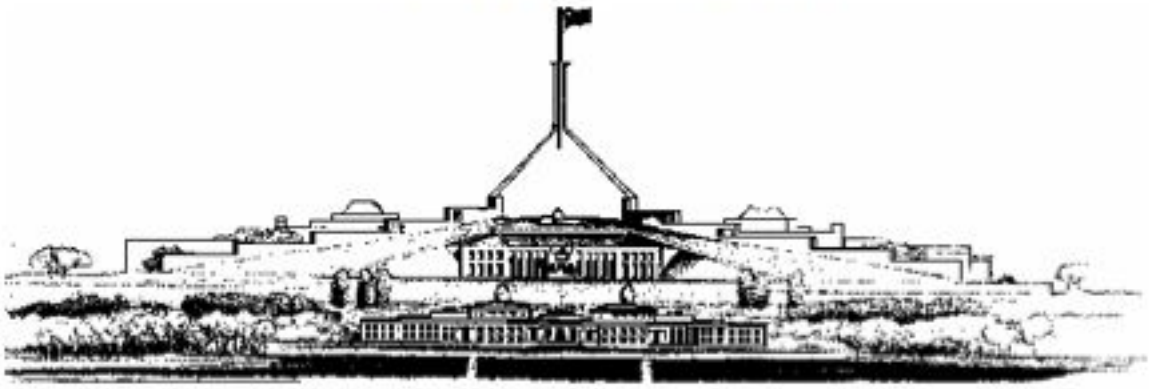
COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY DEBATES



HOUSE OF REPRESENTATIVES

PROOF

Federation Chamber

BILLS

Australian Nuclear Science and Technology Organisation Amendment Bill 2017

Second Reading

SPEECH

Wednesday, 13 September 2017

BY AUTHORITY OF THE HOUSE OF REPRESENTATIVES

SPEECH

Date	Wednesday, 13 September 2017	**Source**	House
Page	144	**Proof**	Yes
Questioner		**Responder**	
Speaker	O'Brien, Ted, MP	**Question No.**	

Mr TED O'BRIEN (Fairfax) (16:12): I would like to thank the member for Bruce for making the most sensible speech I have heard him make in parliament. With the exception of the giggle-worthy comments at the beginning of his speech trying to critique the government, I thought it was otherwise quite a commonsense approach, and I would like to congratulate him on it.

At the end of the day, we are talking about a bill here relating to nuclear science. A lot of people in Australia would hear those words and think that the Australian Nuclear Science and Technology Organisation Amendment Bill 2017 must be esoteric in some shape or form. Often, people think that nuclear science has very little to do with their daily lives or even their long-term interests. At one fundamental level, that's pretty understandable and perhaps inevitable. Nuclear science is the pursuit of a tiny minority of unbelievably intelligent people, dealing with matters—and with matter itself—that very few of us could even begin to comprehend. To the vast majority of us, nuclear science can seem incomprehensible. Say the word 'nuclear' in Australia and thoughts of nuclear weapons will be immediately invoked in many people's minds. It will immediately trigger debate and, for some, concern. But people rarely think of the more benign and beneficial aspects of nuclear research. However, this bill encourages us to do just that and provides greater flexibility to promote nuclear research and direct collaboration with universities via minor amendments to the legislation of 1987, which established, and continues to govern, the Australian Nuclear Science and Technology Organisation, ANSTO, as a corporate Commonwealth entity.

The amendments reflected in this bill are necessary not just because of the positive outcomes and direct impacts here in Australia but also in light of Australia's longstanding participation in this science. The obvious example to point to is health. A statistic I read today that I would like to repeat in this House because I found it amazing is that around one-third of all medical procedures now conducted in our hospitals have a nuclear science component. One-third involve radiation or radioactivity as a diagnostic or even therapeutic tool. On average, every one of us at some point in our lives will have a brush with radiopharmaceuticals and nuclear medicine. Applications are extremely broad. Nuclear medicine is relevant in sectors from cardiology to paediatrics to psychiatry. Some cancers are now being detected two years earlier than they otherwise would have been thanks to nuclear medicine. And such early diagnosis obviously saves lives. There are a vast range of procedures, including irradiation of bones and tendons that are intended for transplants or grafting. Irradiation is also used for sterilisation of bandages, cotton tips and other materials used for implants. Bone imaging can be used to diagnose stress fractures and is widely used not only in our hospitals but by vets, especially in the horseracing industry. The list of medical benefits which have real application to our lives is all but endless.

Another area that benefits from nuclear science is in fact food safety. The radiation of foodstuff at safe levels, far too low to induce radioactivity, can and does make both domestically produced and imported foods safer to eat and for longer. An extension in agriculture involves balancing the use of our precious water resources with maximum productivity. Grape growers, for example, optimise their crops when water is delivered to their vines at precisely the right time and in the right quantities. Nuclear moisture probes pushed into the soil provide extremely accurate data to enable irrigation that is just right, generating big boosts in overall productivity, profit and sustainability. Similar technology is being applied to many other irrigated crops, with equally significant environmental and productivity benefits, which is a very significant thing in a country like Australia which is just so dry.

Other agricultural applications of nuclear technology include sterilised male fruit flies released into the wild that do not breed. This technology, helping to control pests by sterilisation, has enormous extended benefits by helping to reduce insecticides in the environment and is now a very common means of controlling insects and pests worldwide, including right now in controlling fruit flies in south-east Australia.

Many other industries and procedures benefit remarkably from nuclear science. Steel rolling mills use superaccurate nuclear science enhanced gauges to get precisely the right dimensions in their products. The same

applies in the accurate measurement of everything from the amount of product in soft drink bottles to the precise composition of detergent ingredients and even jet engine fuel.

Closer to home, smoke detectors rely on nuclear science, with tiny amounts of radioactive materials measuring the quality of the air, triggering that lifesaving beep exactly when it's needed. Even watch faces that glow in the dark owe that glow to very, very small amounts of radioactive material. And the now ubiquitous personal computer and many other electronic devices rely on silicon chips that have been irradiated in a way that turns atoms into phosphorus, enhancing the semiconducting capability of the chips. The mantles used in gas lanterns that have lit many a camping trip, microwave ovens, electric lights and car windshields all owe something to nuclear science.

I could go on and on, providing a long list of examples demonstrating how peaceful nuclear science and research is contributing to our daily lives and to our industries in positive ways and is very often unrecognised outside the immediate environment in which they have their impact. It should be a source of pride to Australians that our nuclear scientists and our nuclear facilities, restricted as they are, have been significant players in the field at a global level for so many decades.

The principal use of our first reactor at Lucas Heights from the late 1950s when it was commissioned was for medical purposes. Its purpose was to produce neutrons for the production of nuclear medicines and for other civil scientific uses, which has led to countless lives saved and massive contributions to industry. We produce our own nuclear medicines and have done so for a very long time. The successor to Lucas Heights, the OPAL reactor, opened at the same site in 2007 and for the same purpose. It's a state-of-the-art facility, one of the best and most important of its type in the world. And the science that's being applied there today accounts for 60 years of Australian expertise in the production of nuclear medicines, industry technologies and academic research. OPAL will, it's expected, become a major source of supply of nuclear medicines globally. A former major supplier, a reactor in Canada, closed last year, and a number of others worldwide are ageing, so we have increased our capacity and our output to mitigate a potentially serious global shortfall. This is also, as a residual benefit, good for the Australian economy.

This bill seeks to further leverage our experience and the quality of our contribution in nuclear science. We are globally recognised as a significant player in this space, albeit from the exceedingly narrow base of a single nuclear reactor. The government wants to enhance our contribution because we have, in our science community, in our population, the innovative capacity to do so at a level that can lift our already significant reputation, based on real achievements, up to even higher levels and continue to deliver tangible benefits. We want more to flow from that expertise—more life-saving breakthroughs in medicine and more benefits for agriculture, the environment and industry. This bill gives ANSTO, the Australian Nuclear Science and Technology Organisation, the legislative flexibility it needs to develop that opportunity by establishing an innovation precinct comprised of three elements—a graduate institute, an innovation incubator and a technology park—to better enable ANSTO to boost outcomes by sharing the knowledge, facilities and properties it has with other entities and individuals, and to become an even more effective conduit between research, industry and universities.

The specific proposal facilitated by this bill—to establish an innovation precinct at ANSTO's Lucas Heights campus—aims to crowd in scientific partners, knowledge-intensive businesses, high-tech industry and STEM graduates from around Australia's regions into a premium nuclear facility and also a hub of knowledge. This is by no means an insignificant aim. Once established, the ANSTO innovation precinct will become the world's first nuclear science and technology incubator—innovation that is in lockstep with the government's National Science Statement and the objectives of our National Innovation and Science Agenda. These reforms are key to the coalition's policy and vision. Whether it be for the defence industry or nuclear science, our aims are the same, and they are to drive growth in our capability and our economy, and to create jobs through investment and ongoing innovation. It's no wonder, therefore, that members opposite do support this bill; it's no wonder that, in consultation with industry groups, universities and local governments, they were all excited about this new vision for ANSTO. It's hard not to be. The potential here is unmissable. The only exception to this, of course, are the barking-mad Greens, but that should go without saying.

This is all good news, but there is a further imperative, and that is the need to capture and hold new technology and skills in Australia. As Australia has, to date, sought to deny itself a nuclear energy sector at even a minimum level, we lag behind our peers in the application of the technology in that regard. If we are, however, to continue down this path or, if, indeed, we decide to seriously explore the nuclear option for energy purposes, then a small

but highly capable and well-resourced nuclear science based expert group will keep open a better range of options for our country. In this 21st century, the pace of knowledge generation and the application of that knowledge is 'blurringly' fast. If we want to stay in the main game, we have to accelerate, because standing still is never, never an option. It is for that reason that I commend the bill to the House.