Questions and Answers

1. **What is U.S. Nuclear Regulatory Commission's (NRC) new position on blending of Low Level Radioactive Waste (LLRW) to reduce its waste classification?**

Answer**:**

NRC's new position is that large-scale LLRW blending may be conducted when it can be demonstrated to be safe. NRC's blending position will become risk-informed, performance-based, and consistent with the agency's overall policy for regulating the nuclear industry.

- The new position is *risk-informed* – it is tied to how LLRW blending might affect the protection of public health and safety.

- The new position is *performance-based* - NRC's decision making involving blending will above all be based on performance and results. Performance means that the blended waste must meet the limits on radiation exposures at the disposal facility and limits on how much the radioactivity concentration may vary (i.e., how well-mixed it must be).

- NRC's previous position was to discourage blending under some conditions without a health and safety basis, but did not discourage blending if a nuclear facility's operational efficiency could be improved. The position was not risk-informed, performance-based.

2. **What steps will NRC take to implement this new position and when will they occur?**

Answer:

NRC's paper, SECY-10-0043, "Blending of Low-Level Radioactive Waste," describes the steps involved in implementing this option:

- NRC will piggyback blended wastes onto the "unique waste streams" rulemaking that is currently underway. That rulemaking is designed to address waste streams not evaluated in developing NRC's disposal regulation in 10 CFR Part 61. Specifically, Part 61 will be revised to clarify that a site specific intruder analysis must be conducted to ensure compliance with 10 CFR 61.42, the performance objective requiring protection of an inadvertent intruder into the disposal site. Large-scale blended waste, as well as other types of waste, was not evaluated at the time that 10 CFR Part 61 was developed. The draft rulemaking is scheduled to be sent to the Commission late in 2011, and after Commission approval, will be published for public comment in the *Federal Register*. The final rulemaking is to be completed in the fall of 2012.

- NRC will also update its Concentration Averaging Branch Technical Position (CA BTP). The BTP contains NRC's current guidance on LLRW blending, and will be updated to incorporate the Commission's recent decision. The BTP also covers mathematical averaging of radioactivity concentrations. For example, reactor components of varying concentrations can be placed in containers and their concentration averaged over the volume of the container under certain circumstances. The staff plans to have a scoping meeting on these other potential revisions to the BTP in February 2011 in Rockville, MD. After that, NRC's Advisory Committee on Reactor Safeguards will review a draft in the summer 2011, followed by public comment, both in writing and in public meeting. The staff plans to publish the final BTP in mid-2012 after public comments are received and addressed.

- NRC will update its 1981 "Policy Statement on Low-Level Waste Volume Reduction." Some stakeholders interpreted blending of LLRW to be contrary to the Policy Statement, since blending would not use existing processes that can further reduce waste volumes. The revision to the Policy Statement will: (1) continue to recognize the importance of volume reduction in the effective management of low-level radioactive waste; (2) acknowledge the substantial progress in achieving volume reduction since the policy statement was first issued nearly 30 years ago; (3) remove dated information and; (4) recognize that other factors affect licensees' decisions on how to manage LLRW safely, including risk-informed, performance-based approaches.

- NRC will provide guidance to Agreement States on how to address blending proposals by their licensees received before the above rulemaking and guidance are completed. NRC will also summarize its plans for implementing the Commission decision and identify opportunities for Agreement State participation. The staff expects to issue this letter by April 2011.

The following table identifies the milestones and schedules for the publication of rulemaking and guidance documents related to LLRW blending, as well as opportunities for public input on these documents. This table will be periodically updated. Interested stakeholders can also periodically check NRC's public meeting web page to determine the specific dates, agendas, contacts, etc. for meetings.

Milestone	Schedule	Comments
Publish Interim Guidance on LLRW Blending for Agreement States	April 2011	
Issue Federal Register Notice requesting comments on potential changes to CA BTP	January 2011	

Conduct public meeting requesting comments on potential changes to CA BTP	February 2011	Location is Legacy Hotel in Rockville, MD. Details will be provided in the "public meetings" section of the NRC web site
Brief Advisory Committee on Reactor Safeguards on draft CA BTP	June 2011	
Complete Commission paper with revised draft Volume Reduction Policy Statement	August 2011	
Issue draft CA BTP for public comment	October 2011	
Issue draft Volume Reduction Policy Statement for public comment	October 2011	
Complete Commission paper on proposed rulemaking for unique waste streams	October 2011	
Conduct public meeting on draft CA BTP	October 2011	To be held in Albuquerque, NM
Complete Commission paper with proposed final Volume Reduction Policy Statement	December 2011	
Issue final CA BTP	June 2012	
Complete Commission paper with proposed final rule on unique waste streams	October 2012	

3. **Is NRC saying that "dilution is the solution to pollution" with its position on LLRW blending?**

Answer:

No. Dilution means the mixing of clean and contaminated materials together for release to the general environment. Dilution increases the volume of waste through the addition of clean materials to a mixture, and enables the release of materials to the general environment where members of the public could be exposed to the hazard, however small. Blending, in the context of NRC's current activity, involves the mixing of already contaminated materials containing different concentrations of radioactivity for disposal in a licensed disposal site. There is no clean material used in the blending of LLRW, and

the material is not released to the general environment. Thus, the undesirable characteristics of dilution are not present in this kind of blending.

4. **NRC is considering comprehensive revisions to its disposal regulations in 10 CFR Part 61. What is the status of that effort and how might it affect blended waste?**

Answer:

On July 1, 2010, the Commission directed the NRC staff to ". . . provide the Commission with the staff's approach to initiate activities related to a risk-informed, performance-based comprehensive revision to Part 61, including the resources and a timeline for completing the rulemaking. The staff paper, SECY-10-0165, was completed on December 27, 2010, and is available on the NRC's public web site using the above hyperlink or in ADAMS (ML103400242).

In the paper, the staff identities several options for revising 10 CFR Part 61. At least one would preserve the current Class A, B, and C waste classification framework, while others would eliminate the framework and allow for site-specific waste acceptance criteria. Although the staff does not anticipate any change to the new risk-informed, performance-based blending policy, a site-specific approach for waste acceptance criteria (as opposed to the generic Class A, B, C approach in 10 CFR 61.55) could eliminate or reduce further discussions about reducing the waste class through blending, since Class A, B, and C waste classifications would no longer exist.

5. **Hasn't NRC changed its position on blending by now allowing large-scale blending of LLRW from nuclear power plants? What is the basis for this change in position?**

Answer:

No. Blending is not prohibited or explicitly addressed in current NRC regulations. NRC's guidance also acknowledges that blending may be appropriate under certain conditions. As a result of the Commission's recent decision on blending, NRC's will strengthen the regulations and guidance, and make them more risk-informed and performance-based, consistent with NRC's overall philosophy of regulation. A new requirement is being added to NRC's regulations that will require that a safety analysis be performed for large-scale blending of LLRW.

6. **Did NRC take into account the fact that blending increases waste volumes and takes up limited U.S. disposal capacity?**

Answer:

The NRC determined that blending does not increase waste volumes (because waste is mixed with waste). Waste that would otherwise be Class B/C waste would be blended into a Class A mixture for disposal. However, NRC acknowledges that there are commercial volume reduction processes that could be used for Class B/C waste that would not be used if these wastes were blended. This issue was addressed in the staff

paper on LLRW blending, SECY-10-0043 (p. 15 of Enclosure 1), available on NRC's public web site.

7. **Can States adopt stricter guidance and/or regulations on blending of LLRW than NRC's?**

Answer:

Yes. NRC regulations do not prohibit, nor do they address blending of LLRW, and so there are no "compatibility" requirements for blending of LLRW by Agreement States at this time. Agreement States may implement regulations that are more restrictive than NRC requirements, and they are not required to follow NRC guidance. They may develop stricter guidance if they choose.

As part of the new agency blending position, NRC will promulgate a rule that will require a safety assessment of the disposal of blended waste. The Commission directed NRC staff to ensure maximum state flexibility in determining the appropriate compatibility category of the rule while also ensuring that the rule provides a clear requirement for a site specific analysis to ensure that blended waste is disposed of safely.

8. **How will you ensure that blending does not result in these wastes being disposed of in municipal landfills or other facilities not licensed for radioactive waste**?"

Answer:

The scope of the staff's effort on blending of LLRW is for radioactive waste to be disposed of in licensed LLRW disposal facilities, not landfills.

9. **Is blending another means of reducing the radioactivity of material so it can be released into consumer products?**

Answer:

No. The blending being addressed by the staff is for blending of radioactive waste batches with each other for disposal in a licensed LLRW disposal facility, not for release to the general environment.

10. **Has NRC considered the potential conflict between a policy that allows blending and the principles of the compact system in the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA). What about downblending of Greater Than Class C (GTCC) waste that would enable the Federal government to shift responsibility for this waste class to the States?**

Answer:

The LLRWPAA makes each State responsible for providing, either by itself or in cooperation with other States in a regional compact, for the disposal of Class A, B, and C LLRW generated within the State. Increased amounts of blending by industry

could affect the relative amounts of Class A, B, C for disposal, but all of these classes would still be the responsibility of the States and LLRW Compacts. The LLRWPAA also makes the Federal government responsible for disposal of GTCC waste. In its October 13, 2010, decision on LLRW blending, the Commission stated, "The staff should not include waste at GTCC concentrations in the scope of this rulemaking; GTCC waste is a Federal responsibility and these volumes should not be made into a State responsibility, even if the waste has been blended into a lower classification." The staff will provide guidance on this Commission direction in the revisions to the Concentration Averaging BTP.

11. **Why is blending a controversial issue? If the waste meets the acceptance criteria for a disposal facility and the performance objectives for the disposal facility are met, isn't that what's most important?**

Answer:

Several stakeholders have expressed concerns with blending of LLRW that lowers the waste class. These concerns include, but are not limited to, the possible impact of large-scale blending on the economic viability of a proposed new disposal facility; the perception that Class B/C waste would be disposed of in a Class A facility if these wastes were blended to Class A concentrations (in fact, the radioactivity in that waste which was previously Class B/C would be disposed of in a Class A facility, but within Class A limits); and potential safety impacts of disposing of blended waste at or near the Class A concentration limits, which was not analyzed in the technical basis for NRC's disposal regulation in 10 CFR Part 61. Any blended waste would have to meet the acceptance criteria and performance objectives for a disposal facility to ensure that public health and safety and the environment were protected. NRC staff held public meetings to identify stakeholder concerns on the blending issue. SECY-10-0043, "Blending of Low-Level Radioactive Waste," identifies and analyzes these issues, and the Commission considered them in developing its new position on LLRW blending.

12. **Isn't waste blending prohibited for hazardous waste disposal? If so, why is NRC allowing it?**

Answer:

NRC is allowing it, subject to certain additional analyses, because it would be done safely and would be consistent with the agency's overall policy of risk-informed, performance-based regulation. With respect to the Environmental Protection Agency (EPA), in a 2004 Commission paper, NRC staff documented the use of mixing or blending in other programs, including EPA's Resource Conservation and Recovery Act hazardous waste program. That paper noted that EPA has occasionally allowed blending to meet regulatory goals for waste management, under limited circumstances, while generally discouraging and prohibiting blending and dilution.