

The Commonwealth Radioactive Waste Repository ("*Nuclear Waste Dump*")

What is the purpose of a radioactive waste dump (repository)?

To secure radioactive waste temporarily and ensure the safety of people and the environment.

What is radioactive waste?

Radioactive material for which no further use is foreseen.

Where does the radioactive waste to be deposited in this repository come from?

The repository is designed for "low level" and "intermediate level" waste:

- Defence Department low level waste is related to nuclear tests performed in Central Australia in the middle of the twentieth century, and is currently located at the original test sites
- There is an existing low level waste repository at the old Radium Hill mine site, and material from this site will also be sent to the repository.

Low level waste will be the largest amount by volume: 4000 cubic metres.

- Intermediate level waste to be stored will nearly all come from spent fuel, from the HIFAR and MOATA nuclear reactors at Lucas Heights (now decommissioned and replaced by the OPAL reactor). This spent fuel has been sent to Scotland and France for reprocessing. The first returning shipment in 2015 will comprise 53 500-litre concrete containers of this waste.

When will the repository be operational?

The government proposes, no later than 2015

Why 2015 — what's the rush?

Australia has agreed with Scotland and France that this is when the reprocessed fuel (discussed above) will commence returning to Australia. This is the major factor behind the push for a repository.

How much medical waste will be deposited in the repository?

None.

It is for Commonwealth waste only. Medical waste is a State and Territory responsibility.

The states and territories refused to set up radioactive waste repositories during the previous Coalition Federal Government. The government therefore established its own Act (Commonwealth Radioactive Waste Management Act, 2005) to deal with its own (very substantial) waste, and excluded the states and territories.

The Commonwealth is unable to legislate on behalf of the states and territories on radioactive waste management. The amended Act currently being proposed does not alter this relationship or its implications.

Will the repository ever hold radioactive waste from the states and territories?

We don't know. There is no agreement in place to this effect, nor is an agreement being negotiated.

So what happens to all the radioactive medical waste, and how much is there?

The same as has been happening for decades: it is securely stored in hospitals.

Most states and territories each probably only have a few cubic metres of such medical waste at most. Most of this is classified as low level waste.

There are broadly two areas in which radioactive material is used for medical purposes:

- **Nuclear scans for investigating disease.** These produce the vast bulk of medical nuclear waste. This is short-lived and decays on the medical facilities' premises until its activity is negligible. It then is disposed of safely and appropriately in the usual manner of most waste (sewers, incineration, landfill tips etc.) according to set standards.
- **Cancer treatment radiotherapy.** Most radiotherapy uses X-rays or electromagnetic radiation which do not produce any waste at all. A very small proportion of cancer treatment actually relies on radioactive materials, which end up as intermediate level waste.

It would be very misleading to claim that a large radioactive waste repository is justified for such medical derived waste.

written by Dr Peter Karamoskos / March 2010 / available on www.mapw.org.au



The proposed Commonwealth Radioactive Waste Repository

What will the repository look like?

The low level waste will be stored in a shallow trench covered by 5 metres of soil with plastic and clay lining to prevent water and other materials entering. The nuclear fuel waste, which is intermediate level waste, is too hazardous to be stored in this manner, so will be placed above ground in a purpose-built store.¹ Nothing will be subject to deep burial.

Is the repository a permanent storage solution?

No. It is an interim repository pending a final solution being found. However, there is no timeline set for a permanent solution. Permanent storage of intermediate level waste requires deep geological burial, yet since the repository is designated "interim", it is deemed acceptable (i.e. for the 'interim'). The Commonwealth repository follows International Atomic Energy Agency (IAEA) recommendations only for the low level waste (see below). The designation is a politically expedient term that gives the veneer of responsible management. It does not meet the permanent disposal needs of the intermediate level waste, and defers accountability indefinitely.

Does the repository meet world's best practice?

The IAEA stipulates that reprocessed spent fuel comprising long-lived intermediate level waste (such as the waste coming from Scotland and France):

*"... contains long lived radionuclides in quantities that require a high degree of isolation from the biosphere. This is typically provided by disposal in geologic formations at a depth of several hundred meters."*²

Interim storage is permitted above ground until the deep geological repository is prepared. Best practice must dictate a plan and timeline to enable this. Otherwise the "interim storage" designation is a stealth method of avoiding an appropriate permanent solution that addresses the need to isolate reprocessed nuclear reactor waste from the biosphere. Currently in Australia we don't have such a plan. Interim in this case really means 'indefinite.'

The IAEA stipulates that intermediate level waste must be isolated for thousands of years.

Will the repository be suitable for storing spent nuclear fuel, say from nuclear power stations?

No. It is not even suitable for permanently disposing of the reprocessed nuclear reactor fuel we will be receiving. The average nuclear power reactor produces 3000 cubic metres of low and intermediate level waste per year plus some 30 tonnes of high level solid packed waste per year.

The 2006 UMPNER report (Uranium Mining, Processing and Nuclear Energy Review) recommended 25 nuclear reactors for Australia. This would create 75,000 cubic metres of low and intermediate level waste each year, almost twenty times the waste we are currently trying to deal with, and requiring storage capacity for the equivalent of 20 more repositories per annum.

We are currently struggling to deal with 4000 cubic metres of low and intermediate level waste accumulated over 50 or 60 years. On top of that we would also require storage for 750 tonnes of high level waste every year.

Unlike the current waste repository proposal — which is only for interim storage of low and intermediate level waste — high level waste requires permanent storage in deep geological formations or for several hundred thousand years.

Every year around the world 12,000 tonnes of high level waste and 130,000 cubic metres of low and intermediate level waste is produced from the generation of electricity from nuclear power by 438 nuclear reactors. Proponents of the nuclear 'renaissance' anticipate three times as many nuclear reactors in operation by 2050, producing three times as much waste. And we still don't have a permanent repository for high level waste anywhere in the world.

All high level waste is still stored in 'interim' storage facilities awaiting a geologically stable deep repository site to be located and constructed.

Footnotes

1. www.ret.gov.au/resources/radioactive_waste/waste_mgt_in_aust/facility_concept/Pages/FacilityConcept.aspx

2. www.iaea.org/Publications/Factsheets/English/manradwa.html

