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RDB Rec'd

Fax Cover Sheet

Date: 1/29/2010

To: Michael Lesar

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Subject: Comments on NRC's Waste Blending Policy

Number of Pages : 10 (Including Cover Page)

Comments: Attention: RDB

Note: If you do not receive the entire fax transmission or you have any questions, please contact

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WASTE CONTROL SPECIALISTS LLC

January 29, 2010

Michael T. Lesar, Chief
Rulemaking and Directors Branch
Division of Administrative Services
Office of Administration
Mail Stop TWB-05-BO1M
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

- References:
- (1) Texas Radioactive Material License No. R04100, Amendment 01
 - (2) Letter from J. Scott Kirk, CHP (WCS), to Larry M. Camper (NRC), Supplemental Information Regarding Potential Radiological Impacts to an Intruder Resident from Blended Low-Level Radioactive Waste, dated January 8, 2010
 - (3) Presentation by J. Scott Kirk, CHP (WCS), to NRC Staff, *Changing NRC Policy on Waste Dilution to Alter Waste Classification: Why Now?*, on December 14, 2009
 - (4) Letter from J. Scott Kirk, CHP (WCS), to Annette L. Vietti-Cook (NRC), Low-Level Radioactive Waste Policy, dated September 22, 2009

Subject: Additional Comments Regarding Waste Blending

Dear Mr. Lesar:

Waste Control Specialists LLC (WCS) submits the following comments regarding blending of Low-Level Radioactive Waste (LLW) in response to the Federal Register Notice dated November 30, 2009. These comments supplement those previously provided to the U.S. Nuclear Regulatory Commission (NRC) (See References 1, 2, and 3) for the purpose of preparing recommendations to the Commissioners on this important matter in April 2010.

WCS recognizes that blending of waste on such a large scale has never been considered or evaluated in past rulemakings or environmental analysis conducted under the National Environmental Policy Act (NEPA). WCS also recognizes that blending of waste to the upper bound of the Class A limits as specified in Title 10, U.S. Code of Federal Regulations, §61.55 (10 CFR 61.55) as under consideration could result in generating new waste streams that were never analyzed as part of any rulemaking or analysis required under NEPA.

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WCS respectfully requests consideration of the comments provided herein as the Commission weighs stakeholder comments that may have profound and long-term impacts on the regulated community.

TEXAS AND UTAH OPPOSE BLENDING

States hosting a waste disposal facility oppose blending of waste for the purpose of changing waste classification. The State of Texas in its regulations specifically prohibits intentional dilution of waste for the purpose of changing waste classification. Waste that is intentionally blended or diluted as a result of stabilization, mixing, treatment, or for any other reason is subject to the disposal regulations to which it would have been subject prior to dilution.

In 2005, the State of Utah's legislature enacted Code Section 19-3-103.7, prohibiting any entity from accepting or seeking a license to accept Class B or C (hereafter "Class B/C") LLW. In 2007, then-Governor Jon Huntsman also signed an agreement reaffirming that Class B/C LLW would not be accepted. Under a similar agreement, a limitation was placed on the volume of Class A LLW that would be disposed of at a site in Utah.

The State of Utah's regulators have expressed concerns regarding potential changes to the policy established in the Branch Technical Position—i.e., the 1995 Final *Branch Technical Position on Concentration Averaging and Waste Encapsulation* (referred hereafter as the BTP)—that would have the effect of circumventing the State's prohibition of disposing of Class B/C LLW in Utah. To counter this possibility, a petition for rulemaking was introduced in Utah on August 6, 2009, seeking a new *Rule 313-25-36* that would explicitly prohibit processing of material that would otherwise be Class B/C LLW to change its ultimate waste classification if intended to circumvent existing laws regarding disposal of Class B/C LLW.

On January 12, 2010, the State of Utah's Radiation Control Board met to discuss in part the petition for rulemaking prohibiting blending LLW for the purpose of changing waste classification. The Utah Department of Environmental Quality (DEQ) expressed their "objection to waste blending as the intent is to alter the waste classification for the purposes of disposal site access." They also stated that "if waste blending is found acceptable, the NRC should specify through a performance-based rule, the criteria to blend waste." The Executive Director of DEQ has publicly stated several times that the positions taken in the comments were reviewed by and supported by the Utah Governor's office. On January 14, 2010, Congressman Jim Matheson also expressed serious concerns regarding a change in policy to allow blending for the purpose of changing waste classification.

Given that unanimity against changes to the BTP-established policy exists among the states that host a commercial disposal facility, as well as among the Regional LLW Compacts, close coordination with Agreement States should be undertaken before making fundamental changes in policy.

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PROTECTING THE INTRUDER

On January 8, 2010, WCS submitted a radiological analysis to demonstrate the risks to public health for waste blended to the upper bound of the Class A limits (as specified in 10 CFR 61.55). This analysis was submitted in response to questions raised at the December 14-15, 2010, stakeholder meeting held in Rockville, Maryland. The analysis specifically evaluated the risk if a member of the public inadvertently were to intrude into the at-threshold Class A waste at a disposal facility following the expiration of institutional controls in 100 years. At the stakeholder meeting, NRC staff acknowledged that it had not yet conducted such an analysis.

The analysis indicates that the annual radiation dose to an inadvertent intruder resident could be in a range of approximately 46,600 millirems after institutional controls expire in 100 years—465 times greater than the permissible annual radiation dose standard of 100 millirems, as specified in 10 CFR 20.1301. In 300 years, the annual radiation dose would still approach 500 millirems.

The NRC also provided useful information in the BTP¹ that provides insight corroborating the radiation dose estimates for the intruder resident conducted by WCS. The NRC assumed that an intruder was exposed to waste at the upper end of the Class C limit after the engineered intruder barriers were assumed to have failed 500 years in the future.

The source term was also corrected for mixing and radioactive decay.² With these assumptions an annual dose of 500 mrems to the inadvertent intruder resident was estimated based on a ¹³⁷Cs concentration of 340 pCi/g. This information was used to derive a Dose-to-Source Ratio (DSR) of 1.47 mrems per pCi/g of ¹³⁷Cs assuming the intruder is exposed to an infinite half-plane source. The intruder dose rate was estimated by multiplying the DSR by a ¹³⁷Cs concentration at the upper end of the Class A limit (i.e., 1 Ci/m³ or 10⁶ pCi/cm³) assuming a mixing ratio of 3, density of 1 g/cm³ and decay corrected to 100 years when the institutional control period is assumed to expire. Based on this approach, an annual dose to an inadvertent intruder resident was estimated at 48.9 rems.

NOT ALL CLASS A WASTE STREAMS ANALYZED: THE USQ

WCS believes its radiological analysis brings into question the manner in which the original analysis underlying 10 CFR 61 was conducted. When 10 CFR 61 was promulgated, waste streams at the upper thresholds of the waste classifications in 10 CFR 61.55 were not considered.

¹ See BTP, Enclosure 2, *Bases for Concentration Averaging and Encapsulation Guidance for Classification of Discrete (Heterogeneous) Wastes Reflected in Revised Branch Technical Position.*

² The BTP specifies an interstitial and cover mixing factor of 0.125 with an intrusion likelihood and mixing factor with lower activity waste of 0.10. It also assumes a waste density of 1.6 g/cm³ and an exposure time to the intruder of 2360 hours.

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Instead, the NRC evaluated typical wastes and waste forms that were being generated at that time.

Similar observations³ were also identified by the Advisory Committee on Nuclear Waste and Materials (ACNW&M) in response to the NRC's "Strategic Assessment of Low-Level Radioactive Waste Regulatory Program" (SECY-07-0180) where they recommended: "*the potential need to reevaluate 10 CFR Part 61 to account for the fact that the types, forms, and quantities of commercial LLW that are and may be generated in the foreseeable future differ significantly from those projected during the development of 10 CFR Part 61.*" This recommendation should be studied more carefully by the Commission to ensure that a policy change allowing blending of waste to the upper bound of the Class A limits would not create a new "unique waste stream."

WCS continues to encourage the NRC to evaluate all the risk associated with blending of waste on such a large scale because the waste classification system specified in 10 CFR 61.55 by itself does not provide adequate assurances to protect public health or the environment. WCS believes that the radiological analysis provided on January 8, 2010, underscores that additional controls for structural stability must be required by regulation to protect public health for waste streams just under the limits for Class B LLW. The NRC should evaluate such risks as part of the larger rulemaking needed to revise 10 CFR 61.

WASTE VOLUMES INCREASE

Blending increases total waste volumes because the Class B/C waste used to do the blending would otherwise be volume-reduced—as is now being done. A policy change that increases waste volumes is contrary to one of the NRC's most long-standing policy statements—the 1981 *Policy Statement on Low-Level Waste Volume Reduction*—and more generally to well-established waste management and environmental stewardship principles. Further, the increased waste volumes would be in a less stable form (unprocessed ion exchange resins) than is the current practice, where the Class B/C component is stabilized into a granular, inert solid with no potential for off-gassing or biological growth.

IMPEDES DEVELOPMENT OF NEW DISPOSAL SITES

The purpose of the Low-Level Radioactive Waste Policy Act, as passed in 1980 and as amended in 1985 (LLWPA), was to establish regional management of LLW because "[i]t is the policy of the Federal Government that ... low-level radioactive waste can be most safely and efficiently managed on a regional basis." The proposed policy change would serve to increase LLW disposal in Utah and decrease the likelihood that additional LLW disposal facilities will be sited and licensed in other states. These outcomes frustrate the intent of the Congress.

³ See letter from NRC Advisory Committee on Nuclear Waste and Materials to Dale E. Klein, "2007 Strategic Assessment of the Low-Level Radioactive Waste Regulatory Program," dated March 25, 2008, ADAMS Accession No. ML080780476.

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The likelihood of licensing any new radioactive waste disposal facility other than the Texas Compact Disposal Facility is remote—given the lack of political will, the history of failed attempts, and the huge initial economic investment required to do so—and would be reduced further if the economic viability of the newly licensed facility in Andrews County, Texas, were undermined by the proposed change in policy at the this time.

DISPROPORTIONATELY DISADVANTAGEOUS

WCS has expressed concerns that reversal of the NRC policy would have devastating economic impacts to its newly licensed facility—the first operating facility licensed under the LLWPA. WCS stated that should the volumes of Class B/C LLW be artificially eliminated by 50% annually then licensees generating waste streams and waste forms not suitable for blending would be disproportionately disadvantaged.

The possible changes to the BTP to allow blending or dilution for the purpose of changing waste classification provides a potentially cost-effective disposal option for ion exchange resins generated by commercial nuclear power plants. However, the policy reversal will cause other licensees that generate waste streams not amenable to blending—typically sealed sources and wastes related to medical treatment, diagnosis, and research—to shoulder the economic burden. These wastes could potentially be stranded in perpetuity.

Another option available to commercial nuclear power plants would involve changing the ion exchange resins more frequently such that they could be disposed of as Class A LLW—an option that is currently available and does not require a reversal of NRC's longstanding policy.

Accordingly, NRC should be aware and reach out to the academic, university, and medical communities, as well as to the National Nuclear Security Administration (NNSA), to understand and evaluate the impacts and possible security risks its decisions related to the BTP policy would have on medical wastes and sealed sources.

“OPERATIONAL EFFICIENCY OR OCCUPATIONAL DOSE REDUCTION” EXCEPTION IN BTP IS LIMITED TO THE PLANT SITE

The BTP is clear (Sec. 3.1) that its exception for “operational efficiency or occupational dose reduction” is limited to “a *designed* collection of homogenous waste types from a number of sources *within a licensee's facility*” (emphasis added). Thus the BTP exception doesn't cover “operational efficiency or occupational dose reduction” that are said to exist in holistic combinations of plant sites and remote processing facilities. Further, even at the plant sites, the exception only applies where the plant design is controlling in this regard. Accordingly, “operational efficiency” should be clearly defined so that fanciful interpretations are appropriately constrained.

Waste diluted or blended to the upper bound of the Class A limits would pose greater hazards than those currently present at waste processing facilities—giving greater doses beyond the plant

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sites to operating personnel, transportation personnel, and (potentially) emergency responders. The greater volumes being shipped increase the probability of accidents en route. Any handling steps away from the plant sites to combine and homogenize waste streams would result in increased radiation dose, contaminated equipment, and the potential for releases, accidents and injuries, all of which would not be realized if the waste streams remained separated. If the Class A stream and the Class B/C stream originate in different locations or if they have to be diverted to some geographically distant processing facility, then you have additional transportation, and the increased public and transportation worker dose that goes with that (and the increased probability of accidents en route).

RULEMAKING REQUIRED

The NRC could reaffirm its existing policy that proscribes blending of Class B/C LLW for the purpose of its disposal as Class A LLW. The advantage of reaffirming the existing policy is that it would allow the newly licensed Texas Compact Disposal Facility to come online and potentially provide a national solution to the challenges of disposal of Class B/C LLW. This option would provide an accessible, cost-effective waste disposal option for waste streams not amenable to blending and possibly prevent stranding certain waste in perpetuity.

During the stakeholder meetings, NRC discussed the manner in which any potential changes to allow blending of waste to change waste classification should occur. The options addressed included issuance of a Regulatory Issues Summary (RIS), revision to the BTP, development of additional regulatory guidance, or a rulemaking.

None of the first three options—a RIS, revisions to the BTP, or additional regulatory guidance—could by itself accomplish the objective by requiring Agreement States hosting a disposal facility to issue compatible regulations. Only a rulemaking with strict compatibility requirements for Agreement States could mandate provisions that would allow blending of Class B/C LLW to concentrations that would allow its disposal as Class A LLW. This is especially the case given the stated opposition of waste blending by Utah and the regulation in Texas that currently prohibits such waste management practices. A rulemaking would also ensure compatibility with the definition of “dilution, mixing or blending” since the regulatory definition in Texas makes no distinction of such terms

INDUSTRY RELIANCE ON ESTABLISHED NRC POLICY FOR NEARLY THREE DECADES

The 1983 Technical Position Paper that preceded the BTP was clear that artificial manipulation was not to be conducted to sidestep or “game” the 10 CFR 61.55 classification tables. For example, that Technical Position:

- Barred an approach where resin wastes in partially full containers could be classified based on the full volume of the container. Such a calculation methodology could result in a lower waste classification for the resin wastes.

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- Noted that “more sophisticated programs [i.e., licensee programs to determine radionuclide concentrations and waste classes] would be required for licensees generating Class B or Class C waste . . . or for licensees generating waste for which there is a reasonable possibility of the waste containing concentrations of radionuclides which exceed limiting concentration limits for near-surface disposal [i.e., Greater-Than-Class-C, or “GTCC” waste].” If blending were thought to be allowed under the 1983 Technical Position, then increased attention—as through “more sophisticated programs”—would not have been particularly warranted for Class B, Class C, and GTCC waste since the expectation would have been that these waste streams would generally have been blended out of existence.
- Noted that “more sophisticated programs [to determine radionuclide concentrations and waste classes] would be required . . . for licensees generating waste for which minor process variations may cause a change in classification.” If blending were thought to be allowed under the 1983 Technical Position, then why would increased attention have been warranted for “minor process variations [that] may cause a change in classification”?

In the development of the BTP, the NRC staff explicitly addressed a concern that GTCC waste could be blended and thereby eliminated, and a more general U.S. Department of Health suggestion that “there not be a movement of waste from one class to another” in the “Analysis of and Response to Comments” document that accompanied the issuance of the BTP. That document stated: “[T]he staff believes that the averaging practices specified in the position always result in a waste classification that is at least as high, if not higher, than that indicated by the concentration tables in the regulations.” Why would the NRC staff have made that statement if they did not believe it to be true?

As recently as 2006, the NRC responded to a licensee request that it confirm whether “it is within the intent of the BTP that such mixing could be used to blend Class B or C wastes with Class A to produce Class A waste.” If blending were thought to be allowed under the BTP, then why would this question have been posed? Staff responded (Kinneman [NRC] letter to Harverson [ALARON] dated October 16, 2006) that “[i]t is not the intent of the BTP that mixing be used solely to reduce the resulting waste classification.” The response allowed that “if waste is mixed in accordance with the guidance of the BTP, resulting changes in waste classification are acceptable.” However, the BTP is clear (in its Sec. 3.1) that its exception, for “operational efficiency or occupational dose reduction,” is limited to “a *designed* collection of homogenous waste types from a number of sources *within a licensee’s facility*” (emphasis added). Thus the BTP exception does not cover “operational efficiency or occupational dose reduction” that are said to exist in holistic combinations of plant sites and remote processing facilities. Further, even at the plant sites, the exception only applies where the plant design is controlling in this regard.

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Reviewing this history, it is clear that the NRC's policy related to the practice of blending to change waste classification has been clear and consistent for almost three decades. Indeed, the very fact that industry has not been performing blending during this long period is sufficient evidence by itself that the practice was unambiguously viewed as proscribed.

NRC's interpretation of 10 CFR 61.55 was thus long-standing, widely held, and authoritative. In effect, the expressed, direct, and uniform interpretation established itself as administrative common law. The regulated community relied on it. In particular, WCS and Studsvik invested hundreds of millions of dollars in direct reliance on it.

Once an agency's interpretation of a rule becomes well-established, to the extent that businesses are built up in reliance on the interpretation, then the agency is prohibited from changing the interpretation without notice-and-comment rulemaking. This is the rule of law established by *Alaska Professional Hunters Association, Inc. v. Federal Aviation Administration*, 177 F.3d 1030 (D.C. Cir. 1999), as tempered by *Association of American Railroads v. Department of Transportation*, 198 F.3d 944 (D.C. Cir. 1999) and subsequent cases.

RULEMAKING OR STATUS QUO REQUIRED FOR GTCC

NRC staff acknowledged at the January 14, 2010, public meeting that any requirement to "move waste classification upstream" (i.e., to require that waste be classified at some point prior to its ultimate, post-processing preparation for disposal) would necessarily require a rulemaking. Under this approach, a licensee could transport radioactive "material" with radionuclide concentrations in excess of the those for GTCC LLW for processing. However, since the processed radioactive material is not regulated at intermediate steps prior to disposal, it could be blended to lower concentrations and disposed of as Class A, B, or C LLW. That is, deferring waste classification until after processing of radioactive "materials" opens the door and potentially allows for GTCC LLW to be blended down to become Class C, Class B, or even Class A LLW.

DISINGENUOUS TOMFOOLERY: PUBLIC CONFIDENCE

WCS concurs with the statements made by one commenter at the January 14, 2010, public meeting that the proposed policy change is plainly "disingenuous," "tomfoolery," and "a shell game" that reflects badly on the character and credibility of the NRC. Efforts by a federal agency to reverse a longstanding policy that proscribes blending of waste for the purpose of changing waste classification against the objections of states hosting disposal facilities is counter to enhancing the public's confidence in NRC' decision making process.

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WCS requests that a copy of all correspondence regarding this matter be submitted directly to my attention by fax (972-448-1419) or email (skirk@valhi.net). Thank you for your consideration of this submission.

Sincerely,



J. Scott Kirk, CHP
Vice President, Licensing, Corporate Compliance & Radiation Safety Officer

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