Australian Government | ansto Nuclear-based science benefiting all Australians

21 March 2018

Hon Stuart Robert MP
Chair, Joint Standing Committee on Treaties
PO Box 6022
House of Representatives
Parliament House
CANBERRA ACT 2600

Dear Mr Robert

It was my pleasure to welcome you and a number of your colleagues from the Committee to ANSTO last week for an inspection related to the proposed *Agreement between the Government of Australia and the Government of the French Republic Concerning the Reprocessing in France of Australian Irradiated Nuclear Fuel Elements*.

As requested, please find below responses to a number of questions raised by the Committee during the visit. I request this correspondence be treated as a supplementary ANSTO submission to JSCOT's inquiry on this matter.

Provision of Nuclear Medicines to Australian and International Patients

ANSTO produces over 10,000 potential doses of lifesaving nuclear medicines each week, which are distributed to over 250 hospitals and medical practices across all Australian states and territories, where they are used in the diagnosis and treatment of many different illnesses, including heart, brain, lung and bone diseases and a broad range of cancers. On average, one in two Australians will require a nuclear medicine produced at ANSTO during their lifetime. Nuclear medicines produced at ANSTO are also exported to a number of other countries.

The most widely used nuclear medicine manufactured at ANSTO is molybdenum-99 (Mo-99), the decay product of which, technetium-99m, is used in over 80 per cent of all nuclear medicine procedures globally. ANSTO is currently in the process of commissioning the new ANSTO Nuclear Medicine (ANM) Facility, which will increase the amount of Mo-99 the organisation is able to produce. This will ensure ongoing secure domestic supply, in addition to meeting up to 25 per cent of global needs; this could see Mo-99 produced at ANSTO benefitting over 10 million patients every year.

In addition to Mo-99, ANSTO produces a range of other nuclear medicines, including:

- Iodine-131, used in the diagnosis and treatment of hyperthyroidism and thyroid cancer;
- Chromium-51, used to assess kidney function;

- Samarium-153, used to palliate the pain of terminal bone cancers; and
- Lutetium-177 (Lu-177) – a novel therapy for neuroendocrine tumours and prostate cancer. ANSTO is currently supplying Lu-177 for two clinical trials, and to date has provided treatments for a total of 125 patients.

ANSTO is also currently engaged in the development and clinical trials of novel radiopharmaceuticals for the treatment of liver and pancreatic cancers.

ANSTO's Waste Holdings

ANSTO has 60 years of experience in the safe management of its radioactive waste, the majority of which is generated by the production of potentially life-saving nuclear medicines. Waste is managed in accordance with national and international standards, set out by Australia's independent nuclear regulator, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the International Atomic Energy Agency (IAEA) respectively. Ninety-two per cent of the waste generated by and stored at ANSTO is classified as Low-Level Waste (LLW) and is generally made up of paper, plastic, gloves, clothes and filters which contain small levels of radioactivity. This waste is shredded and compressed into 200 litre drums and radioactivity is monitored using a scanning system.

The remaining eight per cent of waste stored at ANSTO is classed as Intermediate-Level Waste (ILW) and is generated by ANSTO's radiopharmaceutical production and reactor operations. The vitrified residues arising from the reprocessing of spent fuel from the HIFAR reactor which you saw on your visit, repatriated from France in 2015, are an example of ILW.

It is intended that the radioactive wastes currently held at ANSTO, along with wastes held at over 100 other sites around Australia, will be sent to the planned National Radioactive Waste Management Facility once it is in operation.

Environmental Work Conducted by ANSTO

ANSTO conducts environmental research using highly sensitive, state of the art isotope instruments to study how environmental systems function and interact. The research is aimed at addressing major environmental issues such as:

- Water resource sustainability - the Isotopes for Water project applies isotopic and nuclear techniques to effectively manage groundwater and rivers, and freshwater ecosystems. A key focus of the project is groundwater recharge rates, which can be used to plan for sustainable use of this finite resource. ANSTO researchers recently partnered with the Government of Western Australia as part of this project.
- Air pollution - ANSTO has been tracking and publishing data on fine particle pollution from key sites around Australia, and internationally, for more than 20 years. This pollution, originating from both man-made (trucks, coal-fired power stations and cars) and naturally-occurring (sea spray and wind-blown soil) sources, can have damaging effects on human health and contribute to climate change. The results from our analysis of the samples collected by ANSTO are utilised by local councils, state environmental agencies, industry groups and Australian universities, and inform mitigation strategies.

I trust this information is useful. Should the Committee wish to obtain further information, Mr Mark Alexander, Manager of International Affairs, would be pleased to assist. He can be contacted on (02) 9717 9077 or at international.liaison@ansto.gov.au.

Yours sincerely

[redacted]

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