

# Studsvik

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RDB Beard

Via First Class Mail

January 29, 2010

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Division of Administrative Services  
Office of Administration  
Mail Stop TWB-05-BO1M  
United States Nuclear Regulatory Commission  
Washington, DC 20555-0001

11/30/09  
74 FR 62606

(11)

Re: Additional comments on blending  
NRC-2009-0520

Dear Mr. Lesar:

Studsvik, Inc. (Studsvik) submits these additional comments relating to blending of low-level radioactive waste (LLW) in response to the Federal Register Notice published on November 30, 2009, and Mr. Camper's request for additional information to Studsvik during its December 15, 2009 meeting with NRC. These materials are for the Commission to consider as they review the staff's recommendations.

Many ideas, comments and theories have been shared, both at the stakeholder meetings held on December 14 and 15, 2009, and during the January roundtable discussion. While Studsvik will provide its views on a number of these items in this letter, it is important at the outset to note several indisputable facts in order to place Studsvik's comments in proper context:

- Large-scale blending is an expansion of the historical practice of blending.
- Large-scale blending will result in more Class A LLW and less Class B/C LLW.
- Large-scale blending cannot address all Class B/C resins, filters, medical, research and other types of Class B/C LLW.
- No NRC study has ever been conducted to measure the potential environmental impacts of large-scale blending.

As the Commission recognizes, it is now facing an important decision that will affect the long-term future of the LLW disposal industry. This letter explains why allowing large-scale blending to reduce waste classification would represent a reversal of existing, longstanding NRC policy, and why such a change would have a negative effect on our industry and the environment.

SUNSI Review Complete  
Template = Adm-013

E-RIDS = Adm-03  
Add: J. Kennedy (JEKJ)

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## Large-scale blending is restricted by current NRC regulations and guidance

The starting point for determining how NRC should address large-scale blending of LLW must be an understanding of the regulatory status quo. Unfortunately, the discussion of the status quo at the three public meetings organized by the Commission has not shed much light on the subject. Studsvik believes that a careful reading of the relevant guidance, and a clear understanding of how consistently that guidance has been applied by regulated parties, makes it clear that large-scale blending by processors would be a dramatic departure from NRC's current policy. NRC acknowledged as much in its response to my August 7, 2009 letter when it stated, "[Cu]rrent industry proposals, however, seek to expand the historical practice of blending." NRC Staff Analysis of Studsvik's August 7, 2009 Comments on Blending, ML092930298, Row 4, Column 2.

There is no dispute that current NRC regulations do not explicitly address downblending—i.e., the intentional mixing of wastes to lower their waste class under 10 C.F.R. Part 61. The NRC itself has taken this position on a number of occasions. See, e.g., 74 Fed. Reg. 62606, 62607 (Nov. 30, 2009) ("Blending is not prohibited or explicitly addressed in NRC regulations."); Letter from Larry W. Camper, NRC to Joseph DiCamillo, Studsvik (Oct. 30, 2009) (same).<sup>1</sup> Nevertheless, the Commission has not been completely silent on the propriety of blending to reduce waste classification. In fact, NRC guidance coherently defines a limited set of circumstances when mixing of LLW is permitted, and prohibits intentional downblending.

## NRC's position on mixing waste types or streams

NRC's Branch Technical Position on Concentration Averaging and Encapsulation (BTP) clearly explains the proper way to classify a mixture of different radionuclide concentrations:

Under the guidance in this position, the classification of a mixture . . . should be based on either: (a) the highest nuclide concentration in any of the individual waste types contributing to the mixture, or (b) the volumetric- or weight-averaged nuclide concentrations of the mixture, provided that the concentrations of the

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<sup>1</sup> Energy Solutions argues that because the NRC's regulations are silent, it is free to engage in large-scale downblending. But as Studsvik will discuss in detail below, the potential environmental, health and safety impacts of downblending have never been studied. Under these circumstances, downblending LLW with the intent to change the waste's classification ought to require express regulatory authorization.

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individual waste type contributors to the mixture are within a factor of 10 of the average concentration of the resulting mixture.

BTP § C.3.1. Put simply, a mixture of LLW may be classified using the average radionuclide concentration of the entire mixture *only if* that average concentration is "within a factor of 10" of the nuclide concentration of any individual waste contained in the mixtures. Otherwise, the mixture must be classified using the *highest* nuclide concentration of the component wastes.

This formula for determining the classification of a LLW mixture does not facilitate current industry proposals for large-scale downblending. The concentration of radionuclides in Class B or C waste can be hundreds or even thousands of times greater than the Class A limit. 10 C.F.R. § 61.55, Table 2. Thus, in many cases, the BTP would require a mixture downblended for disposal as Class A waste to be classified based on the highest nuclide concentration of the component waste streams—i.e., the Class B or C waste.

## Exceptions to the factor of 10

The BTP also contains an exception to the formula for determining the classification of a LLW mixture, which has been repeatedly referenced in presentations to the Commission staff. "[A] designed collection of homogenous waste types from a number of sources within a licensee's facility, for purposes of operational efficiency or worker dose reduction, is not considered 'mixing,' for purposes of this position." BTP § C.3.1. According to some, large-scale blending fits within this exception because it allegedly creates both operational efficiency and worker dose reductions. But a closer reading of the BTP reveals that the exception does not apply to a large-scale blending process.

The BTP exception is plainly intended to be a narrow one. It applies only to a "designed collection of homogenous wastes from a number of sources within a licensee's facility." Such "collection" is not the work of a processor separate from the facility owner. Rather, this is the sort of work performed by an operator within its own "facility." In this context, the undefined term "operational efficiency" makes sense. A facility operator may sometimes find it more efficient (or safer for workers) to collect wastes generated at different locations within its facility, and store them in a single location or container until they are sent for processing or disposal. Such activities are a far cry from the large-scale, intentional blending of wastes currently being proposed, and are not permitted by the exceptions to the BTP.<sup>2</sup>

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<sup>2</sup> Studsvik notes that the BTP does not adequately define operational efficiency or homogeneity, nor does it indicate to what degree worker dose must be reduced to comply with the guidance. In its December 14, 2009 presentation to NRC, Studsvik has demonstrated under common definitions of these

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Furthermore, the BTP's exception for operational efficiencies to its general prohibition of blending LLW for the purpose of intentionally lowering waste classification is linked to the classification of waste streams, which the NRC staff has interpreted should occur at the point when waste is prepared for shipment for disposal. Therefore efforts to ascribe potential operational efficiencies from upstream licensees to the processor that prepares the waste stream for disposal are outside of the BTP as it currently is structured.

## NRC's prohibition on intentional downblending

In addition to the BTP's formula for determining the classification of LLW mixtures, which does not permit large-scale downblending, the BTP contains another restriction directly relevant to the proposals before the Commission. In response to comments stating that nuclide concentration averaging across an entire package should be allowed, the NRC staff indicated that LLW may not be intentionally mixed "solely to lower the classification of any specific waste in a disposal container." BTP App. C Response to Comments at 3; see 74 Fed. Reg. at 62609. Current proposals to downblend large amounts of Class B and C waste, thereby intentionally lowering its classification so it might be disposed of as Class A waste, are flatly contrary to this part of the BTP.<sup>3</sup>

In sum, the regulatory status quo places significant restrictions on blending. Large-scale downblending, in particular, is not permitted under the Commission's BTP.<sup>4</sup>

## Large-scale downblending is not currently occurring

A review of the NRC regulations and guidance provides just part of the picture. To fully understand the status quo, it is equally important to observe the manner in which the regulated parties have consistently applied NRC's instructions. As the Commission

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terms that resin waste streams are not homogeneous and that large scale blending is not operationally efficient. Furthermore, while the actual information on worker dose from large-scale blending activities is not available to Studsvik, based on its experience, Studsvik does not believe that worker dose reduction is achievable under a large scale blending scenario.

<sup>3</sup> While the BTP prohibition specifies that the mixing must be done for "solely" for the purpose of lowering the waste's classification, Studsvik has already explained that large-scale downblending does not fit within the BTP's exceptions. EnergySolutions' activities are solely to lower the classification of LLW so that it can be disposed of in the company's Clive, Utah facility, which can only accept Class A waste.

<sup>4</sup> The NRC has issued other guidance, including its guidance on decommissioning, that clearly prohibits downblending practices. Consolidated Decommissioning Guidance (NUREG-1757, Vol. 1, Rev. 2). While that guidance may be addressing a different factual scenario, there is no logical reason why downblending would be prohibited for decommissioning but permitted for waste disposal. This related Commission guidance reinforces interpretation of the BTP to preclude large-scale downblending.

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itself has recognized, "the scale of blending being considered since the closure of Barnwell is potentially *much larger than current practice*." 74 Fed. Reg. at 62607 (emphasis added). Large-scale downblending is not now being conducted and has never been conducted in the past. In other words, as a simple matter of fact, the status quo is no large-scale blending, a fact that has already been affirmed by NRC.

In view of the fact that current large-scale blending proposals are a dramatic change to the status quo, Chairman Jaczko has instructed the NRC staff to prepare a vote paper that will allow the Commission to consider several issues related to blending. That paper is scheduled to be completed in April. In the meantime, it would be inappropriate for anyone in the industry to initiate large-scale blending, not knowing how the Commission will deal with the issues surrounding the practice in its vote paper.

## Before NRC takes any action to permit downblending, it must comply with the National Environmental Policy Act (NEPA)

Under NEPA, an agency must consider the environmental consequences of any "major federal action" that it is considering. 42 U.S.C. § 4332. The term "major federal action" is not limited to a rulemaking, as has been suggested during the public meetings on this subject. Rather, the President's Council on Environmental Quality defines "major federal action" broadly, to include all "actions with effects that may be major and which are potentially subject to Federal control and responsibility." 40 C.F.R. § 1508.8(18). Major federal actions occur any time an agency adopts "official policy," whether that adoption takes the form of regulations promulgated pursuant to the Administrative Procedures Act or other "formal documents establishing an agency's policies." *Id.* § 1508.8(18)(b)(1).

As Studsvik has explained, the current status quo does not include large-scale downblending of LLW. Therefore, any decision by the NRC, regardless of its form, that permits large-scale downblending constitutes a change in agency policy and a major federal action under NEPA. A rulemaking, issuance of guidance or publication of a Regulatory Issue Summary—if they "substantially alter[s]" the status quo by endorsing large-scale downblending—are all "formal documents establishing [NRC's] policies" that would be subject to all the requirements of NEPA (40 C.F.R. § 1508.8(18)(b)(1)). Moreover, because the environmental, health and safety implications of large-scale downblending are potentially significant and completely unexplored, the Commission would have to prepare an Environmental Impact Statement before any large-scale downblending could be allowed. 40 C.F.R. § 1508.8(18).

During its January 14 public meeting, NRC staff acknowledged that the Environmental Impact Statement (EIS) prepared for the waste classification tables in 10 C.F.R. Part 61 did not account for the potential impacts of downblended waste. In fact, no one

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anywhere has performed a thorough environmental review of large-scale downblending. NEPA is specifically intended to prevent the federal government from authorizing such potentially environmentally significant practices without fully understanding their consequences.<sup>5</sup>

The record compiled during the NRC's public meetings on blending, and in associated written comments, demonstrates how large-scale downblending could adversely impact human health and the environment. Class A LLW is subject to significantly less stringent disposal regulations than Class B and C waste. NRC has never explored whether those Class A disposal regulations are adequate when all or most of the Class A waste at issue is at or near the Class A concentration limit.

One recent study showed that an inadvertent intruder who encountered downblended waste disposed of as Class A waste would encounter hundreds of times more radiation than the NRC regulations in 10 C.F.R. Part 20 permit. See Letter from WCS to NRC (Jan. 8, 2010). This is just one example of the sort of issues that would need thorough exploration in an EIS before the NRC could authorize large-scale downblending. Undoubtedly, the process of preparing the EIS will surface numerous other issues that will appropriately be studied and addressed through the NEPA process.

## Stranded waste and sustainability

On a separate subject, the NRC staff specifically asked Studsvik to provide additional information on the issue of stranded waste. There is no dispute that at least 5,000 cubic feet of Class B/C resin (based upon EPRI's historical analysis of the amount and classes of resins generated by the nuclear power industry) cannot be addressed by large-scale downblending, at least in part because there is an insufficient amount of Class A resin to successfully blend all Class B/C resin into Class A.

In addition, large-scale downblending does not address filters, medical research and the various other types of Class B/C LLW. These wastes, by their nature, simply cannot be "blended" together with Class A waste.

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<sup>5</sup> The claim that NRC guidance is not legally binding would not excuse the Commission from performing a NEPA environmental review, at least in this case. As Studsvik has explained, and the NRC has acknowledged, EnergySolutions' proposal to begin large-scale downblending would lead to a significant expansion of current blending practices. NRC's decision on the acceptability of large-scale downblending, regardless of how that decision is framed, will determine whether that expansion occurs, and accordingly whether the potentially significant environmental impacts of downblending would take place. The Commission's decision is therefore a "major federal action" requiring preparation of an Environmental Assessment or an EIS under NEPA and CEQ regulations. See 10 C.F.R. § 51.21 (NRC regulations under NEPA); 40 C.F.R. § 1508.4 (CEQ regulations).

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Unless a Class B/C disposal site opens to the 36 states currently foreclosed from Class B/C disposal site access, all of the B/C LLW described above will be stranded. WCS has stated repeatedly that not having access to significant amounts of B/C resin (which would be the case under a large scale blending scenario) would seriously undermine the economic viability of its site in Texas, which would be the first new site for disposal of Class B/C waste opened in more than a quarter century and the only site to open under the Low-Level Radioactive Waste Policy Amendments Act of 1985.

Any decision by the NRC that threatens the WCS site does more than harm WCS's business. It would threaten to permanently strand a significant amount of Class B/C waste, and frustrate the intent of Congress, which created the compact system in 1980 so that *more* LLW disposal sites would open. To knowingly permit (and by permission endorse) a practice that has the real potential to foreclose a disposal path and strand waste is a failure in NRC's oversight and in contravention of sound public policy. The allure of downblending is the notion that it is best to "dispose of as much Class B/C waste as possible." This view, when considering the consequences, is shortsighted, and potentially devastating to the long term stability of LLW disposal options.

Furthermore, if the WCS site somehow manages to open in spite of NRC endorsing large-scale downblending, the cost to dispose of Class B/C LLW at that site would increase dramatically. Important medical research is already in jeopardy because of the uncertainties associated with Class B/C LLW disposal access and cost. Increasing those costs would only multiply the difficulties for medical researchers, and NRC must thoughtfully weigh such impacts. Again, this is not about economics or business issues. It is about NRC's obligation to encourage disposal at reasonable prices.

NRC has suggested that adding large scale blending to the waste management toolbox may be helpful. While that may seem to be true at first glance, an objective analysis shows that large scale blending actually has a desultory effect.

## Risk based approach to large-scale downblending

Much of the discussion around blending has centered on the risk based approach to evaluating the issue. Studsvik agrees that a risk based approach is a part of, but far from, the entire analysis. Simple assertions that blending is safe and environmentally sound are woefully insufficient. Any determination regarding the safety and environmental soundness of large-scale downblending must be based on a thorough and scientifically-sound study. Fortunately, as discussed in detail above, NEPA requires the NRC to conduct just such a study before the agency makes any decision to approve or endorse large-scale downblending.

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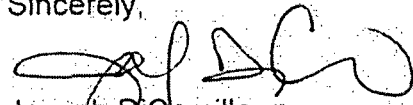
## Waste Classification

The issue of waste classification is a tangential issue to the blending discussion but important to address in the context of public confidence. No matter the point when waste is classified, it is incontrovertible that large-scale downblending will result in mixing substantial amounts of what would otherwise be Class B/C LLW when shipped for disposal with Class A LLW. The amounts of Class A and Class B/C LLW will deviate from historical norms under a large-scale downblending scenario. To ignore this fact undermines public confidence in the regulatory system.

Further, the notion that a processor does not know what waste class waste will be at the end of processing *before* the waste is subjected to the process is simply disingenuous. Safety, regulatory and business practices demand that waste class be known for each individual waste component prior to processing, and a processor who does otherwise is reckless at best. Accordingly, although 10 C.F.R. Part 20, Appendix G does not require waste being shipped to a processor to be classified under 10 C.F.R. § 61.55, as a practical matter, most waste is classified under § 61.55 before it is shipped to a processor. Moreover, the absence of a waste classification manifesting requirement does not mean that a processor can downblend LLW without regard to the prohibitions on downblending in the BTP, which are discussed in more detail above. The important issues surrounding downblending cannot be avoided by using a legal fiction about when waste classification takes place.

Studsvik appreciates the opportunity to participate in this discussion and welcomes the chance for further interaction on this issue. Feel free to contact me should you have any questions or should you require any additional information.

Sincerely,



Joseph DiCamillo  
General Counsel

cc: Via Electronic Mail  
Chairman Gregory B. Jaczko  
Commissioner Dale E. Klein  
Commissioner Kristine L. Svinicki  
Dr. Charles L. Miller  
Mr. Larry W. Camper



## **Mendiola, Doris**

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**To:** CHAIRMAN Resource; CMRKLEIN; CMRSVINICKI Resource; Camper, Larry; Miller, Charles  
**Subject:** Letter to NRC  
**Attachments:** Letter to NRC - Lesar 1.29.2010.pdf

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