



# Uranium and waste

**Intractable radioactive waste is the inevitable result of uranium mining, nuclear power and weapons production. The promotion of nuclear energy as green power overlooks this problem to which no long term solution has yet been found.**

Radioactive waste is produced at all stages in the nuclear chain. All radioactive waste is dangerous and must be isolated from people and the environment.

Radioactive waste is generally divided into five categories depending on its level of radioactivity, although levels are often inconsistently applied. They are (in order of shortest to longest lived): Low Level Waste (LLW), Intermediate Level Waste (ILW), Long Lived Intermediate Level Waste (LLILW), Short Lived Intermediate, and High Level Waste (HLW). No level of radiation exposure above background radiation can be deemed 'safe'.

A typical power reactor produces 25-30 tonnes of HLW annually. Not a single repository exists anywhere in the world for the disposal of HLW from nuclear power.

**How is Australia's waste managed?** Australia has a poor record of managing radioactive waste.

Uranium mining has so far left millions of litres of radioactive tailings at sites throughout Australia. Uranium mining makes up only 1% of of Australia's GDP. It puts workers at risk, pollutes local environments and leaves huge piles of crushed radioactive sand which is stored in huge reservoirs. These left-over piles of radioactive sand are called "uranium tailings". They contain over a dozen radioactive and toxic materials which are all extremely harmful to living things. The most important of these are thorium-230, radium-226, radon-222 (radon gas) and the radon progeny, including polonium-210.

**Nuclear testing** has rendered parts of South and Western Australia no-go zones. Some of the radioactive sands have been turned into glass (vitrified), some equipment has been buried, and ships and other waste have been scuttled at sea.

### TEMPORARY STORAGE

Russian waste kept at port in ships; French waste travelling by train to Germany; US waste from power plants outside Las Vegas; US weapons production waste at Hanford; nuclear power plant waste in the Ukraine; A French nuclear waste storage site in Normandy, in 2006 was found to be one of two local sites contaminating an aquifer; Anti-waste activists in the UK estimate the cost of storing nuclear waste

Australia has **medical and scientific** radioactive waste from the Lucas Heights reactor in Sydney. It includes material used in isotope production and discarded equipment.

**Industrial** radioactive waste scattered around the country includes that produced by food irradiation, smoke alarms and commercial gauges.

**Uranium mining makes up only 1% of of Australia's GDP. Yet the tailings and waste will need to be monitored at cost to taxpayers for thousands of years.**

LLW is stored at numerous local sites around Australia and at two state storage sites: Esk in Qld and Mt. Walton in WA.

**Australia has no long term storage facility for intermediate to high level waste.**

Most of the Australia's current waste, and almost all of the intermediate to high level waste is created by and stored at the Lucas Heights reactor, outside of Sydney. With no long-term management plan in place, the federal government, wishing to close the existing reactor and open a new one, is desperate to find a location for a dump to house the current waste and the contaminated building materials and equipment from the decommissioned reactor.

**A national waste dump for Australia?**

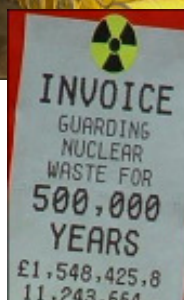
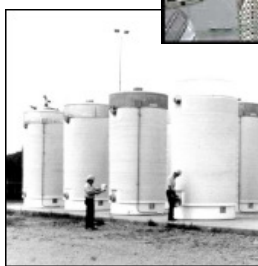
In 2005 the traditional land owners of South Australia, the Kupa Piti Kungka Tjuta, successfully stopped a HLW dump from being placed on their land. The Australian federal government now wants to impose a nuclear dump on the Northern Territory - despite having made unequivocal promises not to do so before the 2004 federal election.

Three sites are being considered: Hart's Range and Mt Everard in Central Australia, and Fisher's Ridge near Katherine. None of these sites was short-listed when environmental and scientific criteria were used to locate potential dump sites in the 1990s.

The proposed NT national waste dump will house low and intermediate level waste

from around Australia, and will also take highly radioactive waste from reprocessed spent fuel rods from the nuclear reactor at Lucas Heights. This reprocessed fuel, classified as LLILW contains long-lived "transuranic elements" (ie. heavier than uranium) such as plutonium, as well as fission products such as strontium-90 and cesium-137 which must be isolated from the biosphere for thousands or even millions of years.

According to reports including the Draft



Environmental Impact Statement for the new nuclear reactor at Lucas there are at least twelve categories of radioactive material that are almost certain to end up at a NT dump.

### Do you live on a transport route?

Radioactive waste in many of these categories will be produced and transported to the NT on an ongoing basis if and when the new Lucas Heights reactor is activated. It is estimated that transporting the existing stockpile of waste from Lucas Heights would involve over 130 truckloads of material. To transport all waste, current and ongoing, will require an initial 160 truck loads, another 200 truckloads for material from the decommissioned old reactor, and about 7 truckloads of new waste per year for the next 40 years. Radioactive waste from other locations around Australia would also be trucked here.



### What should be done with Australia's waste?

Though many are talking about deep burial, this "out of sight, out of mind" approach is unacceptable. The most environmentally sound method of storing radioactive waste is in an above ground dry facility that can withstand all possible climatic conditions, at or near the site of production or use. This allows for constant monitoring and guarding of the waste by experts and ownership and responsibility for the waste by those who produce it. It eliminates the

risk of transporting it elsewhere.

Australian Nuclear Science and Technology Organisation (ANSTO), who operates the reactor, acknowledges that it has the capacity to store all of Lucas Heights existing waste and future waste on site. Obliging waste producers to look after their waste will also encourage waste minimization.

Under international conventions Australia is obligated to ensure that generation of waste is kept to a minimum. Australia, therefore, needs to question the need for its waste producing industries, including reactors, uranium mining, food irradiation and other industries, for which alternatives already exist.

### Australia as the world's waste repository?

Recently the Howard government has been talking about enriching uranium in Australia, leasing the fuel rods, and having them returned here: The 'cradle to grave' approach. The idea is adding credence to the long running international push to make Australia the world's radioactive waste dumping grounds. An intermediate to high level dump in the NT would take Australia one step closer to that reality.

On the eve of [the] 20th anniversary of the Chernobyl disaster, the World Nuclear Association director-general John Ritch defended his industry and made his case for Australia to store nuclear waste in the outback as a "service to the world".

Mr Ritch said Australians had nothing to fear from accepting radioactive waste, although he was initially hesitant to say how long it would need to be stored. "I don't want to get into figures but, yes, it's a long time.



### What Does Australia have to dump anyway?

- Approx. 50 cubic metres of highly radioactive waste produced from reprocessing more than a thousand existing and future spent reactor fuel rods (Lucas Heights) - arriving over the next 40 years in containers probably via Darwin Harbour;
- Approx. 130 drums per year of radioactive 'compactable low level solid waste', e.g. vials, gloves etc (Lucas Heights);
- \* Approx 20 drums per year of solidified radioactive 'sludge' produced in the treatment of reactor wastewaters (Lucas Heights);
- Hundreds of tonnes of radioactive 'non-compactable contaminated items', e.g. materials from the decommissioned old Lucas Heights reactor, pipes, machinery etc;
- A stockpile of over 5,000 drums of 'low level radioactive waste' (Lucas Heights);
- A stockpile of over 200 cubic metres of 'intermediate level solid waste' some with 'unknown radioactive inventory' (Lucas Heights);
- Over 800 drums of 'historical wastes' including radioactive thorium, beryllium and uranium (Lucas Heights);
- Over 2000 litres of radioactive contaminated charcoal (Lucas Heights);
- Hundreds of used air filters containing radioactive contamination (Lucas Heights);
- Around ten cubic metres of highly dangerous solidified molybdenum 'long lived intermediate level waste' (Lucas Heights);
- Over 2000 cubic metres of radioactive contaminated soil currently stored at Woomera;
- Other Commonwealth Defence Department and CSIRO 'historic' radioactive waste.

Yes, we're talking about thousands of years ... That sounds like a long time, but the earth has been here for billions of years and there are many places on earth that have been geologically stable for many millions of years."

*Australia gets push on N-waste By Liz Minchin The Age - Melbourne, Victoria, Australia April 25, 2006*

The nuclear industry creates enormous amounts of highly toxic radioactive waste, putting the community and environment at great risk with little benefit. The solution to Australia's waste problem is not a dump in the NT, it is "above ground dry storage" where waste is produced, a closing down of the Lucas Heights reactor and existing nuclear facilities, and a rejection of future nuclear development from uranium mines to new reactors.

***The best solution to the problem of increasing amounts of badly stored radioactive waste is not a new waste dump, it is not mining uranium in the first place.***



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