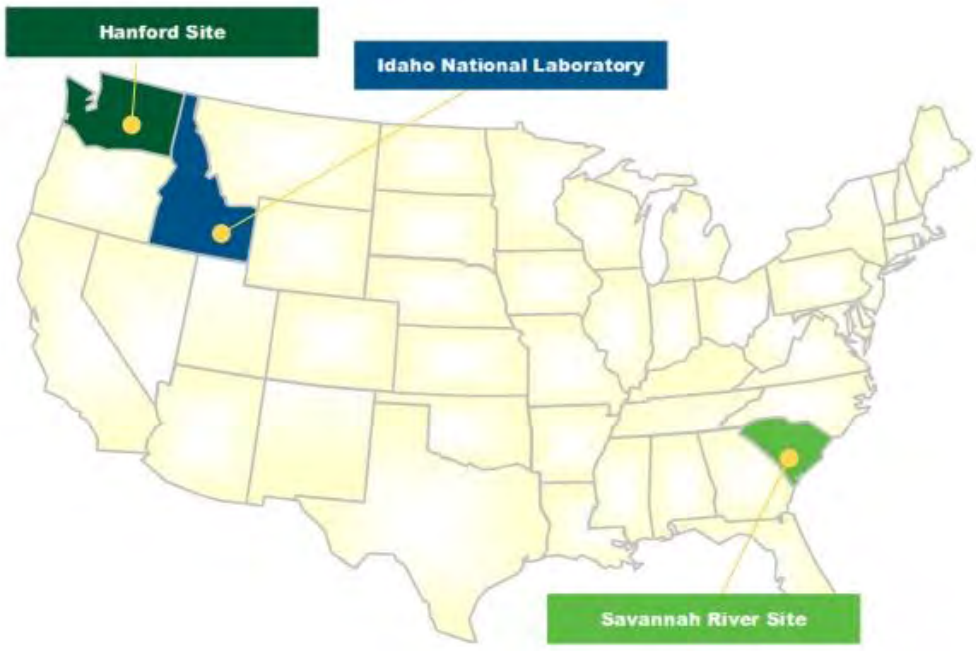
US DOE changes waste interpretation

07 June 2019

The US Department of Energy (DOE) has published a new interpretation of high-level radioactive waste (HLW) in which reprocessing waste streams are defined by their radiological characteristics rather than solely on how they were made.



The locations of the US DOE's reprocessing HLW inventories (Image: DOE)

Up to now the DOE has managed nearly all reprocessing waste streams as HLW regardless of radioactivity in a one- size-fits-all approach. This, it says, has led to decades of delay, cost billions of dollars, and left the waste 'trapped' in DOE facilities in Idaho, South Carolina and Washington without a permanent disposal solution.

"Recognising this failure, this Administration is proposing a responsible, results-driven solution that will finally open potential avenues for the safe treatment and removal of the lower level waste currently housed in three states," US Under Secretary for Science Paul Dabbar said. "DOE is going to analyse each waste stream and manage it in accordance with Nuclear Regulatory Commission standards, with the goal of getting the lower-level waste out of these states without sacrificing public safety."

The USA's 1954 Atomic Energy Act, as amended, and the 1982 Nuclear Waste Policy Act of 1982, as amended, define HLW as: "the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and ... other highly radioactive material that the [Nuclear Regulatory] Commission, consistent with existing law, determines by rule requires permanent isolation." This means that nearly all reprocessing waste streams have up to now been managed as HLW regardless of their radioactivity.

The DOE's new interpretation was drawn up after a 90-day public comment period and was informed by more than 5000 comments from stakeholders including members of the public, Native American tribes, members of Congress, state and local governments, and the Nuclear Regulatory Commission.

Under the new interpretation, DOE may determine that waste is not "highly radioactive", and therefore not HLW, if it does not exceed concentration limits for Class C low-level radioactive waste as set out in section 61.55 of title 10 of the Code of Federal Regulations; or if it does not require disposal in a deep geologic repository. Waste meeting either of these tests could be classified based on its radiological content and disposed of accordingly.

The interpretation does not change or revise any current policies, legal requirements, permits or agreements, DOE said. Decisions about whether and how it will apply to existing wastes and whether such wastes may be disposed of as non-HLW will be the subject of subsequent actions, and any actions to implement the interpretation will be done on a site-specific basis with appropriate engagement with affected stakeholders, it added.

Benefits from the new interpretation, if implemented, include reducing the length of time that radioactive waste is stored on-site at DOE facilities; enhancing site safety by using lower-complexity waste treatment and immobilisation approaches; aligning the USA with international guidelines for management and disposal of radioactive waste based on radiological risk; and using available commercial facilities and capabilities to achieve shorter mission completion schedules, DOE said.

Reprocessing of used nuclear fuel as part of the US defence programme began in the 1940s and continued through much of the Cold War. Weapons development activities occurred primarily at Hanford in Washington and Savannah River in South Carolina, while reprocessing activities supporting nuclear research and development and naval propulsion programmes took place at the Idaho National Laboratory. According to DOE, Savannah River currently holds 4,190 canisters of vitrified waste and 35 million gallons of reprocessing waste; Idaho National Laboratory, 4,400 cubic metres of solid calcine waste - a dry, granular waste form from the processing of liquid wastes - and 3,210 cubic metres of sodium-bearing waste; and Hanford 56 million gallons of waste stored in 177 underground tanks and 1,936 caesium and strontium capsules.

Reprocessing waste from the only commercial nuclear fuel reprocessing plant to have operated in the USA is not included in this inventory of defence waste. The West Valley Demonstration Project, which was established in 1980 to complete the clean-up of the site in New York state, operates under a distinct statutory and regulatory basis from the three DOE sites where the defence reprocessing waste is stored.

DOE also announced it is initiating a National Environmental Policy Act analysis to determine the potential environmental impacts of the disposal of a Savannah River reprocessing waste stream as non-HLW at a commercial disposal facility licensed to receive low-level radioactive waste.

Researched and written by World Nuclear News