The Economist

Nuclear waste

Faff and fallout

The next president will have to decide what to do about radioactive waste

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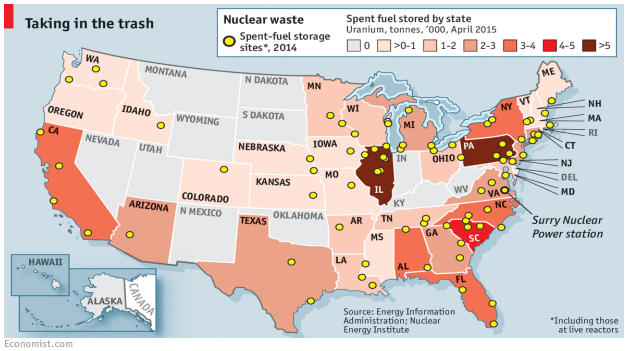
AFTER the baking heat of a Virginia summer, the spent fuel pool at Surry Nuclear Power station, which sits on the James river in the south-east of the state, looks almost worth jumping into. That would be unwise. Some 25 feet below the surface of the clear blue water, the tops of radioactive fuel assemblies glisten. Every 18 months a new load of spent fuel—uranium pellets encased in zirconium—is removed from the power station's two reactors and put into the pool, which absorbs the excess heat and some of the most dangerous (and short-lived) radiation. There it sits for five years, before being moved outside into concrete containers which look like huge washing machines.

But what then? Since the start of Barack Obama's term in office in 2009, America has had no long-term plan for its nuclear waste. As a candidate, Mr Obama promised to oppose the long-term plan to build a repository in Yucca Mountain, some 80 miles (129km) north-west of Las Vegas, to win the support of Harry Reid of Nevada, the Democrats' leader in the Senate. As a result, some 70,000 tons is waiting at power plants such as the one at Surry, in silos or in pools. Mr Reid, like Mr Obama, is standing down in 2017. Their successors will face a difficult question: how to reopen the debate about what to do with spent fuel.

In the early days of the nuclear age, when the priority was beating the Soviet Union, nuclear waste, much of it from weapons programmes, was disposed of without much care. Spent fuel was left to disintegrate in pools; liquid waste was buried in tanks where it could leak into groundwater. That has left places such as Hanford, a former weapons-production site in Washington state, deeply contaminated. The cleanup there involves some 11,000 workers, costs around $3 billion a year and will not finish before 2046.

The problem now, however, is civilian waste from power plants that came online in the 1960s, 1970s and 1980s. Nuclear power generates a fifth of America's electricity; its 99 reactors account for almost a third of all nuclear power generated worldwide. Five more are under construction—the first to be approved since the 1970s—partly thanks to federal loan guarantees intended to boost clean energy production. The waste they generate has been stored safely, but it will stay dangerously radioactive for tens of thousands of years. That requires a longer-term plan than leaving it outside, however well encased in concrete.



Under the 1982 Nuclear Waste Policy Act, the federal government pledged to dispose of nuclear waste—both civilian and military—permanently. Several possible plans were drawn up, many involving burying the waste in salt deposits deep under ground. To pay for this eventual cost, a levy was added to the bills of consumers of nuclear power.

But politics got in the way. In 1987 Congress determined that only one place, Yucca Mountain in Nevada, would be considered. This, says Richard Stewart of New York University Law School, was the result of a stich-up between two congressmen who did not want their states to host waste dumps. Tom Foley, the then House majority leader, and Jim Wright, the Speaker, blocked proposals for sites in their home states of Washington and Texas.

Nevadans nickname the 1987 amendment the "screw Nevada" bill, and they have fiercely resisted implementation. Some $15 billion has been spent on building the repository at Yucca Mountain, but no waste has been moved there. Nevadans are quick to point to the damage done to their state by nuclear-weapons tests. Since 2010, the Department of Energy has formally ruled the facility out. In a lawsuit in 2013, the government was forced to stop collecting the levy on nuclear power until a plan exists for a permanent site. It has also been forced to pay utility companies for the costs of storing waste temporarily, since it did not start collecting waste fuel in 1998, as the original law dictated.

Some hope Yucca Mountain might be reopened by a new president. "The only aspect of used fuel in this country that has been problematic is the politics", says John Keeley of the Nuclear Energy Institute, an industry lobby group. In January the Nuclear Regulatory Commission, the regulator, concluded that the site is safe for the disposal of waste. But the worries of Nevadans—that moving spent fuel on railways might lead to spills, or that radioactivity could leak into the environment—remain.

Recent experience doesn't help. America already operates one of the world's few deep storage

sites for radioactive waste—near Carlsbad, in New Mexico. It stores waste mostly from nuclear-weapons production. In February 2014 the facility suffered two crippling accidents. One was apparently caused by workers packaging waste with the wrong sort of cat litter. The plant-based "Swheat Scoop" brand they used, unlike the mineral-based kind they were meant to, did not absorb radioactivity very well. The facility has not accepted any new waste since.

While there is no long-term solution for civilian waste, utility firms improvise. More of the stuff is being moved from pools into concrete casks: at Surry, around three-quarters of the waste is stored this way. These containers, technicians reckon, could safely last for a few hundred years. They are not easily interfered with, and they do not need a great deal of maintenance, unlike pools, where spent fuel can leak or corrode. Yet given how long the waste will remain radioactive, that is not altogether comforting.

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