

Inquiry Name: Inquiry into Nuclear Prohibition

Dr John Patterson

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I am a retired member of the Physics Department at the University of Adelaide. I am a retired Fellow of the Australian Institute of Physics. I have a PhD in experimental nuclear physics from ANU. I know that the University of Melbourne has a long history of research in nuclear physics.

I am very concerned about the current situation with regard to the menace of Climate Change for our future generations in Australia and overseas. I believe that nuclear power is an indispensable part of reducing our carbon dioxide emissions to zero by 2050 as required by the United Nations. Unfortunately Australia like the US, is not co-operating with this aim and it is up to the states such as Victoria to get our nation on track to meet this goal. As a start I strongly recommend that the Victorian Parliament, along with the Commonwealth, should repeal the historic prohibitions against nuclear technologies. They are out of date and I believe offer no real protection to our populations. Nuclear power is in fact one of the safest forms of energy available, despite the much publicised nuclear accidents that are continually brought out against it. I was in England at the time of Chernobyl and I remember the concern felt at the time which resulted in these bans in Australia. However, the UK population did not panic and the Government there took the simple precautions needed. They did not ban nuclear power which they rely on for 21% of their electricity. Approximately 30 people lost their lives in the Chernobyl accident which remains the worst case, but the millions of deaths from cancer claimed by the anti-nuclear lobby have been refuted by the International Commission on Radiological Protection. Any student of radiation physics knows that is totally incorrect. The airline industry has thrived despite tragic crashes which have killed many more people than the few nuclear accidents. Nuclear technology, like aircraft manufacturing has learnt from, and advanced after every accident.

The other major argument against nuclear is the cost. It is true that there have been cost overruns for a several recent nuclear builds in UK and US. These over-runs resulted from unplanned stoppages and an untrained workforce as reactors had not been built in UK or US for many years. Not so the four reactors being constructed in the United Arab Emirates which are being completed on time and on budget by a South Korean supplier.

The other anti-nuclear argument used is waste disposal and decommissioning. France, Sweden and Finland have solved the waste disposal problem by constructing deep underground storages. Reactors have been decommissioned in a number of countries including the UK which has a minister responsible for it!

The advantages of nuclear are many, first it offers stable synchronous power, and it can load-follow the intermittent

renewables. It is virtually emission-free and emits no smoke and dust pollution into the environment which cause wide-scale health problems. Finally Small Modular Reactors offer a huge cost and construction time advantage, being available from the US in a few years time, off-the shelf. US company Nuscale will have commercially ready by 2026, compact 60 MegaWatt SMRs which can be sequenced up to 720 MWatts. They are ultra safe, generation 3+ and cost competitive with renewables in the long term when the latter's inefficiencies are taken into account. They are reliable with lifetimes over 80 years, compared to under 20 years for renewables. Nuclear technology can provide what is needed to solve the Climate Crisis, so I urge Victoria to offer leadership in energy and allow the market place to consider it, rather than ruling it out to satisfy out-dated ideology.

References: "The future of nuclear energy in a carbon constrained world", Massachusetts Institute of Technology, Boston USA, 2018.

"Not without your approval" recommendations of House of Representatives Inquiry into Prerequisites for Nuclear Technology in Australia, December 2019,
https://www.aph.gov.au/Parliamentary_Business/Committees/House/Environment_and_Energy/Nuclearenergy/Report

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File2:

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