

began building in 1947 and was producing plutonium by October 1950. One of these reactors was responsible for the UK's worst-ever nuclear accident, in 1957, when it overheated and caught fire and radioactive particles were carried to Europe. Also milk from cows across 200 square miles of Cumbria was condemned as radioactive from being contaminated by strontium 90 and disposed of. After this the site was renamed "Sellafield", presumably to try to wash away any aftertaste.

It also became the site of the world's first full-scale nuclear power station, Calder Hall, which generated electricity from 1956 to 2003.

In 1959 Sellafield began receiving thousands of tonnes of highly-radioactive spent nuclear rods from all the UK's growing number of civil nuclear power stations (until 1997 when the newest of the UK's nuclear power stations began storing such rods on site) and other radioactive material. Such material has continued arriving ever since in large quantities.

Sellafield has also imported highly-reactive spent fuel rods from abroad at a price (indeed such contracts have yielded the UK some £9 billion) from such countries as Japan, Germany, Switzerland, Holland, Italy and Sweden. The plan was that such waste should be reprocessed into uranium and plutonium oxides, which would be returned to the country of origin of the rods. With the demand for such reprocessed fuel disappearing and THORP itself shut down in 2012, the UK ceased to import foreign high-level waste and, in 2008 began returning all this waste in vitrified form.

However the amount of UK high-level waste stored at Sellafield continues to grow, unprocessed and unwanted. It's true that the amount of such waste arriving at Sellafield is now much reduced as many of the nuclear power stations producing such waste have now shut down and the plan is for the eight new nuclear power stations promised by the government to all "temporarily" store their high-level waste on site. It is not entirely clear however that having radioactive waste at several sites around the country would be any safer than having it all at one site.

The long-term plan, forecast to cost between £20bn and £53bn, is to bury the UK's high-level and medium-level nuclear waste deep underground in a "geological disposal facility" (essentially a very deep hole in the ground. Out of sight, out of mind?) But not even a site for such a depository has yet been found, so the waste will continue to remain at Sellafield, Sizewell B and any new nuclear power stations for the foreseeable future.

KICK NUCLEAR

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We hold "**Remember Fukushima – End Nuclear Power**" vigils in London on the last Friday of each month – from 11am to 12.30pm outside the Japanese Embassy at 101-104 Piccadilly W1; followed by 1-2pm outside the Offices of the Tokyo Electric Power Company, owners of the Fukushima nuclear power station, at 14-18 Holborn WC2. Join us!

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SELLAFIELD UNDER INVESTIGATION

In early December, *The Guardian* reported the results of a year-long "special investigation" it had carried out into health and safety risks posed by the two square miles large Sellafield nuclear site in Cumbria, which it characterised as "Europe's most hazardous nuclear site." It houses more plutonium than anywhere else on the planet.

A major finding by the investigation was that a decaying building known as the "swarf storage silo" (which is actually made up of 22 older concrete silos and some later double-layered ones) has been leaking radioactive liquid since at least 2019 when Sellafield reported the leak to the Office for Nuclear Regulation (ONR). It says that since summer 2022 it has been starting to extract decades of nuclear waste from the silos, where it has been accumulating since the 50s, but that this could take another 20 years.

Where is the leak (or leaks) situated? Inspectors have reported that unfortunately it is not possible to know where or how many the leaks there are that have formed inside the silo. If the leak increases in volume, as it is reported to be doing, it could contaminate groundwater with radioactivity, with potentially dangerous consequences. "A scientist on an expert panel advising the government on the health impact of radiation" was reported by *The Guardian* to have told it that the risk posed by the leak and other chemical leaks had been "shoved firmly under the rug".

A second finding was that cracks had developed in the concrete and asphalt skin of a crumbling building, known as B30. This was built in the early 1950s and contains a huge cooling pond in which highly-radioactive spent nuclear fuel rods from the 26 Magnox nuclear reactors which operated in the UK between 1956 and 2015. (Similar storage buildings B29 and B41 were also found to be crumbling) The original idea was that the rods should be removed from the pond after three months and re-processed in a Magnox reprocessing plant which separated out the plutonium and uranium the rods contained. This operated from 1964 to 2022. However the plant failed to keep up with the amount of rods arriving and with a declining market for the products of the reprocessing, the rods remained in the ponds for long periods and became corroded in the water, breaking down into radioactive sludge.



A picture of part of the B30 pond containing radioactive sludge. Anyone for a swim? From The Ecologist

A deputy managing director at Sellafield some years ago described B30 as “the most hazardous industrial building in western Europe” and the cracks in the building are recently reported as getting worse, so it’s not getting any safer.

B30 was abandoned in 1986 after new facilities to house arriving spent fuel rods were built. After it was decided to decommission B30, it took 15 years and £1.5bn to bring B30 to a point where decommissioning could even begin, with builders limited to working half-an-hour a day to avoid

exceeding radiation exposure limits. Latterly remotely-operated vehicles have been used to Hoover up the sludge and a new facility has been built to receive the sludge. Sellafield aims to drain the pond by the early 2030s and demolish B30 by the 2050s.

The Guardian also reported that it had seen a document sent to members of the Sellafield board in November 2022 which raised concerns about a general degradation of safety at the site, warning of the “cumulative risk” from failings ranging from nuclear safety to inadequate asbestos and fire standards. It also pointed out the dangers of atmospheric release of radioactive particles posed by such things as explosions and air crashes.

Both Ireland and Norway are concerned about the risk of contamination from Sellafield.

In 2006 the Irish government tried to take action against Sellafield by referring it to a tribunal over concern about the impact on the environment, in particular by radioactive contamination from radioactive material entering the Irish Sea from the plant entering.

Norwegian officials are concerned that an accident at the site could lead to a plume of radioactive particles being carried by the prevailing south-west wind across the North Sea, harming its food production and wildlife.

The *Guardian* investigation also reported that Sellafield cyber security was deficient and had indeed been breached by cyber groups closely linked to Russia and China as far back at least to 2015 when experts discovered “ sleeper” malware (malware that can lurk in to spy on or attack systems) had been embedded in Sellafield’s computer networks. Last year, Sellafield, with 11,000 staff, was placed in “special measures” for consistent failings in cybersecurity.

Senior figures at the site had been aware of cyber problems for at least a decade, according to an internal report seen by *The Guardian* which warned that there were “critical security vulnerabilities” that needed to be addressed immediately. This vulnerabilities include staff at an external site found that they could access Sellafield’s servers and that external contractors could plug memory sticks into the system while unsupervised.

How did Sellafield get into this mess?

Sellafield, then named “Windscale” was the site for a 2-reactor plant for producing the plutonium required for the UK’s nuclear weapons. This