

**Pennsylvania Department of Environmental Protection**  
**Comments on Blending of Low-Level Radioactive Waste**  
**Federal Register Notice, Vol. 74, No 228**  
**Federal Agency - Nuclear Regulatory Commission (NRC)**  
**Docket ID NRC 2009-0520**

As of July 1, 2008, the Barnwell disposal facility in South Carolina no longer accepts low-level radioactive waste (LLRW) from outside the Atlantic Compact (Connecticut, New Jersey and South Carolina). As a result, the generators in 36 states do not have access to disposal for class B and C and certain class A LLRW.

The department believes that in the long-term, the lack of disposal options for these types of wastes could have an adverse impact on the generators as well as the states, if some of these materials (i.e., disused sealed sources) are abandoned due to lack of disposal. The use of radioactive materials, which generally result in generation of LLRW, plays an important role in biomedical research and medical treatment. Unfortunately, the lack of disposal options and/or high cost of disposal have already impacted the production of certain radioactive isotopes that are essential for medical research and treatment such as technetium (Tc-99) and molybdenum (Mo-99).

It is imperative that the regulators (NRC and Agreement States), the LLRW generators and the disposal facility operators cooperate to identify options and solutions for disposal of Class B and C wastes and Class A sealed sources. In the short-term, this can be accomplished by reviewing the existing requirements and guidelines to provide additional flexibility for disposal of wastes that are in storage due to lack of access to a disposal facility. A potentially viable option to consider is intentional blending or mixing of LLRW of different concentrations into a homogeneous mixture, as proposed by the NRC. The department would not oppose intentional blending of LLRW if it results in a change of classification of waste to a lower classification and only for access to a LLRW disposal facility and not for release to the environment. However, it is recommended that the NRC consider the following technical and policy issues as it relates to intentional blending of LLRW.

1. The NRC should provide a clear definition of blending. This definition should prohibit the mixing of clean with contaminated materials for the purpose of changing waste classification or dilution of waste. Additionally, blending which would result in a higher classification of waste (i.e., from Class B and C to Greater Than Class C) should not be allowed or at a minimum, it should be discouraged. The Pennsylvania LLRW regulations (25 Pa Code, Section 236.01) prohibit intentional dilution of waste by the disposal facility operator to alter its classification. The PA regulations do not specifically define dilution and as such, the department will not allow blending of LLRW by the regional disposal facility site operator.

2. There will continue to be a need for good record keeping and proper waste attribution should blending be allowed as a routine practice by waste processing facilities. If constituents of the blended waste could not be attributed to the original generator(s), it would have to be reported as waste generated by the processing facility and this is not acceptable. It is expected that the processor will maintain and report to the disposal facility the original waste generator, the original class of waste prior to blending, original waste streams prior to blending, the original isotopic contents prior to blending, and the original volume and radioactivity of the waste prior to blending. Otherwise, this situation could create some policy, technical and legal issues for states and compacts that the waste processor is located in. For example, the Appalachian States LLRW Compact Act (Act 1985-120) contains a provision that would require the compact commission to designate, as a host state, a party state that generates 25 percent or more of Pennsylvania's (host state) waste based on comparison of averages over three successive year. Absent an accurate record keeping and waste attribution by processors, the compact commission would not be able to adequately implement this provision of the compact act.
3. Prior to making a decision on blending, NRC should consider the potential impact of any decisions on the Agreement States, particularly as it relates to state specific statutes and regulations for management and disposal of LLRW. If NRC implements a position on blending by guidance, Agreement States would not be required to adopt this guidance, particularly if the NRC's position is in conflict with the state statutes and regulations. On the contrary, absent a rulemaking, the NRC's position might not be implemented consistently by the Agreement States. If a rule is to be promulgated, compatibility Category 3 would be more practical for implementation by Agreement States.
4. It would be helpful if NRC could provide an evaluation of potential benefits and risks associated with intentional blending. This evaluation should include an estimate of reduction in the amount of Class B and C wastes as well as an estimate of increase in the amount of Class A waste; the amount of Class A waste suitable and available to blend with Class B and C wastes; potential impact on occupational exposure; transportation risk of additional shipments of Class A waste, if any; and the availability of transportation casks should this result in a significant increase in the amount of Class A waste.
5. NRC regulations only require waste to be classified when it is ready for disposal although in practice, many generators classify waste before it is shipped for disposal and also prior to interim storage. The advantage of maintaining the NRC's current requirement is that the generators would not be required to classify waste prior to shipment to a processor (unless the processor requires) and as such, there will not be any intentional blending of waste [to change its classification] if the waste has not yet been classified.

6. There will be a need for adequate oversight of the generators to ensure that blending is being performed appropriately. In the case of the nuclear power plants and other generators that are located in states that are not Agreement States, the appropriate NRC regional offices should provide that oversight. Agreement States should provide oversight of blending activities for their respective generators except the nuclear power plants. This recommended approach for oversight should also be applied to the review and approval of a specific blending proposal. The NRC's guidance would be very helpful to ensure consistency and to demonstrate compliance with regulations or requirements for intentional blending.