

Nuclear waste Scientist's view on waste plans

SIR - I was involved in the Nirex project to find a nuclear waste repository at Sellafield, both as an earth scientist on behalf of Nirex but later as an objector at the public planning inquiry held at Cleator Moor in 1995-96. We must not forget that the inquiry effectively ruled out the whole of West Cumbria as a suitable location for nuclear waste disposal, not just on planning procedures, but on the overall science.

The fundamental reason is not hard to grasp. Just stand with your back to the sea, anywhere on the coastal plain, looking inland at the mountains of the national park. Imagine the rain falling on these mountains, percolating – however slowly and imperceptibly – through fissures and cracks in these slates and lavas, down towards the sea, over centuries and aeons. These same Lake District rocks are found below your feet, under the sedimentary layers of the coastal plain, constituting what we call geologically the ‘basement’. But the very large hydraulic head of underground water near the coast, thanks to the height of the mountains inland, means that some of this water can percolate back upwards to the surface on its progress to the sea. It is this natural flow pattern that rules out the coastal region from ever being a candidate site; it does not conform to internationally agreed standards for such a repository. In the long term, nature cannot be defied by engineering.

The judge at the planning inquiry considered that the government must look at alternative sites within the UK, and that not to do so may well contravene EU, even if not UK, law. So while I look forward to the eventual publication of the now-delayed report from my former colleagues at the British Geological Survey, on the suitability of Allerdale district as a potential waste site, it is already irrelevant. A decision by the government to focus on the Allerdale or Copeland districts will open up several legal challenges, and the only winners will be the lawyers.

The BGS should instead have been investigating the vast tracts of eastern England where there is not a mountain in sight. Here the flat-lying sedimentary layers overlying basement rocks do conform to one of the international standard models for a waste dump, known as BUSC, or basement under sedimentary cover. There were three such candidate sites in the formerly secret shortlist of 10 potential sites drawn up in 1988, which at the time included two Sellafield alternatives. But the government has allowed a further fifteen years to elapse with no significant new science being done, and now hopes that its new ‘voluntarism’ approach – leading back again to the Cumbria cul-de-sac - will somehow bypass the scientific problems.

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