ANSTO. We will then be open to discussion as to how our practices fit with practices internationally. Perhaps after that we will be in a better position to talk to you about how we fit.

Mr IAN COHEN: Councillor Rankin, I would be interested to hear your perspective in terms of international best practice in the light of information about prohibited areas for dangerous goods and transport.

Ms RANKIN: Yes. I will make a couple of points. In relation to international best practice, there is a reference in the ARPANSA legislation to international best practice, but that relates to process. We at council on all sides of politics are extremely disappointed with the ARPANSA legislation. For years we have lobbied to get a regulator because there was no regulator of the

nuclear industry in this country, and then we got the Australian Radiation Protection and Nuclear Safety Act which at every level is shown to be inadequate. As Dr Smith has pointed out, the State really needs to look at how it can get its own certification. The regulator in this case, which was set up by the Federal Government to license the new reactor—and half the regulation branch consisted of previous ANSTO staff—is not regarded by the community as being at arm's length from the operator of the plant at stage No. 1.

Secondly, I think we have some serious questions about things that have been overlooked by ARPANSA, such as holes being drilled in the containment tank in the wrong place at the nuclear reactor. They have not been able to really enforce with ENVAP and ANSTO that they do not go ahead with things when they are told not to. Obviously the one you are referring to is in relation to the fuel rods. If it is a code of practice, I think Carl Scully put material before this Committee in relation to not transporting hazardous material—and nuclear comes under that—through tunnels. If we actually have it transported through tunnels, I think there will be major problems here. I would think that if you look at the council's recommendations for this inquiry, one of the things that really needs to be done by this State Government from any perspective is to have a look at the joint arrangements between State and Federal and see where we can improve those.

If you look at council's submission we are also getting some further information from the Parliament on this. I think that, really, the State Government needs to have a good look at these issues and not just assume that, because you have a regulator which is set up by the Federal Government in order to license a particular operator saying that everything is okay, that it is okay. If we look at things such as the consequences of an accident, which is what you were asking me before, and we get an answer that has something to do with Manhattan, that is not good enough. We should know the consequences for our own area, what those State guys—the volunteers on the road—will have to deal with.

There has been a consequence analysis done for sabotage of the new reactor. We were told that that was going to be made available so that emergency services could plan, but we have ANSTO saying that we will never have an accident with consequences off site from the reactor. We have had council's consultant using ANSTO's own figures show that a radiation plume, if it was dispersed through fire, could go up to 80 kilometres. We said between nought and 80 kilometres is a long way if you are talking about planning an emergency response. That consequences analysis was done—and we believe that through leaks from ARPANSA that it showed that the plume could go out 50 kilometres, not 80 kilometres that the council said—but has never been made public. As I said, when it was done we were told that it would be made public.

I believe the State should do its own consequence analysis of these things and not just accept that, because we have what we regard as a puppet regulator at the federal level, things are all in order. As New South Wales citizens, we need to know that this is true. If we cannot be told exactly what the consequences of a sabotage attack between Port Botany in Sydney—imagine if this was the middle of London; would people put up with it—will be, what our State guys will have to do and how much it will cost us, why would we take the risk?

Mr IAN COHEN: Mr McIntosh, you keep all of the transport details secret for security reasons, I take it?

Mr McINTOSH: Which transport are we talking about?

Mr IAN COHEN: Transport in terms of the fuel rods of this industry.

Mr McINTOSH: The spent fuel, yes.

Mr IAN COHEN: Would you consider your security to be adequate?

Mr McINTOSH: Yes.

Mr IAN COHEN: The *Daily Telegraph* reported that the ship named the *Fret Moselle* is coming to Sydney to pick up a shipment of the spent nuclear fuel. Can you confirm this?

Mr McINTOSH: Yes. It is easy to work out. I am not formally in a position to confirm it, but I will not deny it.

Mr IAN COHEN: That is what the Americans say. The publicly accessible web site of the Brisbane Port Authority has stated that the *Fret Moselle* is one of approximately 13 boats registered to carry spent nuclear fuel and that it is arriving there today and will be leaving tomorrow. Is there any point in secrecy when we have that type of information coming out? How is this protecting the public from terrorist attacks or any situation like that during this time?

Mr McINTOSH: The identity of the ship is obviously only one aspect. There are more important issues, such as issues of timing. The most important aspect is what response and protection forces are available. The identity of the ship is neither here nor there. While it is important in that it is a properly certified ship, obviously whether it is that precise ship or another is not an important issue in relation to the security of the ship.

Mr IAN COHEN: I put it to you Mr McIntosh that your secrecy is not so much to protect the transport process or the public interest but really is to protect ANSTO from public and government scrutiny.

Mr McINTOSH: No.

Mr IAN COHEN: Because everyone can find, through easily accessible alternative sources, the schedule of these activities, such as the details that appear in the *Daily Telegraph*.

Mr McINTOSH: We are following international standards on security.

CHAIR: My question is relevant to both groups. At what level of radiation is it safe to advise the local community of transport?

Mr McINTOSH: Historically it has not been an issue of radiation. The issue with spent fuel is that it contains nuclear material. Particularly, spent HIFAR fuel contains highly enriched uranium which, if you had an enormously expensive reprocessing plant, you could extract. It is an international guideline that that material has to be very highly protected. The secrecy requirements are attached to that rather than to its level of radioactivity. If something did not contain nuclear material that was highly radioactive, the international guidelines would not be relevant.

CHAIR: In terms of the transport of intermediate and low-level waste, would it be appropriate to advise the local community of the transport of that waste?

Mr McINTOSH: As I said before, from a radiological protection point of view, there would be no reason not to. I will throw two riders onto that. One is that, in the light of recently arisen concerns about the so-called dirty bomb, there is very much still an evolving stage in International Atomic Energy Agency development guidelines on security during transport of radioactive material—non-nuclear material. That may have something to say on that subject.

CHAIR: That would include low-level waste?

Mr McINTOSH: I am not involved in the drafting. I would not see any justification for the inclusion of low-level material. In that connection, I note that on the evening of the time we lasted appeared, you might recall that there was a *Catalyst* program on dirty bombs.

CHAIR: Yes.

Mr McINTOSH: That opened by saying that in theory we have a one million gigabecquerel source in powder form which was used in the former Soviet Union and which is still found there. It went on to explore the consequences. The main consequences were a real contamination problem and panic. That is in a one million gigabecquerel very dispersible powder

form. An entire truckload of low-level waste is 60 gigabecquerels of solid, not easily dispersible material. It is therefore very unsuitable for use in a dirty bomb. As I said, I am not involved in the drafting and I do not know what thresholds will be set. However, it makes no sense to apply those standards to low-level waste.

Dr SMITH: I simply refer the committee to earlier evidence in the primary submission. We have found references to laboratory-grade material in dirty bomb manufacturing instructions on the Internet. We have not explored that and we do not claim to have expertise in that area. However, it has clearly been identified as potentially useful material. That would cover certain parts of the low-level waste category and, of course, the intermediate-level category.

CHAIR: I am trying to clarify one contested point. Are there reasons that the local community could not be advised if low-level waste were to be transported?

Mr McINTOSH: I said that there were two riders. I do not think it should apply to transport of low-level waste. As I said, I am not involved in the drafting. The second rider is that the police may decide that to prevent public injury from people trying to throw themselves in front of trucks and so on precise details of timing will not be available. That is certainly not an ANSTO decision.

CHAIR: That would be a Government decision, not a police decision.

Mr McINTOSH: Again, it would be a Government decision not an ANSTO decision.

CHAIR: What are your views?

Mr McINTOSH: It depends on whether that was seen as a real threat. I am not aware of the practice where that sort of threat is seen. For instance, there was a concern that people might throw themselves in front of live sheep transports. One would apply the same factors. I do not know what the New South Wales authorities would decide in relation to those transports. I believe the results should be the same.

CHAIR: Does the Sutherland council have a comment?

Ms RANKIN: I appreciate that it is a Government decision. As I said, the Government needs to play an active part. During the Olympics, the brochure that Hazmat distributed to personnel—not to the community—identified research as a key potential source of material for dirty bombs. That was taken from the American experience. I have that document at home, but it can be obtained from Hazmat. I worked through some of the emergency services issues with the fire brigade union. The New South Wales personnel

hope that the Government will play a greater role in working out appropriate arrangements. Until now it has been left to them to negotiate with ANSTO, and they are not technical experts in radiation hazards. That needs to be a broader level decision and then they can work out the technicalities of informing people.

A comment was made earlier about a better-informed community being a less alarmed community. That is the basis of the management committee's approach to getting a leaflet to the community and getting material on the emergency planning web site. At every conference I attend dealing with industry best practice and hazardous facilities reference is made to community information and having an informed community. That is why we wonder about decisions such as not releasing the consequence analysis. If there is no consequence that affects emergency services, why not release it? No-one wants information that would support the work of terrorists or sabotage on the site. We want to know how we can respond as a State. That political leadership is needed and it is basic information that should be available to our community.

Mr IAN COHEN: Mr McIntosh, you said ANSTO's isotopes subsidiary, Australian Radioisotopes Industrials [ARI] keeps a record of accidents involving transport of nuclear material. At the committee's last meeting you said that ANSTO/ARI could provide that record of accidents, but it would probably be a blank piece of paper. How does that relate to ANSTO's written submission, which states that each year one or two incident accidents occur per 30,000 package movements?

Mr McINTOSH: I followed up that reply by providing the committee with a written answer giving details of some incidents that have taken place over the past 10 or 15 years. There were some incidents, but all of them involved things like denting the corner of a package. They all related to medical isotopes; none involved the release of any material into the environment.

Mr IAN COHEN: Can you tell the committee what is the source of plutonium stored at ANSTO other than spent nuclear fuel? The Federal Government says that 14 gigabecquerels of plutonium 238 are to be sent to the South Australian dump. The plutonium is from the film industry and smoke detectors.

Mr McINTOSH: That material will not be stored at ANSTO. We may have a few micrograms of plutonium.

Mr IAN COHEN: Does ANSTO plan to store any plutonium at the dump?

Dr HARRIES: At different times ANSTO has had small detectors that are used for calibration purposes. They are plutonium sources and have very low activity levels. I think that plutonium 238 was used in early smoke detectors; they now use americium 241.

Mr McINTOSH: We talk about the relatively large amounts of material that are to be moved immediately as compared to the small amounts arising. I am talking about, at most, one truckload of waste a year. Most industrial facilities would jump over the moon if they could produce such a small amount of waste in terms of volume. The historical waste stems from ANSTO's predecessor, the Australian Atomic Energy Commission [AAEC]. AAEC researched the entire fuel cycle, including different types of fuels, use of thorium in fuels and so on. ANSTO has some materials which are the legacy of the 1960s and early 1970s and which are not produced today. They will they have to go to a national facility. Just because they were produced at that time does not mean they will be produced again. We also have legacy wastes from other operations. I have avoided using the term "nuclear waste" because I am not sure what it means. If it means waste from the nuclear industry, a significant quantity of the intermediate-level radioactive waste held at ANSTO comes from sandmining operations in the 1970s. That is not nuclear fuel-cycle waste. However, it forms a significant part of the intermediate-level waste going to the national store.

Mr IAN COHEN: Is it thorium?

Mr McINTOSH: Yes.

Mr IAN COHEN: Is that stored at Lucas Heights?

Mr McINTOSH: Yes.

Mr IAN COHEN: In what form is it? Is it concentrated sand?

Dr HARRIES: Some is residue from sandmining operations held in 200-litre drums and some is thorium oxide, which is also stored in drums.

Mr IAN COHEN: Is that considered to be low or intermediate-level waste?

Dr HARRIES: It is probably intermediate-level waste. Until we have the waste acceptance criteria—

Mr IAN COHEN: How long does it remain at that level?

Dr HARRIES: The half-life is something like 10 billion years.

Mr IAN COHEN: It will be warm for a while.

Dr HARRIES: It will have that same level of activity. That is why it is still around. It is on the beaches of New South Wales as a naturally occurring—

Mr IAN COHEN: I appreciate that. Are there other concentrations like that in other areas of the State, or just at Lucas Heights?

Dr HARRIES: I am not aware of other places it is stored. Certainly, the sandmining and minerals sands operations get rare earths and would also concentrate the monazite and thorium minerals.

Mr IAN COHEN: Your submission states:

> Around the world there has never been an in-transit accident with serious human, health, economic or environmental consequences attributable to the radioactive nature of the goods.

Can you comment on that in light of the fact that shipments of spent fuel and high-level waste to and from Germany were suspended in 1998 because of radiation releases far beyond permitted levels?

Mr McINTOSH: The decision to suspend shipments to and from Germany was the result of the casts being used. They were like a heater with grills. They did not have a smooth surface that could be washed down and material accumulated between the grills over the years. The regulator decided that that exceeded permitted levels. There was no evidence of human health impacts, but the general precautionary approach to regulation is that if the level of radium nucleides is above the threshold referred to earlier it contravenes the terms of the licence. It states that the shipment is permitted and stipulates the level of radioactivity in the containers. Those levels were exceeded because of the physical design of the containers. No-one proposed that it had a health impact. However, the containers were contaminated above the acceptable levels. Shipments were suspended and new mechanisms were implemented to ensure that the containers were cleaned properly. Shipments have since been resumed.

Mr IAN COHEN: ANSTO's submission also states:

> Any consequence of an accident involving a truck carrying solid LLW would only involve an actual impact and would have no significant radiological consequences.

Do you acknowledge that that submission is incorrect? If the container were breached radioactivity would be released, however small the amount.

Mr McINTOSH: The words you quoted were "no significant radiological consequences". If low-level material were to be released into the environment somebody could go around with a detector and pick it up.

Mr IAN COHEN: If it were burned?

Mr McINTOSH: The solid material we are talking about does not burn easily.

Mr IAN COHEN: Not easily but it does burn.

Mr McINTOSH: I must admit I had not been aware until yesterday that a suggestion has been made that concrete could burn. I put that to somebody with long experience in safety and radiological protection this morning and he looked very surprised by that proposal.

Mr IAN COHEN: Would you dispute the position put by the New South Wales fire brigade representative?

Mr McINTOSH: No, I am saying that we will need to look at the statement that was made by the fire brigade representative and make an evaluation of it. We have not done so because until yesterday we had not been aware of that statement.

CHAIR: Could we possibly get your advice on that because it was actually quite a significant presentation to the Committee by Hazmat.

Mr McINTOSH: It was from Hazmat?

CHAIR: It was someone from the fire brigade union, who was also a senior Hazmat officer, who relayed to the Committee that basically everything burns. We can make the evidence available because it is public evidence. The comment was that all materials burn, even concrete and steel, and basically the issue was burning and spilling.

Mr McINTOSH: We will look at that. I must say that everything burns but whether a truck fire could create temperatures high enough to cause that would obviously need to be analysed.

CHAIR: It is uncorrected evidence but we can make that available to you.

Mr TONY McGRANE: Mr McIntosh, following on my first question to you, you indicated the incident that happened in the private sector which none of us would like to see happen again, but the inference was that there is more waste out there than at Lucas Heights.

Mr McINTOSH: That is correct.

Mr TONY McGRANE: Again, getting back to the storage at Lucas Heights as against another place at the back of beyond, how does having storage at the back of beyond solve the problem that you have quoted in your answer to my first question?

Mr McINTOSH: The storage in the back of beyond will mean that, let us call them, the small holders well have a disposition route. At the moment they do not have a disposition route in New South Wales and they have to hold onto the material indefinitely. At the conference on security of radioactive sources which was held in Vienna in March—and I can provide you with the paper in question—the representative of the European Commission stated that it was the commission's view that all member states and all candidate member states should have in place central facilities to enable the holders of radioactive material who had no further use for it to deposit it in that facility—whether it is a disposal facility or a storage facility—to minimise the likelihood of that material escaping from regulatory control and posing a hazard either, as has occurred, a safety hazard or the potential deliberate use of such material in a dirty bomb or similar device.

CHAIR: Does Sutherland Council have a comment on that?

Dr SMITH: It depends on which part of the question. I think the issue of the private sector having more waste than ANSTO goes back to evidence earlier in the hearings. I think Dr Green and others commented that it depends on whether you were talking about the level of radioactive material or volume or quantity. So again, it could be under-played in the sense that ANSTO does store significant amounts of radioactivity. With respect to centralisation or otherwise, they are material issues to any consideration of how you are going to manage the waste, again depending on how much waste is being used. There can be some clear advantages to centralisation. How you do that whilst still allowing access and use in remote sites is an issue. I think the expert reports we have brought to bear could shed some light on that.

Ms RANKIN: Just to follow up on a question asked by Mr Lynn before, there are models for this, it is just that it is not really one local government authority and someone's purview to try to solve these problems. There is the Queensland ESK facility which has been controversial as well. There are models for dealing with the waste and I think it gets back to the central question of why we have a proposal at this point in time, and why we have it at this point in time is much more to do with the reactor than anything else.

Mr McINTOSH: Could I add in that regard that I think council and I and ANSTO are on a similar footing on how to handle radioactive waste. Regarding comments that have been made before, we keep hearing the comment that the majority of the radioactive waste comes from the reactor. The majority of ANSTO's radioactive waste comes from radiopharmaceutical production rather than the reactor. Even if you close the reactor and did bulk

imports of molybdenum, which is what happens when there is a latent close-down of a reactor; you still have all that radiopharmaceuticals waste. The majority of the waste will still continue to be produced whether or not you have a reactor.

Dr SMITH: The radioactivity in the waste comes from the reactor and the reactor generates a lot of radioactive waste in its own right, notwithstanding the fact that ARI obviously does as well in a different form, including spent fuel rods.

Mr TONY McGRANE: I am at a loss to understand the incentive to get people to take this waste out to a place the back of beyond.

Mr McINTOSH: I come back to the fact that you do not need to have it in a place the back of beyond.

Mr TONY McGRANE: Nobody wants it in the backyard.

Mr McINTOSH: The repository in France is in the middle of the Champagne region which I do not think French people regard as the back of beyond.

Mr TONY McGRANE: We are talking about Australia.

Mr McINTOSH: I am just saying that overseas experience demonstrates that there is no reason, radiologically speaking, for the central facility to be in the back of beyond. However, best practice is that there be a central facility. ANSTO is out to prevent us from being the central facility for non-ANSTO waste, and that was inserted at the request of council, among others, in the early 1990s. So there is this waste that is out there that ANSTO cannot take, that there are no facilities currently to deal with it.

Mr IAN COHEN: Is it not also the case, Mr McIntosh, that ANSTO needs to resolve the situation of storage, wherever it might be, in a secure manner before we can get the go-ahead for the new reactor?

Mr McINTOSH: The issue needs to be resolved perhaps from our point of view but unfortunately—

Mr IAN COHEN: Not under contract? There is no agreement with the Federal Government or the contractor that this is something that needs to be achieved before the reactor can go ahead?

Mr McINTOSH: There needs to be progress on the issue of the store before the operating license is issued. That is what Dr Loy said. Unfortunately perhaps, it is outside ANSTO's control. The store is not an issue that we are dealing with.

Mr IAN COHEN: Perhaps so, but you are building or intending to build a new reactor. You need to resolve the issue or the Commonwealth Government has to resolve the issue of adequate storage before the reactor can go ahead. Is this not the reason why we are seeing such a formidable debate on storage facilities in South Australia at this particular time?

Mr McINTOSH: No. The store for intermediate-level waste is linked to the reactor approval process. The repository is not, for whatever historical reasons, linked. If the repository never goes ahead that has no formal impact in terms of the licensing process on the replacement reactor.

Mr IAN COHEN: It begs the question that can the store go ahead without the repository being successfully set up?

Mr McINTOSH: That is not an issue that ANSTO can answer.

Mr IAN COHEN: Can you answer it? Does it not add up that in terms of the sequence of events and the public debate and the fact that you need to get the repository up before you can go ahead with the more substantial store situation—

Mr McINTOSH: Not necessarily. Canada, for instance, has stores for intermediate-level waste but also stores low-level waste. There is no repository for low-level waste in Canada.

Mr IAN COHEN: In terms of the sequence of this particular development to get it to go-ahead.

Mr McINTOSH: There is no linkage that has been made, in terms of the environmental assessment process for the replacement reactor or the licensing process for the replacement reactor, between the repository and the reactor licensing process. You are in a better position to comment on political factors than I am.

Ms RANKIN: The basic Federal Government position prior to this was that they would be co-located, but that has since changed.

Mr TONY McGRANE: Just for the benefit of Mr McIntosh, the president of the Local Government Shires Association this morning indicated that none of its members want this type of storage in their area. When I say "the back of beyond" I am talking about the unencumbered area of New South Wales which has no local government areas.

Mr McINTOSH: As I say, ANSTO is not doing the licensing process.

The Hon. CHARLIE LYNN: Councillor Rankin, Dr Cleal this morning attributed a statement to you on radio that "the Lucas Heights reactor is another potential Chernobyl disaster waiting to happen". Is that a statement that you made?

Ms RANKIN: I have never made a statement to that effect. In fact, I have got legal advice that that is a defamatory statement of me. I am a chair of the Sutherland Shire local emergency management committee and I believe that is an unfortunate aspect of this industry, which is 100 per cent Federal Government employees, that even though Mr Cleal is a retired lecturer often we find in this industry that they resort to attacking the person rather than the issues that we raise. If you set up a straw man you can answer the questions. He has revised that book and he has given me a copy since he gave evidence and he has actually now got in the actual quote from the mayor in relation to the evidence that we have put forward very publicly on many occasions that a sabotage event could spread a radiation cloud to a long way from the site.

You would not be able to find, I can guarantee you, on any record of any media statement where I have said that this is a Chernobyl disaster waiting to happen. It is nothing like Chernobyl. In fact our evidence shows that the size is one per cent and a simple way that the scientists who examined ANSTO's material explained it to us is that with one per cent of the size you could expect one per cent of the damage. That is a very simplistic way of saying that that is what you look at. If you look at 10,000 deaths from Chernobyl, you can look at how many cancers would be caused in Sydney. The industry will no doubt come back and say that this is not significant, it is only long-term cause of radiation, no one dies on the spot, they get cancer 30 years later, but I would put it that if you were in the path of that radiation plume you would much prefer not to have the cancer 30 years later.

These are the debates we should have on that consequence analysis in a clear way. I do not think it is helped by misrepresentation from people like Mr Cleal. As I say, it is a false statement. It is often made out by ANSTO that their opponents think it is like Chernobyl and they say do not look at it as like Chernobyl. That is not something that I am aware of from anybody informed in the campaign. Certainly there are community fears that we have seen of big accidents like Three Mile Island and Chernobyl. We do not seem to have learned from some of our management practices in relation to the fact that it is always human error on an accident, but the scale is quite different.

The Hon. CHARLIE LYNN: In fact I understand that the corrected statement says that a core meltdown would spread a health-threatening cloud of radioactive gas up to 80 kilometres from Lucas Heights. That statement appeared in a brochure to residents in 2000 from the mayor of Sutherland shire where the reactor is sited.

Ms RANKIN: That was sourced from ANSTO's own environmental impact statement [EIS] in a study of ANSTO's own figures done by Mr Daniel Persch, who is the radiation consequence expert in America. Again, ANSTO, in responding to that, resorted to attacking the curriculum vitae of the person who had written the report. But it is all on the public record and there has never been a technical response to that. It was based on ANSTO's figures from the EIS. That is the simple answer. It was an analysis done for council just by posting the EIS overseas to an expert who looked at ANSTO's own figures and said that would be the consequence of a core meltdown.

The Hon. CHARLIE LYNN: Could I have a comment from ANSTO on that?

Mr McINTOSH: Another expert engaged by the council has given a fairly dismissive view of that earlier analysis. Analyses of consequence have been done. The difficulty with the replacement reactor is that it is impossible to get a credible initiating mechanism from an accident that gives a consequence at all. In licensing the construction of the reactor, ARPANSA assumed an incident without having come from a credible cause and worked out the results of its analysis. I stress that it was ARPANSA that made the decision that to release that would not be helpful to security issues, although it has discussed the results with emergency services. But the results are already in Dr Loy's decision in terms of discussion of the consequences of a deliberate aircraft crash into the facility and what doses to the public would be.

I thank council for its concession that a research reactor is not like Chernobyl. It is not merely the size, though I would note that Chernobyl was around, in megawatts thermal not megawatts electrical, 4,000 megawatts, whereas the replacement reactor will be 20. So it is half a per cent rather than one per cent. Chernobyl also had a graphite reflector, which unfortunately burnt very well and fuelled the fire and the dispersal of the material. A modern research reactor has no such beast and therefore has no such fuel for a fire in place. We have heard figures of 10,000 deaths from Chernobyl but the reports of the UN Scientific committee on the effects of Atomic radiation, which was the body mandated by the UN to explore the health consequences of Chernobyl, does not come up with numbers anything like that. Apart from the liquidators, the people who went in to put out the fire, the significant consequence to members of the population was a massive increase in thyroid cancers, almost all of which were cured. The figure of 10,000 deaths is thrown around but I am unaware of any scientific basis for that.

Three Mile Island was also cited. The accident had severe consequences for the reactor itself in that there was a core meltdown and the reactor was put out of commission permanently, but there were no significant consequences for the public. Payouts by insurers related to things like lost

wages for people who did not go to work for a few days. There have been no awards for damages for personal injury arising from the Three Mile Island accident. And this is in the United States, where there are a plaintiff-friendly courts.

The Hon. CHARLIE LYNN: The response of Dr Keay this morning I think reinforced what you have just said. He stated:

> This implies that Sydney residents are in peril, comparable with Chernobyl. Unlike the HIFAR reactor at Lucas Heights, the Chernobyl reactor was uncontained and its design was inherently unsafe. Reactors very similar to HIFAR and its replacement operate without worries near the heart of large cities like Boston and Munich. Their containment provisions and safety features make the probability of disaster exceedingly remote.
>
> Rather than Chernobyl, a better comparison would be with the Three Mile Island reactor meltdown that posed insignificant danger beyond the station boundary. Similarly, in the highly unlikely event of a core meltdown at Lucas Heights, the damage and virtually all of the radioactive contamination would be confined to within the containment structure. More harm would be done by strident news bulletins making a meal of the problem. As the Three Mile Island incident made clear, increased psychosomatic trauma such as heart attacks and strokes among the local population there resulted from unjustified doomsday pronouncements by irresponsible commentators. Certainly not from the very minor release of radioactive gas dispersed by air currents to the point of harmlessness.

The general manager of Gundagai this morning stated that there are actual safety concerns and there are perceived safety concerns and the perceived safety concerns cause community stress. Do you think we have a responsibility to ensure that information that we get out the public as part of an education program is factually based to reduce the level of community stress around the word "nuclear"?

Mr McINTOSH: I certainly would agree with that as the *Catalyst* program on dirty bombs—

Ms RANKIN: Was the question not addressed to council?

The Hon. CHARLIE LYNN: To both parties.

Mr McINTOSH: As the *Catalyst* program on dirty bombs said, from a dirty bomb of that magnitude the main public health consequences still arise from panic. I think it is incumbent upon all those who are involved in informing the public about transport and nuclear matters in particular to ensure that unjustified fears are not fanned by their statements. If there were an incident involving the transport of low-level waste, as I said, the radiological consequences are insignificant. There may well be panic as a consequence but the responsibility for that panic has to be shared by those who have or will spread the unjustified fears of the actual consequence.

Dr SMITH: In answer to those questions, and taking them from the beginning, there really need be no need for confusion on council's position on the consequences, including the Hirsch report, which suggested 80 kilometres. If people who were giving evidence about what council has said were prepared to research the record—our Senate submissions, the reports themselves, everything has been made public—it is quite clear that the Hirsch report put in appropriate scale the type of accident at Lucas Heights compared with Chernobyl. It is quite clear, it is on the record and we can give you copies of it. We have done it many times. He did not make a comparison in the sense that it is the same scale at all. So it is people who are assuming or implying that it is council that has made the assertion that are factually incorrect. One of the important things about the Hirsch work is that it took the ANSTO distribution modelling from ANSTO data, the mathematics, and applied it to a significant release of radioactivity from a reactor at Lucas Heights and came up with an 80 kilometre figure. The argument ANSTO always made is that not enough radioactivity would get out to be dispersed that far. I think that is actually correct because we used their own models and that has been rebutted.

There was an important distinction and Mr McIntosh may be referring to the opinions of Mr Budnitz, who was at a forum about relative consequences. He pointed out to me himself that there was a difference with Chernobyl in that Chernobyl had a very high heat factor component with which to disperse radioactivity a long way. Therefore a Lucas Heights was not a Chernobyl. We accept all of that. That does not mean that Lucas Heights is not significant. Indeed, it is a question of how much gets out. What ARPANSA is now agreeing with is that there is a potential sabotage scenario where significant quantities indeed could get out. If there was a loss of coolant accident, particularly through a sabotage scenario, that could happen. In fact, we are told that there could be a need for iodine tablets for children at 2.5 kilometres from the reactor. That is a significant shift from what we have been told for many years from the reactor position. So Lucas Heights is not trivial. It is not a Chernobyl but it is not trivial.

On the issue of Boston, Massachusetts and those other places, it is post September 11 now and ARPANSA has identified potential sabotage scenarios. The difficulty is that we cannot get information about how far the risks go. We do not want to know what the targets are; we want to know how far potentially it can go. Finally, getting on to this education issue, we want to be able to tell people beyond five or 10 kilometres that there is no problem. But the industry and the Commonwealth Government are withholding that information from us. We want to be able to assure people that where there is a risk it is under control.

The Hon. CHARLIE LYNN: We heard this morning from Professor Allen that we need to look at the concept of relative risk. That is a great suggestion. Would you agree that making a public statement about a

threatening cloud of radioactive gas up to 80 kilometres from Lucas Heights as a public document is going to concern the public who are not as aware as you are of the facts and the relative risk? It seems to me as a layman to be out of all proportion to the relative risk.

Dr SMITH: If indeed the figure is 80 kilometres then people should be concerned. That is our point. We have made information public. We have tried to get Commonwealth inquiries to investigate the veracity of our information level and the Commonwealth's and we cannot get it. If it is 0-2.5 let us know. That is a key point. With respect to radioactive clouds, you can research ANSTO's own documents. Engadine is about two kilometres away and with a reactor accident you can see the level of radioactivity climbing significantly. So then you argue about risk and health consequences and long-term cancers. The clouds are real. The clouds move there. We have been told 80 kilometres using ANSTO's own modelling. The Commonwealth will not give us any detailed analysis of it so we can say that we are right, they are right or it is somewhere in between. That is where we look to the State Government to do something.

Ms RANKIN: On community information, Dr Loy, who is the chief executive of ARPANSA—ANSTO's chief executive was actually involved in his selection process as well—told the Senate about the potential radiation plume that would go up from the site. His words were that that would spread a radioactive cloud a large distance from the site. The argument is not about whether you would have a radiation cloud in that worst-case sabotage event; it is an argument about how significant it would be. I think that goes to the heart of your question. All along council has said that there should be a public inquiry process. We have a lovely statement from ANSTO today but all we have is the hazardous industry operator, the Federal government. We have to take their word for these things.

In most industries this is not regarded as good enough. Council spent five years negotiating with ANSTO round the table. This is not the first time we have come together; we have had many encounters. One of these processes was a community right to know charter that we requested. It is commonplace in hazardous chemical industries and it is commonplace in the United States. In the United States this sort of facility would have a public inquiry. That means cross-examination, not a whole lot of EISs where the proponent reassures you and then ignores your submissions. It means being able to cross-examine the proponent of the proposal and ask: Is this true or is it not true? When you get some real answers you achieve public knowledge.

Under New South Wales legislation an automatic inquiry would be triggered where questions have to be answered. There is no process with the Commonwealth where the questions have to be answered. Even on this community right to know charter, after five years of sitting around a table—and the committee was hand chosen by ANSTO and involved the ANSTO

staff—they then took the result back to the ANSTO board, which said, " No, we are not happy with that. We will not give you anything more than freedom of information material." This goes to the question about public alarm. We have that kind of Cold War secrecy from a twenty-first century Federal Government operation. Everyone knows Freedom of information is extremely expensive. It comes after the event. When you are trying to do a submission to ARPANSA you cannot get information as a responsible local authority or as a community. This is the very thing that this Committee could well be unanimous in saying, that we need a better go, a fair go, for New South Wales citizens on these matters.

If the consequence analysis shows there is no consequence, why can we not table it? There are simple little questions like that. I know you have been through a technical mire, and I have experienced it over a few years too, but I think you can get back to a few simple questions, such as why can we not have a better go for New South Wales citizens on these issues? When one looks at Three Mile Island and the panic that happened there, and the psychological studies, with teachers going to get their own kids rather than looking after the kids in school, there is very huge potential for the public to panic. I have spoken to people who had houses at Three Mile Island that they cannot sell because of radiation contamination. It is not just whether people drop down dead; if your house is radiation affected and people will not buy it, it is an economic and social consequence as well. All we are saying is it is possible to reach a united New South Wales position on some of these matters and we could say our citizens have a right to a better go than we are getting. That is on the management of waste and particularly community information.

CHAIR: We have continued an hour longer than was proposed. If witnesses are happy to take further questions on notice, that is what we will do, but I think it is appropriate that we ask whether ANSTO has any final comments in response to the statement made by Councillor Rankin?

Mr McINTOSH: In relation to the community right to know charter, council will be pleased to know that the community right to know charter is currently being issued.

Ms RANKIN: Not the charter that was agreed by the community.

Mr McINTOSH: There is only one difference between the two charters that were proposed: whether with the documents that could be sought the exclusions in the Freedom of Information [FOI] Act would also apply, and the charter does not have any charges. For instance, the issue of how expensive FOI is, is not relevant to either side's charter because there were no charges. The difference was could ANSTO protect documents that were given to it by other Federal Government agencies, for instance, that would be exempt from production under the Freedom of Information Act? We were of the view that it was important for our functioning as an organisation in terms of our advice to

government to be able to protect information that was given to us in confidence. That was the outstanding issue, which was referred to the Federal Minister for the Environment and Heritage for resolution. The Federal Minister for the Environment and Heritage adopted ANSTO's position and therefore we are issuing the charter in the form that we suggested. In other words, there are no charges. The charter is identical to the community charter except for the fact that the exemptions that apply under the Commonwealth Freedom of Information Act will apply under the charter. That is to be done.

The other issue that was raised was the access to information. We have not received any application under the Freedom of Information Act for a long time. I suspect that means the information is out there. There is an enormous amount of information on the reactor characteristics, and so on, out there through ARPANSA processes, and I suspect that is what it means. Perhaps with the charter we might get some more applications. I do not know. We had a reference to properties at Three Mile Island. Under the American system, if your property was damaged by radiation you could get a large bucket of money to clean it up, demolish it, replace it or whatever. There have been no cases where that has happened, which suggests to me that if people cannot sell their houses the reason is fear, which comes back to the question that was raised before by the Hon. Charlie Lynn about fears that are not based in fact and the role of all of us who are involved in informing the public about risks and making sure that those risks are put in context.

(The witnesses withdrew)

(The Committee adjourned at 3.34 p.m.)