

Submission

to

Senate Employment, Workplace Relations and Education
Legislation Committee

Inquiry into the Commonwealth Radioactive Waste Management Bill 2005

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The Chair - Senator Judith Troeth
Senate Employment, Workplace Relations and Education Committee

Inquiry into Commonwealth Radioactive Waste Management Bill 2005
Introduction.

This submission is presented on behalf of the Sutherland Shire Environment Centre (SSEC) and People against a Nuclear Reactor (PANR) a local community action group. It is essentially the same as that sent to the NSW Inquiry into the Transport and Storage of Nuclear Waste in August 2003. Whilst the actions suggested were targeted at the NSW Government, the information on the actual wastes and the nonsensical idea of transporting Sydney waste thousands of kilometres, are pertinent to the proposals to bulldoze the constitutional rights of the Northern Territory.

The SSEC has been involved in the question of whether Australia needs a new nuclear reactor since the Research Reactor Review (RRR) in 1992/3. Individual members of the Centre however have taken a keen interest in the operation of ANSTO during its working life, some since it was commissioned in 1958. We have presented submissions to the RRR, to a variety of Senate Select Committees, to the Environmental Impact Study into the Lucas Heights site, to the Joint Public Works Committee that examined the contract between ANSTO and INVAP, and to an assortment of public comments required by ARPANSA regarding its legislation and licence application assessments.

Our membership is almost entirely local and we work on a system of Committees that deal with a wide range of local issues that affect all aspects of the environment in the Sutherland Shire. At times an issue has ramifications that extend outside the Shire, such as the exporting of spent nuclear fuel to Scotland and France for reprocessing and to the US for permanent storage. It should be noted by your Committee that reprocessing spent fuel in Australia is anathema to our politicians and is outlawed at present by legislation. ARPANSA is not allowed to licence a reprocessing plant.

As part of our concerns on nuclear matters where problems created in Australia are passed on to the UK and France we have also sent submissions to the Scottish Environmental Protection Inquiry into nuclear waste (at Dounreay) and to a similar inquiry held by the House of Lords. Several weeks after the Scottish inquiry was held Dounreay reprocessing plant was closed down permanently.

Both our organisations are self-funded and are not affiliated with any political parties. They provide independent opinion and advice on environmental matters that affect the Shire. Members regularly sit on a variety of Council committees. Within our financial means we research our opinions and consider ourselves objective and totally independent.

We are not 'ferals', neither are we anti-science. We suggest that the Lucas Heights site be run as ASTO - the Australian Science and Technology Organisation - its major tasks being the solving of the world's environmental problems (former Australian Chief Scientist Professor John Stocker said that this would be the major job for science before the year 2020) and the eradication of nuclear waste, not only in Australia but as an international project. This would result in an increase of staff that would have the full support of all the local communities.

Note.

In its submission to the Commonwealth Select Committee on the Dangers of Radioactive Waste 1995, the Centre advocated an above ground waste repository in a remote, geologically stable area. In hindsight this was not a fully reasoned position and was prompted by our genuine concerns that Lucas Heights should not remain a permanent waste dump. That concern has not changed but it is now realised that the movement of radioactive wastes halfway across Australia and dumping it on another community is neither a sensible nor an ethical position.

Eight years later and the consumption of thousand of pages of documents from the Commonwealth Government, ANSTO and the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) have given us greater insight. Merely moving the waste from one site to another does not solve the problem. The problem remains but the geography is different.

Sourcing, Transport and Storage of nuclear waste

Sourcing.

Our submission deals with the nuclear waste produced at the Lucas Heights reactor site. This site produces the bulk of the waste and must be seen as the reason for this Inquiry.

Gaseous Emissions "Normal" Emissions

We have purposely placed quotation marks around the word normal to remind the Committee of the statement (claim, commitment, assurance, promise) by Professor Baxter to Sutherland Council when he was selling the idea of setting up HIFAR in the 1950's, that there would be no gaseous or liquid emissions from the operation of the reactor. An eminent person, a distinguished scientist and one who could make pronouncements that were proved to be incorrect and misleading.

Whilst such emissions have become common, usual, routine in this district they will never be 'normal'. This point was taken up eloquently by Parkman in its peer review of the Draft EIS on the Lucas heights site. *"Some caution needs to be applied when making comparisons with natural background (radiation) to avoid the impression that one can conclude that the potential exposure is acceptable because it is less than natural background. All exposure will be in addition to natural background, are*

imposed, not voluntary and, unlike natural background, could be avoided if the proposal does not go ahead."

Liquid Wastes.

The bulk of the low level liquid wastes produced at ANSTO are held for a time in reservoirs until the level of radioactivity is reduced. At that time they are discharged to the sewer system that flows to the tertiary treatment plant at Kurnell and thence to the sea. In the past traces of tritium have been found in the seawater. This is dangerous if ingested.

There is talk of the treated water being used on council lands and we are sure that the submission from the Sutherland Shire Council will expand on this. In more normal circumstances the use of treated water should be useful, especially in times of drought. However, should it ever be decided to offer water that has passed from Lucas Heights for household use the community would be rightly alarmed.

Intermediate Level Long-Lived Wastes from radiopharmaceutical production.

This is a subject that is a vexing and ongoing saga dating back to the mid 1980s. In 1988 the now defunct Safety Review Committee (SRC), an advisory overseer with no powers other than to recommend, pointed out that the storage tanks that held this highly radioactive liquid were a hazard with a potential for off-site consequences. It recommended that the problem be dealt with as a matter of urgency. Over the subsequent 10 years, each annual report of the SRC called for urgent action and the CEO of ANSTO promised, each year, that it would be dealt with urgently.

ANSTO realised that it had a growing problem and attempted to set up a plant to solidify the liquid. However it proved so difficult (and dangerous) that it was postponed. In the report by the Canadian Atomic Energy team that inspected the Lucas Heights facility in 1990 it described the liquid waste as 'High Level', a term that ANSTO now rejects due to a technicality. However it requires the same kind of handling, shielding and long-term storage as high-level radioactive waste

Finally, in 1999, a solidification process was introduced and, at 27 May 424 litres had been processed. We were advised by the Manager of ANSTO's Waste Management Action plan that it would take about 3 years to solidify all the waste. At 6 December 2000, 2100 litres had been processed and 6500 litres remained.

At the same time however the radioactive isotopes continue to be produced and new waste is the by-product. One assumed that the new waste would be solidified immediately but apparently not. According to the ANSTO Communications Manager, Ms Keenan (*Email 6.12.2000*) '*The liquid waste from current molybdenum production continues to be transferred to stainless steel tanks before it is solidified*'. To confuse the situation even more we were advised by ANSTO on 2 June 2003 that 3940 litres had been processed – and that approx 78 litres per month were being processed and 38 litres per month added.

And ANSTO has said that its production of radioisotopes using a new reactor could increase four-fold. A dog chasing its tail?

Even when solidified and dramatically reduced in volume the radioactivity is the same and shielding would be required for thousands of years. This is the waste that is destined for the proposed Store.

It should be noted that the waste solidified so far is stored '*in two high integrity stainless steel vessels with a design life of at least 50 years*' (emphasis added) (ANSTO Annual Report 1999/2000 page 5.) Only 50 years – for waste that lasts for thousands of years? The long-term goal is to immobilise the waste in something similar to Synroc but this has been promised for the past 20 years or more. The most logical course would be to immobilise the liquid waste in Synroc directly – as this was the original aim of Synroc. But in spite of the \$40 million plus spent already on the development of Synroc its commercial use still a dot on the horizon.

ANSTO promises a new method of producing radioisotopes but there is little actual detail available.

Short Lived Low Level Solid Wastes.

With typical understatement this is usually defined by ANSTO and its Minister as comprising lightly contaminated materials such as gloves, clothing and paper. For many years the NSW Government has rightly declined the suggestion that this be dumped in metropolitan landfill tips. The Lucas Heights tip would be 'ideal' for ANSTO as it just across the road.

This material is proposed for the national waste dump. But is it as innocuous as we are led to believe? In the EIS on the dump, Table E-7 shows that long-lived intermediate level waste including uranium and plutonium with potential half lives of thousands of years would be sent to the dump. Whilst it would be 'diluted' by scattering it rather than keeping it in one place this is not within the description of the dump. The NSW Government has made the correct decision not to allow ANSTO to send its waste to the tip.

Long-lived Intermediate Level Solid Waste

A major source would be from the finally solidified waste from radioisotope production as mentioned above. Whether it would be in the state that it is now or whether it is eventually bound in Synroc has not been specified. It took over 10 years to commence solidification in spite of the urgency imposed by the Safety Review Committee - ANSTO works to very long time scales. If it has to wait for a Synroc application then it could stay for several more years on site as a processing plant would need building.

Another, and the largest in bulk as well as radioactivity will be the waste returned from overseas reprocessing. Presumably this would go directly to a Store.

Little Forest Burial Ground.

This land lies across the road from ANSTO and is the site for wastes produced between 1960 and 1968 by the AAEC. It is surrounded by a cyclone wire fence and has a security camera. At one stage the camera was out of order and was not repaired for several months as ANSTO's budget was running low.

The site holds a variety of materials including small quantities of uranium and plutonium. There is also a large amount of beryllium that is very toxic. In 1991 Coffey Partners International carried out a survey of the site and concluded that there had been very little movement of the radioactive material and that health risks to humans was very small. It also suggested that the site needed regular monitoring to ensure that nothing migrated off the site. Markedly it also recommended that there should be no disturbance of the trenches that hold the waste.

In the assessment report issued by Environment Australia, following the EIS on the Lucas Heights site there was a suggestion that the materials in the LFBG be removed and transported to the national dump when it was set up. This suggestion was picked up by the Joint Standing Committee on Public Works when it approved the funding for the new reactor project.

These conflicting 'expert' ideas leave the locals residents once again in the middle of a potentially dangerous, no-win situation. If it is left as it is there is a possibility, that it will eventually leach into the local waterways with potential for health problems. There are already urban stories of certain streets on the edge of Menai where unusual health problems have occurred. On the other hand were the trenches disturbed as part of any method of removing the waste from the site then we could be in a worse position.

Question: Will the NSW Government investigate this as it a potential health issue? The ground belongs to the Commonwealth but the duty of care for the health of NSW residents is that of the NSW Government.

Is there a need for a national repository?

The search for a national radioactive waste dump is based on the continued and expanded operation of a nuclear reactor in Australia at Lucas Heights. It would provide the dump with the majority by volume and radioactivity of the waste that would it would produce. The resultant site selection, half way across this continent, is beyond logic. Reason dictates that it should be stored closer to its origin to minimise the effects and costs of transport. Storage in an aboveground, dry store, was the preferred method recommended by the 1995/6 Senate Select Committee in its report "No Time to Waste".

A simple, safer and far less costly plan would be the setting up of stores in each State (in fact storage facilities already exist for hazardous goods in most States). At least then producers and users of radioactive materials would have some ownership of the problem. For it to be imposed by the Commonwealth on one State arbitrarily is grossly unfair.

For ANSTO not to house its own waste on site at Lucas Heights was a specific political decision based on the knowledge that the local community would not accept both a new reactor – operating for the next half-century – and a permanent waste dump. For some reason communities worldwide are more averse to living next to a nuclear waste dump than a working reactor. The political decision was to impose the new reactor and, at the same time the government was able to claim that it was removing the waste well away from the Sutherland Shire.

This was an opportunity for the Sutherland Shire politicians in 1997 to boast of a ‘win’ for the Shire. However they failed to see that the production of nuclear wastes and its storage at Lucas Heights would continue for another half century regardless and at the end of that period there would be 2 reactors waiting for decommissioning (three if MOATA is included) - a task that may take from between 30 and 100 years.

It is highly regrettable that politics take precedence over reason in these important matters, even more so when it has then to justify the decisions through an apparently scientific EIS process.

Lucas Heights will always be a waste store/repository.

Whether a national waste dump and store are built or not, Lucas heights will always remain a waste dump. It has been the de facto dump since 1958. As long as a reactor is operating it will produce waste that will be held ‘temporarily’ at the site. This includes the wastes, liquid or solid from the manufacture of radioisotopes and the spent fuel from the reactor as well as the low level material that will remain in drums until the next intermittent trip to the dump.

The plan for the new reactor is to have space for 9 years arisings of spent fuel as its plan to send them on a world tour for reprocessing will only come up every few years. The main reprocessors may not be in business over the life of a new reactor. The Dounreay plant in Scotland, ANSTO’s original option, closed after many technical problems and after polluting the sea and beaches in the area. In Europe there is a huge push to close Sellafield in Cumbria for similar reasons. It has polluted the Irish sea and its wastes have finished up on the coasts of Scandinavia. The US no longer reprocesses spent fuel. ANSTO’s present option is COGEMA in France

If the reprocessing pipeline closes then ANSTO would have to have another option. If it has it is not yet in the public area. No worries, we will think about that later!

At any stage there could be from 80 to 300 spent fuel rods on site. They will be huddled cosily next to the new reactor in the cooling pond.

Note: The stainless steel tank that is a vital part of the whole project is at present being investigated by ARPANSA. 22 of the holes for connecting pipe-work were incorrectly positioned, cut and the tank rolled. The manufacturer attempted to fill the misplaced holes with new plates and re-weld against the conditions of its contract. ARPANSA has to decide whether to allow a botched up cooling tank to be part of a \$300 million reactor project.

Choosing a waste dumpsite.

In 1992 the Commonwealth Government issued a discussion paper A Radioactive Repository for Australia: Methods for Choosing the Right Site. Public comment was sought and by 1994 a second paper was released, Site Selection Study - Phase 2.

At a seminar in Sydney on nuclear issues, an officer of the Department of Primary Industry and Resources said that to overcome the inevitable and understandable NIMBY effect, the survey had looked into every backyard in Australia. The Phase 2 document shows the methods and the criteria used to produce the eight regions deemed to be suitable for a site. The criteria included geological and hydro-geological stability; stable climatic conditions; seismic, tectonic and volcanic activity; low population with little chance of population increase; groundwater; a geology which would not allow migration of radioactivity off site; no known mineral resources or potential for agricultural development; reasonable access for transport; the location to have no cultural or historical significance or to be subject to ownership claims.

It should be noted here how this differed from the alleged site selection process for a new nuclear reactor to replace HIFAR. The waste dump study found the entire east coast of Australia unsuitable using its agreed criteria. On the other hand, only one site for a new reactor was put forward – Lucas Heights. This was not a simple case of one government department not knowing what another was doing but a deliberate policy of the Commonwealth Government itself. It refused to make public the site selection process for the new reactor but Sutherland Shire Council finally obtained it under Freedom of Information. A mere 5 pages long it listed very briefly several alternatives and dismissed all with the exception of Lucas Heights, some because of the expected residential growth over the next 40 years. Significantly the name of the sitting Federal Member and political party was shown for each alternative.

Finally Billa Kalina was chosen as the most suitable site and all hell broke out politically in South Australia.

Definitions, Time Scales and Potential Sites.

Whenever nuclear waste management is mentioned the terms "interim", "short-term" "temporary", "not permanent" and, more honestly, "timing uncertain", are used. These are expressions used throughout the industry and certainly in Australia. In 1992, at the Research Reactor Review (RRR), referring to the waste presently held at the Lucas Heights, Sydney, nuclear site, Professor Parsons of the Australian Ionising Advisory Council said, "*Whilst the existing storage of waste might go on for 40 or 50 years we have got to come up with some solution for the permanent management and disposal of High Level waste.....something that does not need supervising for 100,000 years*". Apart from this plea he was unable to give any substantive advice.

As our waste has been accumulating since 1958, Professor Parsons was admitting that "short term" means about 80-100 years, at which time the industry may have come up with a solution acceptable to government, the wider scientific community and to the

Australian people. No other industry would be allowed to create such a situation in a responsible society.

The disputed dump for low level and short-lived intermediate level waste that the Commonwealth hopes to build in South Australia is designed for materials that have a half-life of up to 30 years. When Senator Bob Collins was Minister for Resources he said that the radioactivity “would be negligible in 300 years”. Whilst this might not sound very long it is 100 years longer than the time since Europeans settled in Australia.

The Store proposed for long-lived intermediate level waste (LLILW) – materials that remain radioactive for many thousands of years – has an expected life of around 50 years, at which time the situation as to what to do with it will be reviewed. It will also be at a time when most of the present scientists, legislators and nuclear regulators will be dead or too old to remember their decisions made at the turn of the 20th century.

The next generations will have to take up the challenges of how to deal with that waste plus that from the HIFAR reactor that could still be in its decommissioning stage.

The store was originally proposed to be ‘co-located’ at the waste dump site but, following the political back-lash in South Australia the Commonwealth retreated and conceded that it would not be sited in that State. To date it has not released details of its alternative site, possibly waiting for the results of this inquiry. But recent events and actions in Western Australia and the Northern Territory point to NSW as being the most likely site.

Olary, close to Broken Hill appears to be next in line.

Decommissioning Wastes

ANSTO and the Commonwealth Government are apt to minimise the dangers that lie within the HIFAR reactor. We hear on a regular basis that it is the size of a household washing machine, that its fuel could fit into a coffee cup and that, in the event of a complete melt down and destruction of the containment building there would be no harmful effects to the local community as any radiation would not pass the cyclone wire fence surrounding the site. Even Premier Carr repeated this following his meeting with the ANSTO CEO at a recent State security meeting.

So what is the other side of the story? In September 1992 in a reply from John Rolland, Director of External Affairs at ANSTO, to a question about the decommissioning of HIFAR the following details were given.

“No decisions have yet been made in relation to the method of decommissioning HIFAR. However, there are normally three basis stages in decommissioning a reactor as follows:

1. Reactor shutdown, removal of spent fuel and other movable parts and other radioactive equipment, followed by a period of normal care and maintenance. The

longer this care and maintenance period, the lower will be the radiation dose to workers and the cost of the next decommissioning stages.

2. Dismantling and removal of fixed equipment outside the reactor's concrete biological shield. A care and maintenance period of 30 – 50 years as above would allow radioactivity to decay to levels which would remove the need for remotely operated tools.

3. Dismantling and removal of the biological shield and reactor internals after a further period of 50 years. This would allow the return of the site for unrestricted use."

Although the return of the site to what ANSTO refers to as a 'green-field site' sounds attractive to future generations it would still involve the movement of more long-lived intermediate level waste – somewhere. But there is another option in ANSTO's book - that of entombing the remains in concrete and leaving it on site. One wonders whose name will be on the plaque.

So is the waste produced at Lucas Heights dangerous?

On 14th and 17th December 2001, at a public forum that was arranged by ARPANSA as part of its process for dealing with an application for a licence to construct a new reactor a witness was Tony Wood, a former chief nuclear engineer at ANSTO. He is a supporter of the new reactor. He is also a realist. I urge the Committee to obtain a copy of the complete forum transcripts from ARPANSA. To save you some time I have attached copies of part of the transcript.

Mr Wood's concerns were, in part, about the Preliminary Safety Analysis Report (PSAR) that accompanied ANSTO's licence application. Here is an extract:

"My dilemma with the PSAR: with respect to the PSAR the bottom line is that we have an open-pool reactor which at any time will contain half a million curies of iodine¹³¹. We only have to let out one quarter of one percent of this iodine to escape to the atmosphere before the exposure dose at the exclusion boundary exceeds the recommended IAEA generic intervention level for iodine prophylaxis adopted by ARPANSA. This is a safe reactor but it is not harmless, as depicted by ANSTO in its handout publicity material.

The PSAR tells us that the most severe of all accidents considered delivers a smaller dose at the exclusion boundary than an individual living for one month in Sydney would receive through natural background. Moreover it suggests that even this infinitesimally trivial event would not be expected to occur more than once in 300,000 years. At this point in the preparation of the PSAR an important point has been overlooked, it is called a reality check and this check tells me that this result is unreal. It has been achieved by a series of logical steps but has led to an illogical conclusion which is not apparent to ANSTO."

Mr Wood's opening statement went to 9 pages followed by questioning and discussion with the panel of experts. He spoke also about safety culture, terrorism and

emergency management plans (NSW has responsibility for all events involving off site consequences of radiation releases for the Lucas Heights site).

Transportation to the Dump.

The Commonwealth's preferred scheme of one dump and one store – preferably on the same site – as a solution to Australia's radioactive waste problem does not make much sense. The size of this continent makes the option bizarre. The bulk of the waste and by far the greatest quantity of radioactivity is generated at Lucas Heights. The road distance between Sydney and SA varies between 1400 and 1700 Km.

We cannot comment on all the routes to the proposed dump in SA but one wonders if the proponents of the scheme have ever driven across the Blue Mountains from Sydney. The estimates of the risk of truck accidents over a period of the life of the dump in the EIS for the dump-site do not take into consideration 'Murphy's Law' that if a thing can go wrong, it will. The road from Penrith to Lithgow, whilst better than it was 30 years ago, is still narrow, winding and dangerous.

Local State above ground stores would minimise the risk of accidents and remove the onus from local country councils to look after the effects of an accident.

Questions for the Committee: Across NSW how many HAZMAT units are there capable of dealing with a radiation spill?

Are the local HAZMAT commanders and crews trained in such matters?

How long would it take HAZMAT unit to get from its base to the more remote communities along the proposed transport routes?

How do they clean up radioactive contamination?

Do they have protective clothing?

Could a radiation spill in the Blue Mountains affect its World Heritage status?

Sustainable, long-term management.

The use of the word management implies that permanent, safe and final disposal methods are not expected in our lifetime. Overseas much time and massive amounts of money have gone into researching the permanent deep geological burial of High Level radioactive wastes. The tunnel system at Yucca Mountain in the USA was almost ready to be the world's first permanent disposal site when it was downgraded to an "interim" storage site. More recently, the US President signed off on the project, against the opposition from the State Governor. A similar situation occurred at Sellafield in the UK except that the project was called off before construction took place. It is obvious that even the most dedicated supporters of the nuclear industry are not intrepid enough to sign their names to a "permanent" solution.

If long-term management, as opposed to permanent disposal, is the aim then the only suitable and sensible method is aboveground, dry, retrievable storage. In fact this would mean that the waste would be accessible if and when a technical method of safe disposal is ever found. This may never happen.

Out of Sight – Out of Mind.

If oversight of radioactive waste is paramount then who better to keep an eye on it than the people are trained in that field who have no scruples about producing it. If it is sent away from Lucas Heights then ANSTO's management and staff will breath a collective sigh of relief, forget all about it and continue to produce more of the same. The problem that they created will be 'solved' and their consciences will be clear.

But it will not have been solved, merely moved to another place. It would then be 'owned' by another unwilling community.

Transportation – are there any winners?

The big winner would be ANSTO. Its Lucas Heights site is, and has been, the dump/store/repository/facility since 1958 and it is now an embarrassing reminder of the Australian Atomic Energy Commission (AEEC) and ANSTO's lack of foresight. Not that this is essentially different from the rest of the international nuclear industry. After half a century of producing nuclear waste and waiting, hopefully, for a solution to turn up the 'interim' storage sites have filled and the problem has reached crisis point.

If the Lucas Heights waste is removed, the group that would claim it as their own victory would be those local Shire politicians at all levels from local through State and up to Federal who, after opposing the new reactor project in 1997, strongly supported it so long as the waste was removed. This was confirmed in the Environmental Report, February 1999, that accompanied the Environmental Impact Study on the Lucas Heights site. *"Acceptable 'compensation' for the reactor proceeding is likely to relate more to removal of all stored wastes at Lucas Heights and rigorous implementation of waste minimisation and emission reduction strategies according to a strict timetable and under the independent surveillance of ARPANSA."*

Who loses from transportation?

The communities along whatever transport routes are chosen become the losers. Many have not been consulted. Most have the main road passing through the centre of the town. They would never be informed when a waste transport was to pass through. Then there are the agricultural regions, including the vineyards, along the way. The State Emergency Services who are not trained to deal with radioactive waste spills. Also there are the communities close to the dumpsites.

Then there are the indigenous people in that area. Isn't it odd that in so many countries that want to dump nuclear waste, they choose land owned or occupied by indigenes? The US, Russia, China are guilty of this and now Australia wants to do the

same. In the case of the traditional owners in South Australia a powerful campaign has been mounted against the proposed dump. "They do not want the poison".

What about the people of Sutherland Shire?

Should the combined opposition of the State Governments of South Australia, Western Australia and the Northern Territory Council plus that of the communities along the transport routes be successful in preventing waste being dumped in their jurisdictions then a possible outcome could be that it remains at Lucas Heights.

This leaves the Sutherland Shire communities, the losers, with Sophie's Choice. The local population will have lived and will die with two reactors remaining (plus a smaller one, MOATA) whatever happens to the waste. The defunct reactors will need decommissioning and this will create more waste. Lucas Heights is still Australia's *de facto* waste dump, the next generations would have the waste produced by both reactors for about a century.

Add to this the on-going threat of terrorist attacks and it becomes obvious that our communities would have an uncertain future. However, as outlined earlier the Centre cannot take an unethical position of wanting it dumped on another community, however remote it might appear.

Health and safety risks associated with waste transportation and storage.

Social Effects of Land Contamination.

There have been many reports over the past 6 years on the building of a new reactor at Lucas Heights and associated waste issues. They include Environmental Impact Studies, Senate Inquiries and licence applications and approvals by ARPANSA. Not one has considered the social and financial effects of land contamination following a radiation release. The apparent reason is that this is not a scientific subject and social matters are not their problem.

In the application for a licence to construct a new reactor we are told, "there could be alienation of the land for perhaps a short time only"! Why does no government department consider this issue? If there is 'only short term' alienation may we presume that neither ANSTO nor the Commonwealth would take responsibility for loss of value or the possibility of psychological effects of knowing that 'low doses' of radiation had affected the area? This is not good enough!

This deliberate omission once again leaves local residents in limbo. An accident or an act of sabotage at Lucas Heights or along a transport route would have social effects even if the amount of radiation was deemed not to be harmful to health. That our legislators and regulators do not take this into consideration is a disgrace.

Question: If the NSW Government approves waste transportation and there is a radiation spill that affects a community, what financial responsibility would the NSW Government have?

Health.

Stable Iodine Tablets.

The special medical needs of children make it essential that Emergency Services are prepared for radiation disasters. The short- and long-term consequences of a radiation disaster are significantly greater in children for several reasons. First, children have a disproportionately higher minute ventilation, leading to greater internal exposure to radioactive gases. Children have a significantly greater risk of developing cancer even when they are exposed to radiation in utero. The paediatrician has a critical role in planning for radiation disasters. For example, potassium iodide is of proven value for thyroid protection but must be given before or very soon after exposure to radioiodines, requiring its placement in homes, schools, and child-care centres. Paediatricians should work with public health authorities to ensure that children receive full consideration in local planning for a radiation disaster. (*The American Academy of Paediatrics (AAP) Radiation Disasters and Children policy statement*)

According to the Las Vegas Sun, June 11 2002, sales of potassium iodide (KI) which is used to protect the thyroid gland from one type of radioactive fallout, are going through the roof – even though it is not a cure-all. (It blocks no other type of radiation and protects no other body part.) One Internet site, NukePills.com reported orders for 10,000 packs of the pills on one day alone. KI is sold without a prescription for about \$US 1 a pill. The US NRC is offering States enough KI to treat every resident within 16 Km of a reactor because radioactive iodine is likely to be released during a serious reactor accident or attack.

In the UK the British Government has sent a packet of 6 iodine tablets to every household in Ireland as part of its national emergency plan for nuclear accidents. Ireland's preparations for possible nuclear fallout were criticised in the wake of Sept. 11, prompting a review of nuclear accident procedures.

So what is the situation in Sydney? Lagging far behind the rest of the developed world. The potential consequences of a worst - case accident are not available to the public. ARPANSA has done the sums for the construction licence but has refused to release details because of 'problem of security'. Without this it is not possible for the State Emergency Services to plan for such an event. As an example, there are 8000 people in the 2.5 Km radius of HIFAR. At 4.8 Km, which was the original planning zone, there are 41,000 or 5 times the number of tablets.

Stable iodine tablets are not available from pharmacies in Australia. Following public pressure the NSW Health Department has examined whether stable iodine tablets should be supplied to the communities close to the reactor and, if so, how many people would be involved. Its report has been handed to government. It is uncertain whether the Minister for Health or the Minister for Emergency Services is dealing with the matter. What is certain is that the public is still not protected, however slightly and a decision has not been announced.

Question: Will the Committee, as a matter of urgency, have the report of the NSW Health Department made public?

Risks – Terrorism

“People should get out of their minds that it [*terrorist attacks*] can’t happen here. It can.” (PM John Howard ABC TV 13th October 2002)

Sabotage was raised by the Centre in several submissions during 1999 relating to the preparation of a site for a proposed new reactor. At that time terrorism was not a word in common use. In addition to the community submissions the former chief engineer and operator of HIFAR eloquently and descriptively raised the subject. The response from Dr Loy was terse and dismissive *‘Of course it is possible to posit all sorts of simultaneous disasters and suggest superhuman powers to saboteurs or enemies; but that does not help the careful evaluation of a real-life proposal.’*

To my knowledge, no one had suggested that saboteurs had superhuman powers except Dr Loy. We had described how sabotage was a possibility and for that reason Lucas Heights, close to a large and growing population was an unsuitable site. ARPANSA duly issued a site licence. Dr Loy has not retracted his comment.

It should be acknowledged that the world’s awareness of terrorism has changed - even though it has been widely used in Spain, the UK and Northern Ireland, Sri Lanka and Russia, for many years. The perpetrators are far from superhuman, merely people willing to sacrifice their lives for reasons outside the range of western understanding.

Today our media is awash with tales of terrorism. We have had the Commonwealth security pack and the fridge sticker. The ‘phone terror hotline is in a prominent place in our homes. The photograph of the reactor container building pops up regularly on our TV screens (and even featured at an Emergency Management seminar held in Sydney on 18th and 19th June during one of the presentations). Premier Carr called for military guards for Lucas Heights and all this made us alarmed and very much aware.

The Commonwealth and its nuclear regulator ARPANSA see these patent risks as being “acceptable”. But not to this community.

Some of the wastes stored at Lucas Heights are extremely dangerous and pose a great risk to the public in the event of a ‘successful’ attack.

Transportation of wastes across Australia increases the opportunity of a terrorist attack that could result in a so-called ‘dirty bomb’.

Insurance.

Loss or damage caused directly or indirectly by the use, existence or escape of any nuclear or radioactive material has long been a standard exclusion of the commercial insurance industry. We have sent details of ANSTO’s amazing claims to the Insurance Council of Australia detailing its odds against anything adverse resulting from the most severe accident on the site. The industry declined to amend the exclusion clause.

More recently the industry has added another exclusion clause that relates to loss or damage caused by or arising from any act of terrorism that involves any biological, chemical or nuclear pollution or contamination.

A Deed of Indemnity which signed on 27 August 1998 between the Commonwealth and ANSTO in which the then Minister for Industry, Science and Tourism agreed that it was appropriate for the Commonwealth to indemnify ANSTO and ANSTO officers for nuclear related activities in accordance with the terms and conditions set out in the Deed. That the Deed provides that " the Commonwealth shall indemnify and at all times hereafter keep indemnified ANSTO and ANSTO officers from and against any loss (including legal cost and expenses) or liability, incurred or suffered by them arising from any proceeding or claim by any person against them for injury to persons or damage to property caused by ionising radiation, whether directly or indirectly".

This deed was in answer to constant criticism by the community of the ANSTO and the Commonwealth that they would not back up their claims of safety. The catch was that to get compensation the affected community would have to take ANSTO to court and prove negligence under Common Law.

Now the Commonwealth has introduced the Terrorism – Insurance Bill 2003 that includes the following paragraph:

Eligible [a strange choice of words] terrorism loss means a loss or liability arising from a declared terrorist incident, but does not include a loss or liability arising from the hazardous properties (including radioactive, toxic or explosive properties) of nuclear fuel, nuclear material or nuclear waste.

Looking at the terms of the new Bill/Act it seems that there would be no Commonwealth compensation for any loss or damage as a result of a terrorist attack on a waste transport. Yet another reason for not moving it.

I have attached a copy of a letter received from the Minister for Science that expands on the subject. In the case of an accident at Lucas Heights, liability *'would likely depend on whether ANSTO had put in place reasonable security arrangements to protect against a terrorist attack on the Lucas Heights facility.'*

The Minister also repeated a claim that gives the local community little comfort. *"A compensation payment could, in appropriate circumstances, be made without court proceedings. ANSTO has already identified this possibility in response to Public Submissions provided to the Parliamentary Committee on Public Works on 28 April 1999, when it stated that:*

"... It is not a (sic) essential that ANSTO first be taken to court and judgement be given against ANSTO for the indemnity to apply as such claims may be settled out of court. In this respect the indemnity works just like commercial insurance."

The suggestion contains too many conditional words.

Question: Can the Committee pin down the appropriate Commonwealth body and clarify this very important matter?

Other Relevant Issues.

State Governments' actions

South Australia. When it looked likely that the Low-level Waste Dump would be sited in SA and that the Store for the more dangerous long-lived waste would be co-located at the same site, the State Government and the Coalition opposition dug their heels in - a rare example of political unity. They kicked up so much fuss that the Commonwealth backed off and said that the store would go elsewhere but the dump would go ahead. The State continues to fight the dump and has threatened legal action as well as a referendum just before the next Federal election.

The Northern Territory Assembly has said that it would not accept the waste store.

Western Australia is moving towards introducing legislation prohibiting the receipt of nuclear waste generated in another State. It has also warned of a referendum and making it a Federal election issue.

Tasmania, Victoria and Queensland were considered but rejected in the Waste Repository Study.

Which leaves **New South Wales** as the leading candidate for the long-lived intermediate level waste store. The likely site could be somewhere near Broken Hill. Whilst the Minister is keeping his store site close to his chest there have been rumours that he is looking at possibilities within 100 Km from Sydney, Melbourne or Brisbane.

A distinct possibility would be **Jervis Bay**. It is part of the ACT and has a naval base there. Can the Committee imagine driving a truckload of our most radioactive nuclear waste between Kiama and Jervis Bay? Through Nowra in the dead of night so as not to disturb the residents?

The NSW Government's attitude to the expansion of the nuclear industry within NSW has been varied and confusing. Occasionally critical, often silent.

In 1991 there was a suggestion that radioactive waste from the St Mary's munitions manufacturing site be moved to Lucas Heights. At that time the State Government wanted to develop the site as a model city for 40,000 residents. That move was delayed by a court challenge by Sutherland Shire Council. The waste remained at St Mary's

The then Opposition Leader Bob Carr was quoted in the Sutherland Shire Leader as saying:

"Nuclear waste that is not generated at Lucas Heights should not be stored there. The area already stores high-level radioactive waste in the form of spent fuel rods, a

former liquid waste dump and Sydney's largest landfill tip-site. It's no wonder the local council says 'enough is enough'."

"ANSTO wanted Federal legislation governing the storage of waste changed to override Council's powers and NSW planning legislation. The Opposition opposes such a change. Federal and State governments should consult Sutherland Council on this issue and not override the legitimate health and safety concerns of local residents."

Powerful stuff but the ANSTO Amendment Act 1992 went through a few months later and both the State and Council were sidelined on all matters that related to planning and/or the environment on the Lucas Heights site.

In 1993 Mr Carr visited the Bangor shopping centre. Here are some of his comments, reported in the Leader 24th June 1993.

"Labor's candidate Genevieve Rankin has led the fight against this proposal. As a result of her efforts, the entire State ALP has come out against a new reactor. Our concerns are based mainly on environmental and planning grounds. We believe the (existing) reactor should be scaled down and the scientific research at the site expanded – ensuring jobs are saved. Advances in medical technology mean isotopes can now be produced without a nuclear reactor. Stirring stuff indeed!"

In a Sydney Morning Herald article, 23 December 2002 there were some interesting comments from NSW Minister for the Environment Bob Debus. He said that he 'would lead a co-ordinated community movement against any attempt to truck nuclear waste across NSW, especially through heavily populated and environmentally sensitive areas, including my own electorate of the Blue Mountains'.

He also said "For the last 16 years NSW has had legislation in place to prohibit the dumping of nuclear waste". Unfortunately this legislation, the NSW Uranium Mining and Nuclear Facilities (Prohibitions) Act 1986 has always been fatally flawed. It includes:

Nothing in this section prevents:

- a) the construction or operation, under an Act of the Commonwealth, of a nuclear facility by the Australian Atomic Energy Commission or by any authority of the Commonwealth that replaces that Commission:
- b) the construction or operation of a facility for the storage or disposal of any radioactive material resulting from the use of nuclear materials for research or medical purposes or for any other purpose authorised under the Radioactive Substances Act 1957

This Act could have been written by the AAEC. Efforts have been made to get the NSW Government to amend this ineffective legislation without success. If the NSW Government really wants to fight the Commonwealth on this matter then it must amend the Act urgently.

Earlier this year on the subject of a waste dump Premier Carr was forthright. "NSW Government expresses total opposition to the creation of a new nuclear waste storage

facility – anywhere in NSW.” But in the Australian Financial Review a spokesperson said “The Premier would resist any proposal to turn Lucas Heights into a nuclear dump. He calls on the Federal Government to explain their position.”

This exposes the difficulty of the NSW Government. It calls for:

No transportation.

No to Lucas Heights as a dump/store.

No waste storage anywhere in NSW.

SA, WA the NT have refused it.

So what do you do with it?

Answer: First you stop producing it and then start to negotiate.

Question: Will the Committee clarify the NSW Government’s position on the Nuclear Prohibitions Act?

Are there alternatives to the production of nuclear waste?

Opportunities for alternative sources for the manufacture of radioisotopes for medical applications, such as additional cyclotrons/accelerators at appropriate locations.

This is a sad saga of missed opportunity and lack of interest by Commonwealth Governments over the past eleven years. During the 1992/3 Research Reactor Review Dr Lagunas-Solar of the University of California offered to collaborate with Dr Gary Egan of the Cyclotron Centre of the Austin Hospital in Melbourne to evaluate the cyclotron method of producing Technetium^{99m}. This isotope is the workhorse of radiological medicine and represents about 90% of all those used in the field. Funding of some \$2 million was asked of the Commonwealth Government and it was duly refused.

A copy of a letter dated 12 September 1997 from Dr Lagunas-Solar to the Prime Minister is attached.

More recently there was an article in Nuclear Technology, April 1999, an industry magazine sent out under plain wrapper from an ANSTO employee. Its title was ‘*A System of ^{99m}Tc Production based on Distributed Electron Accelerators and Thermal Separation*’. A copy of this is attached. Its source is from the Idaho National Engineering and Environmental Laboratory of Lockheed Martin Idaho Technologies Company. Whilst its detail is incomprehensible to a layperson its introduction and conclusions reinforced our belief that alternatives to reactors are or could be, available. All that was needed was the cutting of the umbilical cord between an entrenched nuclear industry and its political financial providers.

The advantages of the system were
the end product would not need government subsidy (as with reactor based materials)

- its cost would be around 1/3 that made in reactors

- – there would not be the radioactive waste problem caused by reactors
- – the plant could not be used for weapons research
- – the capital costs would be a fraction of a new reactor.
- - Fixed capital costs around \$A5.7 million and three machines needed to produce
 - all the technetium that Australia could use.
- - Variable costs around \$A2 million per year.

Could we have asked for more?

So where were the forward-looking scientists and the Government's economic rationalists? Deadly silent. Was this on ANSTO advice? It has always been the view of ANSTO that unless and until such a plant was built and proved somewhere else it would not take any notice of any on-going research. What progressive thinking!

But such obstacles to new science and technology are not unique to Australia. In a reply from Dr Ralph G Bennet, Director of the project, to a letter asking for an update we learnt that it had stalled due to lack of interest on the part of the US Department of Energy. He added "*Despite the price advantage, I believe that there is considerable fear on the part of potential partners that the subsidised foreign supplies [sic] would act to cut their prices to preserve jobs and national pride.*"

Recommendation: That the Committee call for an independent investigation into the Lockheed Martin project with a view to a NSW State Government investment programme into this important alternative technology. The investigation should not use ANSTO as an 'expert' advisor as it has a heavily invested self-interest in its new reactor.

ANSTO has always taken the position that, as there was no working example of an accelerator producing Technetium^{99m} commercially it advised the Commonwealth to wait until this happened. This advice lost Australia a decade in advanced research and the result is that it has fallen back on old, low-tech reactor technology that produces intractable wastes.

For an up to date opinion on this the Committee might like to call on Professor Barry Allen, Head of Biomedical Physics Research Unit, St George Hospital, Kogarah. He was Chief Research Scientist at ANSTO for many years.

The State Government has shown interest in accelerator technology. If the Lockheed claims are justified, NSW could manufacture and set up one plant in Sydney and sell two others interstate so that Australia's Technetium^{99m} supplies could reach the rest of Australia. It would create jobs. The machines could be exported. **It could make money for NSW treasury.**

The Minister for Science Peter McGauran constantly stresses the need for a new reactor to produce medical radioisotopes. On advice from ANSTO, as advisor on nuclear matters to government(s) alternative technologies are always dismissed. This in turn leads to continuous use of reactor technology.

Recommendation: That if the Committee has to weigh up the 'benefits' to Australia of having a reactor to produce medical radioisotopes against the down side of how to

deal with the waste it produces then it must also seriously look at the alternative of using accelerators.

Summary.

It is not possible to separate the subject of nuclear waste production, transport and storage, from the expansion and continuation of nuclear reactors in Australia.

Lucas Heights is the chief source of the problem.

A 20 Mw reactor is not as benign as a household washing machine in spite of the similarity in size. Its dangers and risks should not be underestimated.

Potentially the most dangerous areas of the Lucas Heights site are the reactor(s), the radioisotope production and waste storage tanks and the spent fuel rods

If the NSW Government is unwilling to allow ANSTO to dump its low level wastes at the Lucas Heights tip, why should it agree to its dumping in another State?

Would the NSW Government allow the Little Forest Burial Ground to be dug up without another independent inquiry? Should any adverse health effects arise following the disturbance of this dump would the NSW Government be liable for damages?

Whether the Commonwealth insists on a national dump or store in NSW or another State Lucas Heights will remain a waste store for the next 100 years. Depending on the future decision on the method of decommissioning it could be eternal.

Transporting nuclear waste up to 1700 Km across Australia does not make sense. The Transports provide terrorist targets and put local communities at risk. Hijacking could provide materials for 'dirty bombs'.

Are NSW HAZMAT units capable and prepared to deal with a spill of nuclear materials and for any subsequent clean up?

Transporting waste off the Lucas Heights site would provide no winners. Those individuals and organisations that believe they will have won would be deluding themselves. Out of Sight – Out of Mind!

Social and economic following an accident or an act of terrorism have not been acknowledged by any government or bureaucracy.

The community is denied insurance against any radiation release. Whilst the Commonwealth believes all ANSTO's exaggerated claims of safety it refuses automatic and comprehensive cover. The Terrorism – Insurance legislation reduces even further any government liability where radiation is involved. At the same time the Commonwealth is happy to expand nuclear facilities (and set up terrorist targets) close to a large and growing residential area of Sydney.

States that are potentially affected by nuclear waste transportation to a dump/store are taking legislative action in an attempt to nullify the process. NSW so far is the only one that has been in self-denial. Has it the courage to take up the cudgels against the Commonwealth on behalf of its citizens?

Will the NSW Government alter the Nuclear (Prohibition) Act of 1986? The current legislation is a licence for the Commonwealth to impose its will on this State.

Alternative methods of producing Technetium ⁹⁹m – the main medical isotope used around the world – are available. The NSW Government should investigate this and preferably build and install one in Sydney in opposition to ANSTO. It would cheapen the product and show that ANSTO's reliance on old reactor technology is wrong. We feel sure that there would be many ANSTO accelerator scientists to assist in this project.

The benefits of accelerator technology versus reactors are apparent. That they produce only small amounts of waste is only one of them.

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