

# Studsvik

August 7, 2009

Annette L. Vietti-Cook  
Secretary  
Nuclear Regulatory Commission  
Mail Stop O-16G4  
Washington, DC 20555-0001

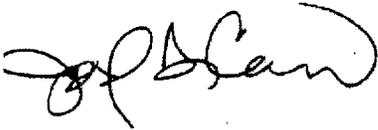
Re: Low Level Radioactive Waste Policies—Comments to April 17, 2009 Commission meeting

Dear Ms. Vietti-Cook:

Studsvik hereby submits the enclosed comments for consideration by the Commission to certain topics raised at the Commission's April 17, 2009 meeting relating to the management and disposal of low-level radioactive waste (LLW).

Thank you for the opportunity to provide these comments. Feel free to contact me at 312 343 7808 or at [joseph.dicamillo@studsvik.com](mailto:joseph.dicamillo@studsvik.com) should the Commission have any questions or should it require any additional information.

Sincerely,



Joseph DiCamillo  
General Counsel

JGD:s

Enclosures

# Studsvik

August 7, 2009

Honorable Gregory B. Jaczko  
Chairman  
Nuclear Regulatory Commission  
Mail Stop O-16G4  
Washington, DC 20555-0001

Re: Low Level Radioactive Waste Policies—Comments to April 17, 2009 Commission meeting

Dear Chairman Jaczko:

This letter constitutes Studsvik's comments to certain topics raised at the Commission's April 17, 2009 meeting relating to the management and disposal of low-level radioactive waste (LLW). Based upon the scope of materials presented at the meeting, it is apparent there are numerous items of interest to the Commission, NRC staff, other government agencies (particularly the Department of Energy), agreement states, stakeholders and the public relating to LLW.

Studsvik is an international publicly traded company with operations in the United States, the United Kingdom, Sweden, Germany, France and Japan. Studsvik has a strong tradition of research and development and is committed to creating technologies that will enhance the safety and increase the efficiency of processing LLW while minimizing the amount of LLW sent for disposal. For example, Studsvik's THOR® technology, which is practiced at its Erwin, Tennessee facility, has saved over 240,000 cubic feet of disposal space over the last ten years by reducing the volume of LLW. The THOR® process also creates a non-dispersible waste form, vastly reducing the risk of contamination to the biosphere in the event (however unlikely) of a release and significantly increasing the long-term stability of the LLW. NRC should embrace these types of beneficial technologies and encourage their use and development by private industry and academic research institutions.

Studsvik's comments relate specifically to the issue of blending of LLW. NRC regulations and the Branch Technical Position (BTP) clearly spell out the NRC's existing policy that waste streams may not be mixed solely to reduce the resulting waste classification (BTP and 10 CFR 61). The Commission reaffirmed that position in order to maintain the integrity of its safety and environmental protections in its October 16, 2006 letter to Alaron. (Letter to Alaron 10/16/2006, Docket No. 03030666 License No. 37-20826-02 Control No. 139125). There is little doubt that the vigorous pursuit of some action by the Commission with respect to this issue by certain stakeholders and other interested parties is driven by the closure of the Barnwell disposal site to non-Atlantic Compact generators. While Studsvik recognizes that the changes at Barnwell have closed a disposal path for Class B and C LLW to 36 states, Studsvik does not believe this challenge justifies a significant shift in current NRC policy.

# Studsvik

Honorable Gregory B. Jaczko  
August 7, 2009  
Page 2

Contrary to other assertions, the practice of gathering LLW from various generators, shipping it to a third party as uncharacterized material (not waste) where it will be "blended" until the material can be classified as Class A LLW is not supported by current regulations and is far outside of the scope of the BTP. The Commission has stated "extreme measures should not be taken when performing concentration averaging to determine waste classification. Extreme measures include: (1) Deliberate blending of lower concentration waste streams with high activity waste streams to achieve waste classification objectives." *Draft Interim Concentration Averaging Guidance for Waste Determinations, 74 FR 74846 (Dec. 16, 2005)*. A regulatory analysis of the arguments made in support of blending is attached to further clarify this point.

Indeed, Studsvik believes the current proposals not only are inconsistent with current regulations and policy, but raise such significant technical, environmental, safety and policy issues that further study of all these issues are warranted and adoption of any changes should only be made through published rule making with appropriate opportunities for public comment.

The Commission must also consider the effect of any policy changes in light of state and compact statutes, rules, regulations and policies, particularly in those states and compacts with disposal sites. See, for example, 30 TAC §336.229, Texas statute prohibiting dilution; Utah Code §19-3-103.7, prohibiting acceptance or application for a license to accept Class B and C LLW.

Thank you for the opportunity to provide these comments. Feel free to contact me at 312 343 7808 or at [joseph.dicamillo@studsvik.com](mailto:joseph.dicamillo@studsvik.com) should the Commission have any questions or should it require any additional information.

Sincerely,



Joseph DiCamillo  
General Counsel

cc: Commissioner Dale E. Klein  
Commissioner Kristine L. Svinicki  
Annette L. Vietti-Cook, Commission Secretary  
Martin J. Virgilio, Deputy Executive Director for Materials, Waste, Research,  
State, Tribal and Compliance Programs

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## Regulatory Analysis of Arguments for Blending Low-Level Radioactive Waste

**Assertion:** Blending of low-level radioactive waste (LLW) is allowed under NRC regulations, particularly 10 CFR 61 and the Branch Technical Position (BTP) on Concentration Averaging and Encapsulation.

**Analysis:** The BTP requires that mixtures of homogenous waste be classified based on the highest nuclide concentration in any individual waste, or based on the mixture's average nuclide concentration provided that the individual waste type concentrations are within a factor of 10 of the average. In 2006, the NRC affirmed that the BTP and its "factor of 10" rule do not allow intentional mixing solely to lower waste classification. (Letter to Alaron 10/16/2006, Docket No. 03030666 License No. 37-20826-02 Control No. 139125)

NRC approves intentional mixing as long as classification of waste determined under NRC regulations is not altered (i.e., changing Class B/C to Class A waste). (NUREG-1757)

**Assertion:** The LLW classification system set out in 10 CFR 61.55 should not be applied except under the terms set out in 10 CFR 20 Appendix G. Under Appendix G, waste classification characterization is performed after waste has been processed and packaged for disposal.

**Analysis:** If the NRC were to accept this assertion it effectively would be adopting new standards for when waste should be classified and thereby authorize the practice of delaying classification of low level waste until it has been processed to intentionally change (lower) its classification. The relevant substantive regulation (10 CFR 20.2006(a)) states Appendix G is intended to be **administrative**, dealing with control, tracking and recordkeeping during the transfer of low-level waste. Nothing in this regulation suggests Appendix G either authorizes intentional activity that has the effect of reclassifying waste, or determines when waste classification under section 61.55 takes place.

Appendix G itself confirms this interpretation. Part I of the appendix addresses "manifesting requirements." And while it requires the manifest for "waste consigned to a disposal facility" list "the classification of the waste pursuant to § 61.55," it does not suggest waste has no classification unless such a manifest is prepared. Similarly, Part III of Appendix G requires licensees performing certain transfers to "[p]repare all wastes so that the waste is classified according to § 61.55 . . . ." Other transfers apparently do not require special preparation of wastes for classification. The provisions of Appendix G govern the control, tracking and recording of waste transfers. They do **not** say the classification system in section 61.55 applies only to waste that is being transferred.

Appendix G does not "authorize" the shipment of waste "prior to classification," as has been asserted by some in the industry. It simply requires the waste classification be clearly marked and tracked on certain shipments. Furthermore, Appendix G is silent about the intentional mixing of waste to change the waste's classification.

Appendix G should be read as consistent with section 61.55 and the BTP. A party who mixes any wastes in order to change their classification under section 61.55--- regardless of whether those wastes are subject to Appendix G's manifest and tracking requirements---accordingly violates section 61. 55 and the BTP.

**Assertion:** The closure of the Barnwell disposal site to non-Atlantic Compact waste, has led to some generators to store Class B and C LLW onsite. Blending reduces the amount of waste that needs to be stored.

**Analysis:** A change in NRC policy does not make practical sense as there is no disposal site in the country that can accept blended waste.

There are only two sites that accept LLW from all states. One is a disposal site in Clive, Utah that can only accept Class A waste. The other is a storage site in Andrews, Texas that accepts Class A, B, and C waste. Under applicable state law, neither would be able to accept blended waste that is properly classified.

Utah regulators have expressed significant concerns with blended waste as a way to circumvent the State's statutory prohibition against the acceptance of Class B and C LLW. (Utah Code §19-3-103.7) The owner and operator of the Clive facility signed an agreement on March 15, 2007, with the Governor of Utah to not dispose of Class B and C waste at the facility. A regulation is pending before the Utah Division of Radiation Control that will further clarify the intention of State law to prohibit blending that changes waste class. As a result, disposal at the Clive facility of Class B and C waste blended down to Class A would violate Utah law and its agreement with the Governor.

Texas law explicitly prohibits blending to change waste classification or disposal requirements and mixed/diluted waste is subject to the disposal requirements as if it had not been diluted. (30 TAC §336.229)

The Texas storage site offers a safer alternative to on-site storage of Class B and C waste since it not only eliminates the real need for on-site storage at generator sites scattered across the country, but also the perceived need for blending.

There is limited disposal space for Class A waste at the Clive facility. Even if the Clive site could accept blended waste, the disposal of waste achieved by physically mixing Class B and C waste with Class A waste would more rapidly deplete this site's limited space and significantly increase the amount of radioactivity at the site.

**Assertion:** There are no negative environmental or health or safety consequences to blending.

**Analysis:** Because of its higher radioactivity, Class B and C waste takes 300 to 500 years to decay to acceptable levels for environmental and human contact versus 100 years for Class A LLW. As a consequence, disposal of Class B and C waste requires a more rigorous treatment involving stabilization of the deposited material to assure

isolation from the biosphere. The classification scheme in 10 CFR 61 exists for this purpose. Blending to achieve Class A waste classification will result in the more dangerous B and C waste in the blended waste to be subject to less rigorous stabilization and isolation requirements and will substantially increase the amount of radioactivity present in the Class A waste.

Whether blending is implemented through a physical mixing of waste or through concentration averaging over a geographical area, the result is the same: the "hotter" Class B and C waste will be sent for permanent disposal without the benefit of waste stabilization, isolation, and other appropriate safeguards as prescribed by current regulations, rules, and policy, resulting in a large and diffuse waste source able to move into the environment.