



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR MATERIALS & WASTE  
WASHINGTON, DC 20555**

April 30, 2008

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:    ADVISORY COMMITTEE ON NUCLEAR WASTE AND MATERIALS  
              LOW-ACTIVITY RADIOACTIVE WASTE WORKING GROUP MEETING  
              OF FEBRUARY 13–14, 2008**

Dear Chairman Klein:

During its 186th meeting on February 12–14, 2008, the Advisory Committee on Nuclear Waste and Materials (ACNW&M or the Committee) held a working group meeting (WGM) to better understand how commercial low-activity radioactive waste (LAW) is being managed in the United States. Some states have authorized the disposal of LAW waste streams in both hazardous (Subtitle C) and nonhazardous (Subtitle D) solid waste landfills regulated under the authority of the Resource Conservation and Recovery Act (RCRA). This letter provides insights gained during the WGM regarding the extent to which these alternative RCRA disposal methods could play a greater role in the future safe disposal of LAW.

This WGM was held in response to a Commission Action Memorandum (COM), dated February 5, 2008. In that COM<sup>1</sup>, the Commission directed the ACNW&M to "... address how requirements under the Resource Conservation and Recovery Act Subtitle C compare with 10 CFR Part 10 CFR Part 61, and whether the RCRA Subtitle C facilities might be bounding for low activity waste...."

The WGM considered the following:

- regulatory approaches to defining LAW
- risk-informed and performance-based approaches to the management of LAW
- case studies describing the management of LAW in RCRA landfills

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<sup>1</sup> COMPBL-08-0001 entitled "Staff Requirements – Proposed Merger of ACRS and ACNW&M."

U.S. Nuclear Regulatory Commission (NRC) Commissioner Gregory B. Jaczko made an opening statement to the WGM.<sup>2</sup> Invited participants included representatives of the Conference of Radiation Control Program Directors, the U.S. Environmental Protection Agency (EPA), the Southeast Compact Commission for Low-Level Radioactive Waste Management, the American Ecology Corporation, EnergySolutions, Clean Harbors Environmental Services, and Waste Control Specialists, LLC. Staff from the NRC's Office of Federal and State Materials and Environmental Management Programs also participated in the discussions. The Nuclear Energy Institute and Talisman International, LLC, represented two stakeholder organizations. A total of 75 individuals attended the WGM.

The Committee has performed a limited review of key publicly available literature covering the disposal of LAW in the United States. Additional information is provided in the attachment to this letter, including a bibliography.

## **OBSERVATIONS**

The Committee offers the following seven key observations:

- (1) WGM participants were unanimous in the view that no changes to NRC regulations were needed. Participants believed that case-specific guidance on acceptable approaches for managing current or new LAW streams would be useful.
- (2) Risk-informed approaches to LAW management should emphasize the radionuclide content of those wastes rather than their origin. Guidance on ways to improve the management and disposal of LAW commensurate with its risks would be welcome. In this regard, uniform guidance on the LAW quantities and concentrations in wastes that would be exempt from NRC regulation would also be useful.
- (3) Some states have permitted the disposal of LAW in both RCRA Subtitle C and Subtitle D landfills. This has been achieved by evaluating case-by-case information and progressively building a body of evidence for use in making disposal authorizations. The attachment lists the RCRA Subtitle C landfills currently permitted. Of the approximately 20 facilities, half have disposal authority for LAW. The Committee did not perform an exhaustive search of the approximately 2500 Subtitle D facilities in the United States to determine what fraction of these facilities has LAW disposal capability. The Committee heard testimony that LAW, mostly naturally occurring radioactive material (NORM), has been disposed of effectively and safely in both types of landfills. Typically, the disposal costs are lower for disposal at a RCRA landfill than at a low-level waste (LLW) disposal facility.
- (4) There are key differences between EPA/RCRA and NRC/LLW regulations for protecting the public and the environment. Examples cited during the WGM include the following:

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<sup>2</sup> See <http://www.nrc.gov/reading-rm/doc-collections/commission/speeches/2008/s-08-006.html>.

- a. The duration and durability of institutional controls are different in EPA/RCRA and NRC/LLW regulations.
  - b. EPA/RCRA does not require the evaluation of an intruder scenario.
  - c. The RCRA regulations, while prescriptive with respect to landfill designs, allow for alternate designs if they can be shown to provide an equivalent degree of protection primarily by preventing infiltration and contaminant migration to ground water.
- (5) It is clear that there are differences in the basic requirements for Subtitle C RCRA landfills and those for LLW disposal facilities in Title 10, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," of the *Code of Federal Regulations* (10 CFR Part 61). However, the decision to dispose of LAW in either type of facility depends on performance assessments designed to assess radiological risks.

Site-specific performance assessments to date indicate that performance objectives have been met at RCRA Subtitle C landfills where LAW has been disposed. This suggests that RCRA Subtitle C requirements could be generically bounding for LAW.

- (6) WGM participants indicated that detailed guidance regarding performance assessments for demonstrating the health, safety, and performance of RCRA landfills for the disposal of LAW would be useful. Guidance should address key elements of performance assessment, which would include (a) radionuclide quantity and concentration, (b) waste form and physical and chemical characteristics, (c) disposal cell design, (d) disposal cell cover design, and (e) environmental processes and features.
- (7) Staff representing EPA reported that the Agency intends to revisit the 2003 advance notice of proposed rulemaking that discusses RCRA as an alternative for the disposal of wastes containing LAW in RCRA landfills and decide how to proceed based on the public response to that notice, but the staff did not provide a schedule.

## RECOMMENDATIONS

The Committee offers the following three recommendations:

- (1) The Committee believes that there is no need at this time to revise the NRC's LLW regulations found in 10 CFR Part 61 to address disposal of LAW at RCRA landfills. The Committee believes that continued disposal of LAW at RCRA Subtitle C landfills can be accomplished safely.
- (2) The Committee recommends that the Commission develop risk-informed regulatory guidance concerning the disposal of LAW at RCRA landfills, including current and emerging types of LAW. Developing such guidance should be straightforward because the effort can build on the case-by-case experience in disposing of LAW in RCRA landfills. The NRC staff has developed and successfully applied flexible performance assessment methodologies to the analysis of disposal of waste incidental to reprocessing. The Committee believes that these tools can be successfully applied to LAW disposal.

- (3) The Committee recommends that any risk-informed regulatory guidance should address the following:
- disposal under the provisions of 10 CFR 20.2002, "Method for Obtaining Approval of Proposed Disposal Procedures," which provides for alternate disposal
  - 10 CFR 61.58, "Alternative Requirements for Waste Classification and Characteristics," which gives specific authority to the Commission to develop and implement alternative systems of waste classification so long as the principle performance criteria are met
  - radionuclide quantity and concentration
  - waste form and physical and chemical characteristics
  - waste packaging
  - disposal cell design
  - disposal cell cover design
  - environmental processes and features

Sincerely,

***/RA/***

Michael T. Ryan  
Chairman

Attachment: As stated

- (3) The Committee recommends that any risk-informed regulatory guidance should address the following:
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  - disposal cell cover design
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Sincerely,

*/RA/*

Michael T. Ryan  
Chairman

Attachment: As stated

Distribution:  
See next page.

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Letter to Dale E. Klein from Michael T. Ryan dated April 30, 2008

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