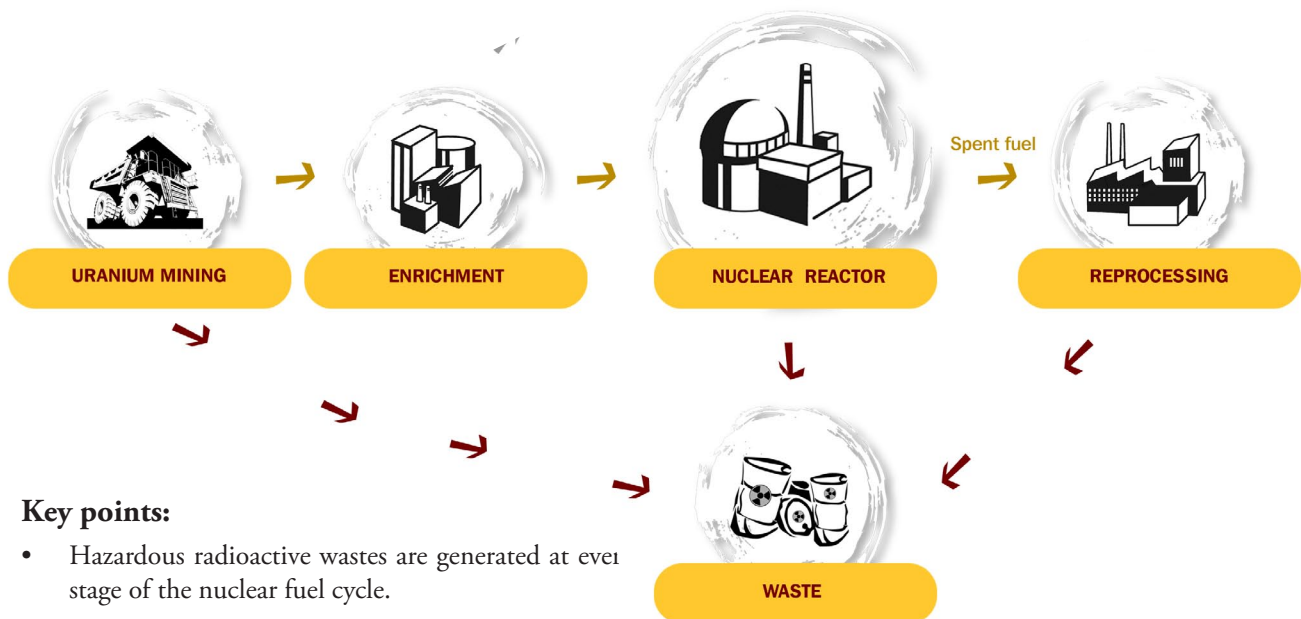


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RADIOACTIVE WASTE

A detailed, referenced version of this paper is posted at www.choosenuclearfree.net



Key points:

- Hazardous radioactive wastes are generated at every stage of the nuclear fuel cycle.
- No country has established a repository for high level nuclear waste from nuclear power.
- Some waste streams have military potential – depleted uranium is used in munitions, and spent nuclear fuel from reactors contains weapons-useable plutonium.

Nuclear Reactors

The waste produced in nuclear reactors – called spent nuclear fuel – is much more radioactive than fresh uranium fuel. This is because irradiation of uranium produces many types of radioactive particles.

It takes about 200,000 years for spent fuel to break down to a state where it is at a safe level of radioactivity.

Spent fuel is stored in reactor cooling ponds for several years after its removal from the reactor. This is usually followed by longer term storage away from the reactor, pending reprocessing or eventual disposal.

Repositories and Reprocessing

Not a single repository exists anywhere in the world for the disposal of high-level waste from nuclear power reactors. Only a few countries have identified a repository site.

Shallow repositories for low and short-lived intermediate level waste have been established in over 30 countries. Many have experienced problems. Three repositories in the USA have been closed because of environmental problems. Farmers in the Champagne region of France have taken legal action in relation to a leaking radioactive waste dump. In Asse, Germany, all 126,000 barrels of

waste already placed in a repository are being removed because of large-scale water infiltration over a period of two decades.

Reprocessing involves dissolving spent nuclear fuel in acid and separating the unused uranium (about 96% of the mass), plutonium (1%) and high level wastes (3%). It is arguably the most dangerous and dirty stage of the nuclear fuel cycle. Reprocessing generates large waste streams and it separates weapons-useable plutonium from spent fuel.

What to do with radioactive waste?

A common-sense approach to radioactive waste involves the following three steps:

1. Minimising the production of radioactive waste.
2. Thoroughly assessing all options for the management of radioactive waste.
3. Using scientific and environmental citing criteria rather than choosing politically 'soft' targets.



Nuclear power in Australia – how much waste?

Former Chair of the Board of the Australian Nuclear Science and Technology Organisation, Ziggy Switkowski, has been promoting the construction of 50 nuclear power reactors in Australia.

Over a 50-year lifespan, 50 reactors would:

- be responsible for 1.8 billion tonnes of low level radioactive tailings waste each year (assuming the uranium came from Olympic Dam).
- be responsible for 430,000 tonnes of depleted uranium waste.
- produce 75,000 tonnes of high level nuclear waste (approx. 25,000 cubic metres).
- produce 750,000 cubic metres of low level waste and intermediate level waste.
- produce 750 tonnes of plutonium, enough for 75,000 nuclear weapons.

As the 2006 Switkowski Report noted: “Establishing a nuclear power industry would substantially increase the volume of radioactive waste to be managed in Australia and require management of significant quantities of high level waste.”

Proposed repository in the Northern Territory

In addition to uranium mine wastes, Australia has a stockpile of about 4000 m³ of low and intermediate level waste, increasing at the rate of 50 m³ each year.

In July 2005 the Coalition government announced plans to establish a nuclear waste repository in the Northern Territory – a plan that has been pursued by the Labor government since it was elected in November 2007.

Just one site is under active consideration – Muckaty, 120 kms north of Tennant Creek. If built the repository will accept low and short-lived intermediate level waste.

The proposed repository at Muckaty is opposed by the NT Government. The NT Parliament has passed legislation banning the imposition of radioactive waste dumps but the federal government plans to ignore or override the state legislation. Muckaty Traditional Owners have initiated legal action in the Federal Court challenging the nomination of the Muckaty site.

The federal Labor government has put before parliament a draconian new Bill entitled the National Radioactive Waste Management Bill. The Bill would override all state/territory laws that could in any way impede the repository plan. The Bill also limits the application of federal environmental protection legislation, Aboriginal heritage protection legislation, and appeal rights. The federal Labor government's promise to handle this issue in an open, transparent and fair manner has not been met.



Muckaty Traditional Owners

Radioactive wastes can be solid, liquid or gaseous and are produced at every stage of the nuclear fuel cycle:

- Underground and open pit uranium mines generate large volumes of long lived, low level waste which is kept on site.
- In situ leach uranium mines pollute groundwater with radioactive particles, heavy metals and acid.
- Enrichment plants generate large volumes of depleted uranium waste.
- Reactors produce high level radioactive waste in the form of spent nuclear fuel.
- Reactors and other nuclear fuel cycle facilities discharge radioactive emissions to air and water.
- Reprocessing plants generate a high level radioactive waste stream.

More information

- Choose Nuclear Free <www.choosenuclearfree.net>
- 'Radwaste' information portal <www.radwaste.org>
- Country and regional briefings <<http://world-nuclear.org/infomap.aspx>>

Plan for Commonwealth repository in the NT:

- Beyond Nuclear Initiative <www.beyondnuclearinitiative.wordpress.com>
- Friends of the Earth <www.foe.org.au/anti-nuclear/issues/oz/nontdump> and <www.nuclearfreeways.org.au>
- Federal government: <www.radioactivewaste.gov.au>