



MAPW

Health professionals promoting peace

Ten more questions about Australia's nuclear waste (March 2017)

1. Is the waste dump needed for nuclear medicine to continue?

No. The government is confusing the nuclear waste we have now with nuclear waste they are planning to make in the future.

The waste we have now: Much less than 1% is from nuclear medicine use, virtually all from legacy radium waste (which is not used anymore). Most countries do not have a nuclear reactor and import their isotopes. For example the USA, the world's largest market, imports nearly all its reactor produced nuclear isotopes. We import isotopes when our reactor is down (4-6 weeks a year).

The waste in the future: The government plans to massively increase production of the most commonly used nuclear isotope - Technetium 99m. Traditionally Lucas Heights reactor has produced 1% of the world's supply-enough for Australia. The government plans to make 25% (up to 30%) of the world market. This will massively increase the amount of intermediate level waste in the future, going to a waste site in Australia.

2. What is the first principle of toxic waste management?

To stop producing the toxic material as soon as feasible.

3. What should Australia be doing?

Australia should continue to produce enough isotopes for Australia's needs, aiming to close the reactor in the next few years. This will massively reduce the amount of nuclear waste in the future. It should be partnering with the world's leaders in Canada to make isotopes using cyclotrons, which do not produce long lived nuclear waste.

4. What about world shortages?

Europe, South Africa and Russia are expanding their supply capacities. Canada's reactor has stopped routine production but will not finally shut down until 2018. In the meantime if there is a major shortage the Canadian reactor will restart temporarily. New reactor and non-reactor based projects are coming on line in the 2015-2020 period in Europe, North and South America and the Far East.

Relying on just a handful of reactors has led to major shortages in the past when one breaks down. Supply chain failures are inherent in reactor production of medical isotopes which has led to great supply disruption especially over the last decade worldwide. Any interim Canadian domestic shortages due to Canada's reactor closing can be temporarily overcome through import substitution, however, once established, cyclotron production of isotopes will be in multiple sites, reducing the risk of shortages and making supply more reliable.

5. Are there alternatives to reactor based nuclear medicine?

PET scanning is the fastest growth segment in nuclear medicine. Overwhelmingly this is used in cancer diagnosis and increasingly in therapy, and relies only on cyclotrons for supply.

6. Does cyclotron manufacture work?

Cyclotron manufacture of Technetium 99m has been approved last year by Health Canada and a clinical trial (routine with new manufacturing techniques) is underway. The technology was commercially licensed late last year. The Canadians have demonstrated a reliable commercial scale process for producing Technetium 99m.

7. Why is Canada switching to Cyclotrons?

Canada had a major inquiry into the reactor production of isotopes in 2009^{1 2}. They found it was expensive, unreliable and left them with a lot of nuclear waste from other countries' nuclear medicine. Cyclotrons will provide a more stable, secure and reliable supply, with no long term nuclear waste.

8. What about Australia developing an export industry and making money?

There has been no transparent costed business case for developing an export industry, nor any consultation about whether massively increasing nuclear waste production is what the community wants.

It is highly unlikely the business case includes the cost of building and running the reactor, the cost of insurance and the cost of storing the waste. The 2009 Canadian enquiry¹ found that sales of isotopes repaid only 10-15% of the genuine total cost of manufacture, and in 2010 an extensive OECD/ Nuclear Energy Agency³ report found

"In many cases the full impact of Mo-99/Tc-99m provision was not transparent to or appreciated by governments who were financially supporting research reactors' 99Mo production. The full costs of waste management, reactor operations, fuel consumption, etc. were not included in the price structure, thus providing a significant deficiency in the pricing mechanism. This is a subsidisation by one country's taxpayers of another country's health care system."

The facilities at Lucas Heights rely heavily on taxpayer subsidies.

9. Is MAPW opposed to all things nuclear, as the government claims?

MAPW members are doctors, (including nuclear medicine specialists), nurses etc. who use nuclear medicine when it is in the best interests of their patients. We are clearly not opposed to all things nuclear.

The medical claims made by the department have been frequently wrong and/or misleading, and MAPW has been pointing out their mistakes. It is important to provide accurate information to communities if you are genuinely looking for informed consent.

10. Should the Barndioota site go ahead?

The current process has had a lot of misleading information, and the plans for the site are a long way from world's best practice. MAPW believes the government needs to carefully review future nuclear waste production, and start afresh on planning and establishing best practice for this highly toxic waste.

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¹ Report of the Expert Review Panel on Medical Isotope Production 2009 Presented to the Minister of Natural Resources Canada
<https://www.triumf.ca/sites/default/files/panrep-rapexp-eng.pdf>

² <http://www.nrcan.gc.ca/energy/uranium-nuclear/7795>

³ <https://www.oecd-nea.org/med-radio/reports/MO-99.pdf>