

TRANSCRIPT

LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Nuclear Energy Prohibition

Melbourne—Thursday, 12 March 2020

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WITNESS

Dr Carl-Magnus Larsson, Chief Executive Officer, Australian Radiation Protection and Nuclear Safety Agency (via videoconference).

The CHAIR: I declare the standing Environment and Planning Committee's public hearing open. All mobile phones should be turned to silent. The Committee is hearing evidence today in relation to the Inquiry into Nuclear Prohibition, and the evidence is being recorded. I now formally welcome Dr Larsson, the CEO of the Australian Radiation Protection and Nuclear Safety Agency. Thank you for making yourself available this afternoon.

All evidence taken at this hearing is protected by parliamentary privilege as provided by the *Constitution Act 1975* and further subject to the provisions of the Legislative Council standing orders; therefore the information you give today is protected by law. However, any comments you repeat outside this hearing may not be protected. Any deliberately false evidence or misleading of the Committee may be considered a contempt of Parliament. You will be provided with a proof version of the transcript in the next few days.

Dr Larsson, we have allowed 5 minutes or so for you to just give us a bit of an overview about your organisation. We do have a brief in front of us as well, so if you are able to give us a bit of a snapshot about the organisation, then I will ask Members to start giving you questions. I am looking forward to your contribution.

Dr LARSSON: Thank you very much. I am Dr Carl-Magnus Larsson, Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency, or ARPANSA. Thank you for the invitation to this hearing. I will make a few introductory remarks and then probably respond to the question that you just posed. As the CEO of ARPANSA I am charged with responsibilities under the *Australian Radiation Protection and Nuclear Safety Act 1998*, the ARPANS Act, and that is for protecting people and the environment from the harmful effects of radiation. We do this through understanding risks, best practice regulation, research, policy, services, partnerships and engaging with the community. The organisation has about 130 members of staff, most of them in Melbourne and some of them also in Sydney—particularly the regulatory staff are in Sydney.

Our activities include the regulation of the nuclear installations operated by the Commonwealth, so we are a Commonwealth regulator; we do not have jurisdiction in the states and territories. The aim of our regulatory activities, as for all other activities that we carry out, is the protection of the health and safety of workers, the public and the environment independent of any promoting interests. Our focus is also on the safety and security of the regulated facilities, with the aim of reducing the likelihood of accidents and mitigating their consequences should they occur.

We apply international best practice in our regulatory decision-making, and we participate in the development and implementation of the international framework for safety together with our international partners and colleagues. We fulfil Australia's reporting obligations under international instruments such as the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management. We are also the National Competent Authority under the assistance and early notification conventions for radiological and nuclear emergencies. We also work with our colleagues in all states and territories with the aim of achieving consistent practices and safety outcomes across the nation in managing the radiation risks.

Again, I would like to emphasise that as the independent Commonwealth regulator, ARPANSA does not have a role in the policy decisions governing the use or potential expansion of nuclear activities. Our remit is to protect the health and safety of people and the environment from the harmful effects of radiation. That is my introduction. I would be pleased to receive any questions the Committee may have.

The CHAIR: Thank you very much.

Mr LIMBRICK: Thank you, Dr Larsson. Would you mind just outlining—the Federal facilities that you are talking about—what type of facilities we have in Victoria that ARPANSA would be involved in monitoring?

Dr LARSSON: So there would be a number of facilities that are not nuclear facilities in Victoria, such as some of the defence facilities and also the Australian Synchrotron here in Melbourne. These are just examples.

None of these, as I said, are nuclear facilities. All the nuclear facilities that we do regulate are outside Sydney at Lucas Heights at the ANSTO facilities.

Mr LIMBRICK: The main thing that this Inquiry is looking at is what might be the effects of lifting the Victorian prohibition. What type of activities could conceivably happen in Victoria if that prohibition was lifted, and what is your view on ARPANSA's ability to be able to handle that type of possible regulatory expansion or activity expansion that might be required?

Dr LARSSON: As I said, we are a Commonwealth regulator, so we actually do not have jurisdiction. However, under the ARPANSA Act, the CEO of ARPANSA is also charged with responsibilities for promoting national uniformity in policies and practices and regulatory approaches across all jurisdictions. Under the Act that we are administering there is a statutory committee, which is called the Radiation Health Committee, which has membership from all the states and territories in Australia and meets three times a year, usually for two days at a time. What is on the agenda is the development of codes and standards and guidance for consistent applications across the jurisdictions. The Radiation Health Committee will sign off on agreed documents, and in the case that there are codes—by codes, that implies that there is a mandatory requirement to comply with them—we would start a process of them being approved, which means that they go through the Environmental Health Standing Committee, and they finally get put in front of the health ministers under the COAG Health Council. When that has happened, they will be given effect in all the states and territories. It is a long process sometimes, and it takes time to make this happen, but this is to make enough studies available to us to promote national uniformity, which means that if we have had this agreement from the COAG Health Council, those codes would also be applicable in Victoria.

Mr LIMBRICK: As you mentioned before, the two main roles of ARPANSA are to protect humans from the possible damaging effects of radiation and also the environment. There are a lot of people who are concerned about radiation and who have ideas about radiation. What sort of qualifications would one need to be offering this type of opinion on the effects of radiation on the human body? What sort of qualifications would you require for someone to be able to speak credibly about that sort of thing?

Dr LARSSON: Well, if we look at ARPANSA, just to take the example of the mix of competencies that we have, we have a lot of staff here who have radiation physics and nuclear physics and other areas of physics in their educational background, and some of them also with PhDs in these areas. We have other members of staff that are specialised in biology, and we do have communication staff that have experience and knowledge in the management of stakeholders and stakeholder interaction. I think that there is a mix of competencies, which range from the scientific competencies to competencies that have to do with the communication of radiation risks to workers and also to the public.

The regulatory role and the regulations are just one mechanism by which radiation risks can be managed. Education, information and making it possible for people to take their own informed decisions through the material that we provide are other ways by which we can manage radiation risk. So regulation is just one of them.

Mr LIMBRICK: We have got lots of submissions to our Inquiry already, and we are going to be hearing from lots of people. How would you suggest to us that we determine—we are not experts in this—the concerns that people might have about these things? How can we determine whether these are things that people should be concerned about or whether they are not concerning? Do you know what I am saying?

Mrs McARTHUR: Overreacting.

Mr LIMBRICK: Yes, or they are overreacting or something.

Dr LARSSON: Yes.

Mr LIMBRICK: How do you suggest that we manage that in the course of our Inquiry?

Dr LARSSON: Well, there is a plethora of information that is available, but it is not always the case that people would consider that information available. It is not always about what the information is; sometimes it is also about who is providing the information. So I think that you need to source that information from various sources, and you will probably get some different views on radiation risks. Of course if you go to our website—and maybe you have done that—you will see that there is a huge amount of resources available on the ARPANSA website informing about radiation risks, informing about the health effects of radiation and also informing about different sources of radiation that we are exposed to when we go about our normal life. Actually, the largest source of radiation for the Australian population is the medical use of radiation for diagnostic procedures. That is about 50 per cent of the radiation dose that the average Australian would get. Then you get also radiation from natural sources: from the bedrock, from cosmic radiation and so forth. Actually, for the average member of the public there is very, very little radiation that comes from the practices that involve radiation, such as industry, education and research.

For people that are occupationally exposed, of course, it is a different thing, and it is something that is very carefully managed. There is a very stringent regulatory framework that surrounds occupational exposure to radiation. Every regulator in the states and territories and ourselves—the Commonwealth—keep registers and keep a close look at the radiation exposure from those activities.

Then you will have other sources of information that will probably have another view on the radiation risks. I think the work will be to weigh those different pieces of information from different sources together and then form a view of the radiation risks. Certainly ARPANSA would be able to provide advice, but as I said, it is probably wise to seek advice from many different sources.

Mr HAYES: Thanks, Dr Larsson. I just wanted to ask you: if Victoria wanted to remove the restrictions on nuclear prohibition, could Victoria move to nuclear power generation under existing Commonwealth legislation or would there have to be some sort of agreement with the Commonwealth for Victoria to be able to do this?

Dr LARSSON: Not only Victoria has prohibitions, so has the Commonwealth. The ARPANS Act actually has prohibitions, and those prohibitions, for instance, apply to nuclear power. There are also prohibitions in the EPBC Act, the *Environment Protection and Biodiversity Conservation Act*. If a facility would go ahead in Victoria, it would require an approval under the EPBC Act, so under the Commonwealth legislation. The ARPANS Act would not be applicable because the ARPANS Act only applies for Commonwealth facilities. So it would not be applicable, but it would still be prohibited under Commonwealth legislation because of the EPBC Act.

Ms TERPSTRA: Thank you, Dr Larsson, for your contribution. Jumping forward to the storage and disposal of high-level nuclear waste, what would be some of the key considerations for Australia in relation to the management and storage of such waste? I know there has been a lot of discussion around how waste is stored, but I am also particularly interested in what would happen if the storage of particular waste needed to be re-stored because the facility or the container or however you describe it reached the end of its purposeful life and needed to be re-stored. Could you just touch on what would be the key considerations for that and what we would need to do to continue to keep waste stored in a safe manner? The second part to that question is: what skills and capabilities and knowledge development would Australia need to support such an industry?

Dr LARSSON: Well, for the waste that is currently stored in Australia—I do not think that we need more skills and capabilities for the waste that we currently have. The waste that we currently have is mainly what is referred to as low-level waste, and we have also got some intermediate-level waste. We have not really got high-level waste because the high-level waste would be the reactor fuel. Under agreements that we have with other countries, we send the reactor fuel overseas for reprocessing, and the reprocessing waste—not the fissile material but the reprocessing waste—is then returned to Australia and is classified as intermediate-level waste. That reactor waste and most of the low-level waste is under Commonwealth relation, regulated by ARPANSA. Most of it is actually stored at the ANSTO facilities at Lucas Heights, and certainly that is where we have got the absolute majority of the intermediate-level waste.

Our assessment is that the storage is safe, but as you say, it is stored in containers, and the intermediate-level waste is stored in containers. These containers need recertification every 10 years. That is a cycle that can be repeated several times, but ultimately there will have to be a facility that will accept this kind of waste for final disposal. As you know, there have been attempts in Australia, and there is currently a process in place, to licence a facility for the disposal of low-level waste and for the storage of intermediate-level waste. There is

also commitment from the Commonwealth Government to seek a final disposal solution for the intermediate level waste. But that is several years away, and in the interim it will have to be stored. It can be stored safely, but it also needs to be monitored, as you said, and the storage casks that are used right now need to be recertified—in the case of the ANSTO waste every 10 years. That can go on for several cycles, but in the end there has to be a disposal solution.

Ms TERPSTRA: Is ARPANSA responsible for the monitoring of the levels of safety with the material that is currently stored? Who then is responsible for repurposing it or repackaging it into a different container, or another container, if radiation is found to be leaking? How does that work?

Dr LARSSON: The responsibility is always with the operator or with the licence-holder. That does not mean that ARPANSA does not have responsibility; we obviously have responsibility for maintaining an oversight program that is effective and that makes sure that the operator, which in this case is ANSTO, takes the responsibility seriously and does the appropriate work. We do that through our regulatory oversight, our inspection program and our discussions with staff at ANSTO, but the responsibility in the end is always with the operator.

Mrs McARTHUR: Thank you, Dr Larsson. What is not to like about nuclear energy?

Dr LARSSON: Well, that is a good and interesting question, but probably you will excuse me if I do not go into details. As I said from the beginning, our role is not to promote or to be an advocate for any of the activities and facilities that we are regulating. The purpose of this organisation is the protection of health and safety and the protection of the public and workers from the harmful effects of radiation, so the policy decision is not ours. Should there be a policy decision and should we be the regulator, then we would make sure that it is safe.

Mrs McARTHUR: In your worldly experience, Dr Larsson, how is it operating elsewhere in the world?

Dr LARSSON: In terms of safety, you mean?

Mrs McARTHUR: Yes, and regulation.

Dr LARSSON: I think that one can say that the international framework for safety is actually very strong. It is something that has been developed over many years in international partnership, in particular under the auspices of the International Atomic Energy Agency, IAEA, but also with other organisations involved, like the International Commission on Radiological Protection and so on. It is applied internationally, but that does not prevent things from happening. As you know, there have been accidents and certainly events that have happened outside of the regulatory control. In the end it is not a framework for safety, it is how people manage the framework for safety. I keep saying to everyone who asks me this kind of question that it is very rare that things break or you have an accident out of nowhere. You can often trace it back to human factors. That is, in the end, what we have to focus on—the human factors. So the framework for safety is good and robust. After the Fukushima accident there was a whole review of the international safety requirements. The conclusion was that with very few amendments the safety requirements are actually fit for purpose, but it is a question of how they are implemented.

Mrs McARTHUR: So finally, Dr Larsson, if Australia lifted this prohibition, or Victoria, and we embarked on nuclear energy, given it is effectively a greenfield site are there gaps in the regulatory framework that have been identified that you could suggest would be beneficial for us to apply that would set an almost perfect situation?

Dr LARSSON: Yes, so as I said, the international framework for safety is fit for purpose. I am not saying that there cannot be improvements done to it, but it is fit for purpose. What would happen in that case, and what I would suggest in that case, is that there would be an international review of the Australian system for safety against those safety requirements. There are actually such reviews offered as a service from the International Atomic Energy Agency for countries that are embarking on nuclear power, and countries that are embarking on nuclear power are utilising these services.

However, we know that there are certain areas of the legislation in Australia that need to be worked on. Apart from the ARPANS Act, that we administer, there is actually no radiation protection legislation in Australia that specifically addresses nuclear facilities. That is only in the ARPANS Act. But as I just said, as a

Commonwealth regulator, we do not have jurisdiction in Victoria, so there will have to be a system for the regulation of nuclear safety that can be applied in Victoria. It is my view, and I have communicated that before, that if Australia or any part of Australia were to embark on nuclear power, and comparing ourselves with other federated countries, that should be under Federal regulation. That does not mean that there could not be a responsibility also of the Victorian regulator in this particular case, but every nuclear power country with a federated constitution, that I am aware of, has a Federal regulator for nuclear power.

Mrs McARTHUR: That would have been my next question, but you have answered it. Excellent.

Dr RATNAM: Thank you, Dr Larsson, for your evidence here today. Just following up from that question, I am just trying to see whether I have got this right. It is, I guess, more a point of clarification as well. Looking at the international examples where they have got much more expansive nuclear activity relative to Australia with the prohibitions, do the regulatory frameworks look very different? I am wondering if the architecture of the regulatory framework is very different in a country with expanded activities. For example, if Australia wanted to move further into that, would we actually have to think about new bids or would it just be expanding what we already have? Would it look the same but just bigger?

Dr LARSSON: The answer to your question is probably a mix of yes and no. If I go back to the ARPANS Act, the ARPANS Act is from 1998. It was actually developed at a time when there was consideration of nuclear power in Australia and there was definitely a move towards replacing the old HIFAR reactor at Lucas Heights—they now have the OPAL reactor there—which means that the ARPANS Act, as it was developed at the time, considered many of the aspects that you need to regulate, let us just say. So there is a framework there. ARPANSA operates and administers the ARPANS Act, and ARPANSA have many of the capabilities that would be needed if it were scaled up to nuclear power, but not all capabilities. Certainly there will have to be a change. It will have to be scaled up, as you just said, and you would have to make considerations of establishing a new baseline so you have a new baseline structure that would actually accommodate for all the aspects and consider all the aspects that you have to consider when you go to nuclear power. Then there would be a scalable component to that as well, which could be dependent on the size of the nuclear power program. But the ARPANS Act is not fundamentally different from the legislation in most countries that operate nuclear power.

I should also say that there are some areas that in that case would have to be considered in the legislation, for instance the management of high-level waste that we were just talking about, because as it is currently, the reactor fuel is shipped overseas for reprocessing. Australia would have to take a decision on what the policy should be for the management of the spent fuel, and if the policy would be to dispose of the high-level waste in Australia, then of course this would not be accommodated in the national radioactive waste management facility which is now under consideration. That would be a completely different system that had to be put in place for the management of the spent fuel.

This would also go into the area of funding because the back end of the nuclear fuel cycle requires funding. The usual internationally acknowledged principle for doing that is that you set aside the money as the reactors are operating and actually revenue-generating and make sure that you have enough funds so that you can take care of the back end of the nuclear fuel cycle when that time comes. What we have seen in many countries, of course, is that the back end is considered a little bit too late. Many countries are now busily looking at solutions for the high-level waste and the spent fuel, and they are taking different approaches. But I would in that case probably suggest that Australia would take a different approach and consider the back end already at the beginning.

Dr RATNAM: Can I ask a follow-up question to that: in mentioning that some of the international jurisdictions are rethinking their approach to the back end, what has caused that? Why are they rethinking it now?

Dr LARSSON: They are not rethinking it; in some cases they are even thinking it. In some countries, and certainly the country where I come from, after some of the reactors had been started it was actually a condition placed on starting more reactors that there would have to be consideration of the back end. It was not until the government of Sweden at that point in time was convinced that serious consideration had been given to the back end that fuel loading of the new reactors was allowed. So that is one way by which one can address it. But as we have seen, we should also be aware that the establishment of waste management facilities for this kind of waste is a long process. It requires a site selection process, it requires community consultation, and it is

sometimes a contentious decision. So when waste management is discussed, you are in it for a long haul and it is wise to start early.

Dr RATNAM: Just going back to what you said earlier in your evidence when we were talking about state legislation versus Federal legislation and what is currently in place in Australia, you were talking about the ARPANS Act not having jurisdiction over the states, and then there is the EPBC Act as well—so there are prohibitions in the Federal legislation. Should a state, for example, want to lift its prohibitions and expand its activities, is it actually legally possible, or would it conflict too much with those pieces of legislation unless the Federal legislation was also changed simultaneously?

Dr LARSSON: It would not conflict with the ARPANS Act because the ARPANS Act only applies to the Commonwealth, but it would conflict with the EPBC Act.

Dr RATNAM: Right, so you would need the change there. Okay, thank you.

Dr LARSSON: Yes. And the prohibitions that we have in the ARPANS Act and in the EPBC Act are the same—so it is for a nuclear power plant, it is for a fuel fabrication plant, a reprocessing plant and so forth.

Ms BATH: Thanks, Dr Larsson. Just going back, you mentioned it a couple of times in terms of the nuclear waste and in terms of high-level waste being reprocessed into intermediate-level waste and moving between countries—that if it was made here, for example, it would be reprocessed in another country and then delivered back to us. Did I hear that correctly?

Dr LARSSON: Yes, that is the current practice with the research reactor fuel after it has been used in the Lucas Heights reactor. It is being shipped overseas, where it is reprocessed—in this particular case in France. France would keep the fissile material that can be used for the production of new fuel, but the waste that does not have any future use is returned back to Australia.

Ms BATH: Could you explain in layman's terms what fissile fuel is? Could I have an example of that?

Dr LARSSON: Yes. When the fuel has been used in the reactor there will still be residues of the material that can be used for the production of new nuclear fuel, and that is not only the remaining uranium but also material that has been generated during the time it has been sitting in the reactor. You can extract this. You can essentially dissolve the fuel and you can extract those substances that can then be used again for the production of reactor fuel. That would normally lead to something which is called MOX fuel. MOX fuel means that it is mixed oxides, and it is uranium and it is other substances, but it is fissile. But then there are the fission products that cannot be used for anything else, and the fission products that cannot be used for anything else are returned to Australia for us to manage here and store in waiting for a final solution for disposal.

Ms BATH: And when does your jurisdiction start again? When it hits Australian soil? Or do you have any oversight and risk management when it is external to Australia?

Dr LARSSON: Not when it is external to Australia. But we certainly, through our contacts with ANSTO, know precisely what is being returned, and we can do the assessment of the suitability of the waste that is returned for the waste management systems that we have in Australia. Currently, as I said, we are storing it.

Ms BATH: I think you mentioned in the Inquiry in the House of Representatives last year an increase in the scaling of your requirements if there were to be expanded nuclear activities.

Dr LARSSON: Yes.

Ms BATH: The numbers that exist now—what percentage increase would you need to cope with that?

Dr LARSSON: I would really have to do a little bit of research in order to come up with a precise or more specific number about that. As I said, we have about 130 to 135 staff and many capabilities. But if we compare the Nordic countries, for instance Sweden and Finland, Sweden has a mature nuclear power program. We had once upon a time 12 operating reactors and of course the waste management responsibilities and all of that. That safety agency has in the order of 320 or so staff. The Finnish regulatory agency is of the same size. The nuclear power program is comparatively smaller, but they are on the other hand also involved in new build projects, so it is about the same size. So that gives you a rough indication of the size of the regulatory authority.

But I should add that is not only for nuclear, that is also for radiation protection and radiation sources and so on, so it is really dependent on what mandate you give to that regulatory agency.

Mrs McARTHUR: I am interested, Dr Larsson, in the country or the industry that is reprocessing our waste and then sending back what is not suitable for further use in nuclear energy. I am sure they are perhaps not doing that out of the goodness of their hearts. Is there an economic model or benefit that Australia or the company or Victoria could gain from actually reprocessing our own waste?

Dr LARSSON: Yes, that is a very good question, and it is very difficult to answer that. A reprocessing facility, as I said, would be prohibited under the legislation as it is now, and there are not many reprocessing facilities in the world. Whether there is actually room for further reprocessing capability and capacity in the world, I do not have the answer to that.

Mr ATKINSON: Thank you, Dr Larsson. In terms of worldwide practice with nuclear reactors and so forth, what country or countries would you suggest have the best regime for management and oversight?

Dr LARSSON: A very difficult question again. I do not think that we have a ranking system for that. What I would do in that case is look at countries that have established a structure that covers everything from the front end to the back end. The front end essentially starts, of course, with the mining of radioactive ores, and the cycle—which is not a cycle in this particular case—finishes with the back end, which is really the disposal of the radioactive substances, including, if that is the solution, the disposal of the spent fuel. A number of countries have established systems that consider the whole. I mentioned two countries previously, but there are also other countries that are pursuing the whole nuclear fuel cycle, and I would probably look at them in order to see how they have set up their regulatory structure.

Mr ATKINSON: Just on a tangent away from power: people in the medical fraternity have indicated to me that Lucas Heights has struggled to meet the demand for the services drawn by the medical profession. Particularly last year I think there were some major issues. Can you just advise on the Lucas Heights situation and the need for at least one additional facility, irrespective of what Lucas Heights might do to improve its capacity?

Dr LARSSON: Well, you are right that there have been a number of safety issues at the Lucas Heights facility and with the nuclear medicine production in recent years. Currently, under the licence condition that is imposed by ARPANSA, we have restricted the production at Lucas Heights to a level that can only sustain the Australian market but not the international market. We have done that because of a number of events, I would say of significance, that have occurred relatively recently. The most recent one, which led to this restriction, was a contamination event where three workers were contaminated and two of them significantly over the statutory dose limits for exposure to the skin. This was recorded on the so-called INES, which is the International Nuclear and Radiological Event Scale, as a level 2, which we do not have that many of in a year in the world. I took the decision that there was a need to improve safety practices at the facility, and in order to free up resources for them to work on that while still producing nuclear medicine I imposed a restriction on the production so that it can sustain the Australian market but it cannot sustain or deliver to the international market.

ANSTO has over the last month made a tremendous effort to rectify all those issues that have been identified, and we are currently looking at that work to see whether we can lift that restriction, but that is not a decision that has been taken yet and I am not pre-empting the regulatory decision. But that is one illustration of the problems that ANSTO has experienced in recent years.

Mr ATKINSON: I am a bit of a fan of having facilities that are spread rather than located in one place in the event of catastrophic events or breakdowns or whatever. Do you have any view on whether or not a second facility in the same area as Lucas Heights is operating in fact would provide a significant advantage to Australia and afford some protection in the event of difficulties?

Dr LARSSON: I think the government's consideration at the time when it was decided to fund the new facility at Lucas Heights was that there should be production in Australia. Theoretically Australia could rely on the importation of these substances, but that would mean being dependent on a relatively small number of producers around the world. In some cases also these producers operate ageing facilities and ageing reactors, so

there is uncertainty around the possibility to sustain a steady supply of nuclear medicine. We are talking here about molybdenum-99 and technetium-99.

The ANM facility, or the new facility, at Lucas Heights is obviously a facility that is intended to make sure that we can sustain the supply to the Australian market. There are considerations that would have to go into a decision to expand the production capacity. That has to do with the economy, and this is outside the remit that we have. Our remit is the health and safety of the workers and the public. That is our focus, so I am not really able to answer your question because that, again, would be a policy decision.

Mr ATKINSON: That is fair enough. Proponents of nuclear energy suggest that Australia is actually a fairly good place, as a continent, to deal with the long-term waste issues because of the stability of the continent, and it is suggested that there is limited risk associated with that in terms of long-term storage—and we are talking tens of thousands of years. Do you, as a regulator, have any views on that proposition or indeed any evidence that would support those proponents in that argument?

Dr LARSSON: I think as a regulator what I would have to say in this particular case is that I would have to let the operator or the proponent convince me that that can be done, and I think it would just not be appropriate to jump to conclusions before you have done that. This is the approach that we are taking in all our licensing decisions. We are not jumping to conclusions, but we are requesting the proponent for a facility of that nature, for instance, to convince us that this is safe, and we will make our own assessment of it.

Mr LIMBRICK: Can I just follow on from one question from Mr Atkinson: what would be the effect, or what would be the consequences to Australia if, for example, there was an interruption at Lucas Heights and we could not find an international supplier for, say, technetium-99? What does that mean for Australia if we cannot actually produce or source that material?

Dr LARSSON: Well, we have experienced it already during some of the outages. There was a limitation, or an outage, in production at the Australian facility for some time. Other measures can be put in place so that, for instance, we produce the molybdenum-99 in Australia and ship it overseas, and then the technetium generators would be manufactured outside of Australia, or the separation of the molybdenum-99 from the uranium would take place outside of Australia. The problem with all of these arrangements, of course, is that they take time to implement, and this is not a product that you can stockpile. The half-life of molybdenum-99 is less than three days, so we cannot stockpile this product, and the technetium-99, which is actually used in the procedures, has a half-life of only 6 hours. So there will be an immediate shortfall in delivery to the Australian markets when you have a disturbance like this, which means that you will have to set up alternative arrangements.

But there are very few producers around the world at this point in time, which means that the market is vulnerable. Provided the producers operate and do not have problems with their delivery, there is sufficient production capacity in the world, but if something happens at short notice or suddenly, you will still have to adjust and get hold of a delivery from the international market. That takes time, and in the meantime there will be consequences.

Mr LIMBRICK: What sort of consequences do we mean, though?

Dr LARSSON: The consequences will basically be that there will be a shortage of nuclear medicine, which will affect planned procedures and disrupt the healthcare system.

The CHAIR: If there is nothing further, thank you very much, Dr Larsson. One of our Members unfortunately had to leave early. Ms Taylor would like to send you a couple of questions via email, if that is possible, via the Secretariat.

Dr LARSSON: By all means.

The CHAIR: We would appreciate it if you are able to respond to those. Again, thank you for your time this afternoon and your contribution.

Committee adjourned.