March 25, 2019

The Honorable Secretary Rick Perry
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Dear Mr. Secretary:

The U.S. Department of Energy (DOE) is proposing a revised interpretation of the definition of the statutory term "high-level radioactive waste" as set forth in the Atomic Energy Act of 1954 and the Nuclear Waste Policy Act of 1982. The proposal would shift the definition from a source-based definition to a risk-based interpretation consistent with the radiological characteristics of the waste and the ability to safely isolate the waste from the human environment.

The national laboratories have reviewed the proposal and support the revised interpretation based on its technical attributes and potential complex-wide benefits. The attachment summarizes our assessment of the proposed change. We believe that classification of reprocessing waste for disposal based on radiological risk provides the best path to accelerating the safe long-term stabilization and disposition of a wide variety of waste streams and provides immediate benefit to the health and safety of the worker, communities, and environment across the DOE complex.

The national laboratories are supportive of a revised interpretation for high-level radioactive waste and willing to provide any resources to ensure successful implementation of the final policy.

Sincerely,

Vahid Majidi
Savannah River National Laboratory

Steven Ashby
Pacific Northwest National Laboratory

Mark Peters
Idaho National Laboratory

Thomas Mason
Los Alamos National Laboratory

Stephen Younger
Sandia National Laboratories

Thomas Zacharia
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Attachment

cc: DOE-HQ
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# Position Paper from the National Laboratories Concerning the Revised Interpretation of the High-Level Radioactive Waste Definition March 25, 2019

The U.S. Department of Energy (DOE) has proposed a revised interpretation of the high-level radioactive waste (HLW) definition that is risk-based and consistent with the radiological characteristics of the waste and the ability to safely isolate the waste from the human environment. The HLW definition comes from the *Nuclear Waste Policy Act (NWPA)* of 1982, as amended in 1987. The *NWPA* defined HLW as the highly radioactive material resulting from the reprocessing of spent nuclear fuel and encompassed both liquid wastes and solid wastes containing sufficient concentrations of fission products. It further specified that HLW would include other highly radioactive material determined to require permanent isolation. Under this definition, reprocessing referred to the dissolution of irradiated spent nuclear fuel and the chemical processing required to separate other radioactive species from the desired plutonium and uranium material. DOE currently manages reprocessing waste based on its source. For HLW disposition, the *NWPA* specified disposal in a permanent geologic repository to provide reasonable assurance of protection to the public and the environment.

Amendments have been made to the *NWPA* since its issuance in 1982, but the changes have focused on the repository siting and acceptance requirements and not the HLW definition. By comparison, the International Atomic Energy Agency (IAEA) has made several revisions to its definition of low-level, intermediate-level, and high-level radioactive waste over the years. Currently, the IAEA standards provide a graded approach to waste classification based on the underlying constituents and the suitability of the disposal facility for containment and isolation of those constituents. The proposed HLW interpretation would align with these international guidelines for management and disposal of radioactive waste based on radiological risk and not waste source.

The proposed HLW interpretation has the following technical attributes:

- Considers the waste's radiological characteristics (which determine risk) and the potential disposal facility capabilities, consistent with settled Nuclear Regulatory Commission's (NRC) and IAEA policies and guidance;
- Requires deep geologic disposal for reprocessing waste with high levels of radiation and long-lived radionuclides consistent with NRC regulations and IAEA guidelines; and
- Reduces the risk profile to human health and environment because additional processing for removal of radionuclides from waste that already meets the criteria for safe transportation and disposal presents additional hazards and risk.

Enactment of the proposed HLW interpretation provides significant benefits to safe disposition of legacy waste, including:

- Expands the number of disposition paths by basing the disposal method on the hazard level of the material;
- Utilizes existing licensed disposal sites with approved performance assessments to mitigate the risk from prolonged interim storage in aging facilities and structures across the DOE complex;
- Preserves scarce deep geological disposal resources for truly highly radioactive waste; and
- Recognizes the significant technological advances in waste characterization, waste form formulations, and the understanding of the performance of radiological constituents of concern

in different disposal environments since enactment of the *NWPA*. These advances allow for more effective processing without compromising the safety of the environment.

Based on the perspective of the DOE's Environmental Management National Laboratory Network, the HLW interpretation provides the best path to accelerating the safe long-term stabilization and disposition of a wide variety of reprocessing waste streams that exist across the DOE complex. The interpretation would provide immediate benefit to the health and safety of the worker, the surrounding communities, and the environment, and would establish consistent, risk-based approaches to the disposition of radioactive waste generated from the reprocessing of spent nuclear fuel. In short, we strongly support the HLW interpretation.