

**Submission to the Environment and Communications Legislation Committee
ENVIRONMENT AND OTHER LEGISLATION AMENDMENT (REMOVING
NUCLEAR ENERGY PROHIBITIONS) BILL 2022**

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Summary:

I am in favour of allowing Nuclear Energy production in Australia because I believe it is the only way we can produce sufficient energy capable of removing and sequestering carbon from the atmosphere. It is now critical to reverse the accelerating increase in greenhouse gases in order to reduce the deaths from climate change and consequent sea level rise.

Even the dangers of water-cooled reactors are less than the dangers of global warming from current trends in fossil-fuel emissions. However there are far safer reactor designs available and already prototyped, there is no need to build more water cooled reactors.

Case Points:

1. Nuclear Energy accidents have all been with water cooled fission reactors (WCR).and there are far safer alternatives.
2. Liquid salt coolant fission reactors (LSR) are far safer for many reasons. The first was running for two years at Oak Ridge National Laboratory (ORNL) in the USA before being shut down by LBJ in 1969 (for “budgetary” reasons). Research and development has commenced again in 2022 at Los Alamos National Laboratory (reference A)
It is likely that the decision to shut down the prototype in 1969 was in response to pressure from the Oil and Gas Industry which has consistently lobbied against all forms of nuclear power, suppressed information on greenhouse effects and funded anti-nuclear groups).
3. LSRs operate at Atmospheric pressure which gives many advantages including:
 - no danger of radioactive ejecta into the atmosphere
 - far less radioactive waste with far shorter average half-lives than WCRs
 - LSR's allow designs for automatic shutdown on loss of electric power.
 - LSR's can produce energy from Thorium which is cheaper and safer to handle than Uranium
 - LFR's will convey a strategic advantage as well as economic benefits
 - China has an entire institute working on an experimental LFR.
4. A prototype LSR in China is the most advanced development. Work over the past decade, has produced a prototype plant, which was cleared for startup in August 2022 after some covid related delays (reference B).
5. Fusion reactors are a potential source of abundant clean energy but the designs are still decades away from commercial production.
6. Earth's climate is changing and sea level rising at the highest rate estimated since around 1990 and every decade the estimates have been increased. Global sea level is the most reliable measure of long term climate change (reference C). The world will need to remove Carbon from the atmosphere (sequestration) on a massive scale to mitigate the recurrent catastrophes That requires abundant non-carbon-fueled energy, which can only be produced by nuclear sources.
7. The current high scenario projections for sea level rise by an inter-agency scenario hosted by NASA are 0.44 metre by 2050 and 2m by 2100. (reference D). The high scenario is likely because the glaciers in Antarctica have only just been released from surrounding sea-ice.
8. Power from natural resources is helping reduce current emissions but it is not enough and certainly not enough for the demands of sequestration.

Conclusion:

Removing the blanket obstacle to any nuclear energy production is the first step to put Australia in the running for the development of safer, carbon-free energy technology for domestic use and export. We need to learn from and contribute to developments in the USA and China for the clear benefit of our economy and human habitability of the Earth.

References:

- A Molten Salt Reactor USA: <https://discover.lanl.gov/news/0816-molten-salt/>
- B Molten Salt Reactor China <https://www.world-nuclear-news.org/Articles/Chinese-molten-salt-reactor-cleared-for-start-up>
- C Sea level rise history <https://sealevel.nasa.gov/faq/8/is-the-rate-of-sea-level-rise-increasing/>
- D Sea Level Rise projections <https://sealevel.nasa.gov/task-force-scenario-tool?type=global>