

Nuclear Waste Repositories

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This presentation addresses:

- Is a disposal facility (or facilities) needed under all foreseeable scenarios?
- If so, what are our alternative approaches for disposal?
- What should the process to develop a US disposal system look like?

The key points of the presentation are that waste disposal is not an urgent priority in the US, and that it is important that the potential rebirth and future of nuclear power in the US not be built around technically immature and uneconomic waste management methods. Water reactors and dry cask storage work well, and nuclear power plant spent fuel, while highly radioactive, has volumes that are small in terms of the volumes to be stored and in comparison to the wastes produced by technologies such as coal-fired electricity production. Advanced waste treatments such as reprocessing and actinide burning in fast reactors are not economic at the present time.

The current waste management system should address the following:

- Need to get spent fuel off sites where power reactors are closed – this could be done by moving spent fuel to operating reactor sites or to a central storage facility.
- Need to continue to convert DOE wastes to stable waste forms.
- Need to create solutions for wastes that have no current disposal options, e.g., mixed wastes, greater-than-Class-C wastes. (This last issue may be outside of the BRC scope, but it is a long-time waste management problem.)

Regarding alternatives for high-level waste management, deep geological disposal (recommended by the US NAS in 1957) remains the leading choice in countries with nuclear power programs. Advanced technology approaches such as accelerator or fast reactor-based transmutation have been proposed, but these systems are not technically mature or economic at the present time. These technologies may make sense if and when reprocessing becomes economic, but premature attempts to adopt these technologies could add costs that would damage the possible rebirth of nuclear power in the US.