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Nuclear waste in Germany

Nuclear waste repository: Stay up!

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What to do with the ever-increasing amount of radiation waste from the 442 nuclear reactors in 31 countries around the world? If one follows the common narrative, then for decades it has been a matter of finding a "safe repository", and according to the latest announcements, 54 percent of Germany's underground is suitable for such a repository. But this debate is a classic smoke screen: it is misleading.

Repository or time bombs?

The common argument, which is usually not questioned even by opponents of nuclear power (and which is laid down in law), that a "repository" is absolutely necessary, follows the principle that is also consistently applied to other types of waste: out of sight, out of mind. So we have to find a place where the stinking, rusting, poisonous or radiating remains of civilization can be buried as invisibly as possible and supposedly safely for all time. The term used for this, the beautiful neologism "disposal", was also created to suggest that this could finally dispel the justified concerns that the accumulation of ever larger quantities of (radiating) waste inevitably causes.

But reality belies this euphemism: dealing with the debris of nuclear plants, which were apostrophized as having a bright future, has so far been more of a carefree affair than a disposal operation. Would you like some small examples?

- ▶ After the first known nuclear meltdown of an atomic plant in the so-called NRX reactor of the Chalk River Laboratories near Ottawa in Canada in 1952, the elegant solution was chosen: bury the remains of the melted reactor core on site and let the four million litres of water contaminated with partly long-lived fission products disappear in a cesspool.
- ▶ In 1961, the prototype of a military boiling water reactor went through at the National Reactor Testing Station in the desert of Idaho/USA. After removing the three soldiers killed in the process, the highly radioactive parts of the dismantled reactor building were finally buried nearby.
- ▶ In the Swiss experimental reactor Lucens in the canton of Gstaad, which was constructed in three rock caverns, a partial core meltdown occurred in 1969. Most of the radiating remains of the accident were transported to an interim storage facility (but not until 2003), but the caverns are still radiating today. It was assumed that the porous sandstone could store radiating particles long enough for the radiation to decay. A minor flaw: the facility has had to be drained ever since, and high quantities of radioactive substances, mainly tritium, have been found in the waste water, which has been increasing since 2011.
- ▶ Another example of this type of "disposal" is the German "intermediate" storage facility at Asse, which leaks like a bucket full of holes and is currently being remediated.
- ▶ The then Soviet Union had a similarly elegant "final solution" for decommissioned nuclear submarines and reactors. According to the Norwegian environmental organisation Bellona, between 1960 and 1993 the Soviet Union sank a total of 17,000 containers and 19 freighters with radioactive waste, 735 radioactively contaminated heavy machinery parts, 14 nuclear reactors and a complete nuclear submarine in the Arctic Sea, mainly off the island of Novaya Zemlya. There are also two other submarines that sank in 1989 and 2003 as a result of accidents. However,

this is not a Soviet invention: Until the dumping of radioactive solids was banned internationally in 1994, all the nuclear nations had dumped a total of 100,000 tonnes of nuclear waste into the world's oceans, 80% of which was dumped by Great Britain.

Are these all repositories? If it were up to those responsible, obviously yes. There are no plans for remediation, with the exception of the Russian dumping in the Arctic Sea, but in this case only because one of the submarines dumped there threatens to explode and, moreover, because drilling for oil and gas is planned in the sea area. And as far as the Asse is concerned, without the persistent work of the anti-nuclear movement, the current clean-up operation would almost certainly not have come about.

Futile search

Internationally, there is a fierce search for suitable storage sites for waste. The furthest ahead is Finland, where on an island where there are already nuclear power stations, a storage facility for low- and intermediate-level nuclear waste has been built at a depth of 450 metres in granite, and has been in operation since 1992. The high-level waste repository, which is also under construction there, is due to come on stream this year.

Sweden and China also rely on granite, although in Sweden the repository for low and intermediate level waste, which is already in operation, has already experienced a water ingress, Switzerland wants to store in clay rock, France relies on clay.

Common to all such experiments is that "safe storage" for the required 1 million years is at best a pious hope. One of the German experts involved in the search for a site recently admitted that a forecast is possible for a few thousand years at most. In the USA, former President Obama stopped the current plans there for precisely this reason at the time.

There were also discussions about simply shooting nuclear waste into space. One of the hitches is that, according to a well-known advertising slogan of the confectionery industry, with the current failure rate of the required rockets, part of the energy consumed would be returned by return post. The nuclear industry, on the other hand, is propagating (and testing) new types of reactors, by means of which nuclear waste is to be recycled, or long-radiating fission products are to be converted by so-called transmutation into those with a shorter half-life.

The alternative

In summary, there is no safe method of disposal or "final" storage of radioactive waste. All the approaches mentioned are either about getting rid of the stuff as cheaply as possible or about finding a way to continue to operate this technology, which is hostile to humans and the environment - but in fact both.

The best, though not the cheapest, solution to the problem is simple: above-ground storage under appropriate safety precautions that can be checked and adjusted at any time. This is the only way to prevent the immense quantities of highly radioactive material from simply being forgotten over the next few millennia. On the other hand, it would have the advantage that, simply for reasons of space and cost, the nuclear industry would reach a dead end of its own accord in the medium term.

Nuclear waste repository: Stay up!

The slogan should therefore apply not only to the movement against the monster-underground railway station in the German town of Stuttgart, but also to the anti-nuclear movement: Stay on top.

PS:

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