

MILITARY NUCLEAR WASTE

High Level Waste (HLW)

Spent fuel from submarine reactors are stored in dedicated Ministry Of Defence ponds at BNFL Sellafield, Cumbria. It is transported in safety flasks by rail to Sellafield from DML Devonport, currently the only site where fuel is removed from submarines. HLW is hot and highly radioactive. It requires continuous water-cooling to prevent a catastrophic release of radiation into the environment.

Intermediate Level Nuclear Waste (ILW)

ILW is not transported from its site of production to reduce the risk of transport accidents and to spread the load rather than establish a single waste depository. Future plans are for seven ILW waste stores to be in indefinite service by 2050, although no sites have yet been established where they are to be built. Material above 100 Bq g^{-1} Pu alpha is classified as ILW.

Military ILW includes

- plutonium pits from decommissioned nuclear weapons
- highly enriched uranium pits from decommissioned nuclear weapons
- other weapons' nuclear materials
- contaminated weapons' materials
- weapons' production nuclear waste
- contaminated production materials
- decommissioned production plant waste
- decommissioned building waste
- decommissioned submarine waste
- decommissioned submarine waste
- contaminated submarine refit waste
- research reactor waste

Legacy waste has been building up at the Atomic Weapons Establishment Aldermaston since research, development and production began there in the 1950s. At that time, nuclear waste was not a political or even a practical issue. It was merely a by-product, albeit a dangerous one, of the rush to be in the nuclear club. Thus, AWE contains a large store of ILW. It all has to be carefully stored in concrete-lined metal drums to avoid creating a critical mass leading to a spontaneous nuclear detonation. Thousands of such drums at AWE Aldermaston are the legacy we leave the next generation -and the next and the next, for 24,000 years. The ILW pile continues to grow at all military nuclear sites as it slowly accumulates from the current Trident programme and submarine reactor servicing and decommissioning.

Low Level Waste (LLW)

The national BNFL repository for LLW is at Drigg in Cumbria. LLW is defined as that where the specific plutonium (Pu) alpha activity of the consignment does not exceed $0.1 \text{ GBq tonne}^{-1}$ or 100 Bq g^{-1} (33 parts per billion of Pu by mass). LLW is transported by road from all nuclear military sites and goes into allocated space at Drigg. AWE's space allocation at Drigg is filling up and efforts are being made to reduce their amount of LLW produced.

Very Low Level Waste (VLLW)

Very low activity LLW (called Very Low Level Waste – VLLW) is buried in conventional landfills where the waste is diluted by significant quantities of other (non radioactive) wastes. Incineration is also used for some combustible waste from AWE.

Submarines

Submarine decommissioning involves all four levels of waste tied up in the submarine hulls stored afloat in Devonport at Rosyth until a solution is found for its Interim Storage Of Laid Up Submarines (ISOLUS).