

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
WASHINGTON, D.C. 20555

September 27, 2005

**NRC REGULATORY ISSUE SUMMARY 2004-17, REVISION 1  
REVISED DECAY-IN-STORAGE PROVISIONS FOR THE STORAGE OF  
RADIOACTIVE WASTE CONTAINING BYPRODUCT MATERIAL**

**ADDRESSEES**

All licensees regulated under 10 CFR Parts 30, 32, 33, 35, 39, and 50.

**INTENT**

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to inform all addressees of requirements applicable to decay-in-storage of radioactive waste containing radioactive material with half-lives of less than or equal to 120 days. Revision 1 supersedes RIS 2004-17 in its entirety. It is expected that recipients will review this information for applicability to their programs. No specific action nor written response is required.

**BACKGROUND**

On October 24, 2002, the revised regulations in Part 35, "Medical Use of Byproduct Material," became effective. Revised 10 CFR 35.92, "Decay-in-storage," included a significant change in eliminating the requirement to hold radioactive waste for a period of 10 half lives before disposal. The regulation as revised is more risk-informed and performance based and does not require or specify a holding period before disposal of medical radioactive waste, provided that certain conditions are met and that the final radiation survey determines that the exposure rates of the waste cannot be distinguished from the background radiation levels. Currently, many medical licensees have a license condition requiring them to hold non-medical radioactive waste for decay a minimum of 10 half-lives. This condition imposes a more restrictive requirement on decay-in-storage for non-medical wastes containing radioactive material, than for medical wastes containing radioactive material. As a result, several medical licensees have requested that their licenses be amended to allow the decay-in-storage and processing of their non-medical radioactive waste in a manner similar with the performance-based requirements in Section 35.92.

**ML052720099**

## SUMMARY OF ISSUE

There are two standard license conditions (License Conditions 140 and 142) in Appendix E of the NUREG 1556, Volume 20, "Consolidated Guidance About Materials Licensees - Guidance About Administrative Licensing Procedures," that govern decay-in-storage. License Condition 140 is designed for decay-in-storage of waste by non-medical licensees, while License Condition 142 is designed for decay-in-storage of non-medical waste for medical licensees. Both License Conditions 140 and 142 allow decay-in-storage for wastes containing radioactive material with half-lives "less than or equal to 120 days." However, the revised 10 CFR 35.92, which authorizes decay-in-storage for medical waste, only authorizes decay-in-storage for byproduct material with half-lives "less than 120 days."

The original RIS (i.e., RIS 2004-17, dated November 23, 2004) incorporated the 10 CFR 35.92 provision of allowing the holding of waste with half-lives "less than 120 days," instead of waste with half-lives "less than **or equal to** 120 days" as provided in License Conditions 140 and 142. In addition, the original RIS did not include well-logging licensees (i.e., licensees regulated under Part 39), although the decay-in-storage provisions also apply to them. As noted in the "Addressees" section, these licensees are included in this RIS.

This revision to RIS-2004-17, "Revised Decay-in-Storage Provisions for the Storage of Radioactive Waste Containing Byproduct Material," informs addressees that the standard License Conditions 140 and 142 will retain the existing half-life criterion of "less than **or equal to** 120 days" for radioactive waste generated from non-medical use by all licensees, including Part 35 licensees. For radioactive waste generated from medical uses by Part 35 licensees (i.e., medical use licensees), 10 CFR 35.92 will govern in authorizing decay-in-storage only for byproduct material with half-lives "less than 120 days."

In addition to meeting the half-life requirement, waste to be processed as decay-in-storage waste must meet the following conditions:

- The waste must be held in storage until the radiation exposure rate cannot be distinguished from background radiation levels;<sup>1</sup>
- The waste must be monitored at the container's surface and with no interposed shielding;
- The waste must be monitored with an appropriate radiation-detection instrument set at its most sensitive scale;

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<sup>1</sup> The License Condition 140 stipulation that decay-in-storage waste be held for 10 half-lives will be deleted. Instead, this waste must be held until the exposure rate is indistinguishable from background radiation exposure. This approach is in keeping with the performance-based intent of Section 35.92.

- The licensee must obliterate or remove all radiation labels prior to disposal <sup>2</sup>; and
- Records of the disposal are maintained.

#### 10 CFR 35.92 Amendment

NRC staff is aware that 35.92 requires revision to allow decay-in-storage provisions for medical waste with half-lives less than or equal to 120 days. (The current rule addresses a decay period of less than 120 days.) Staff is evaluating mechanisms to resolve this issue.

#### Detecting Low-Energy Beta Emitting Isotopes

Low levels of some beta emitters, such as sulfur-35, are difficult to detect. Therefore, to assure that the requirement for holding radioactive waste in storage, until the radiation exposure rate cannot be distinguished from background levels is met, licensees should perform surveys for these materials in a low background radiation area. For example, areas such as radioactive waste areas and hot labs should be avoided. Furthermore, to ensure proper release of decay-in-storage byproduct waste, licensees must carefully select the appropriate radiation survey instrument, and must ensure it is properly and currently calibrated. For guidance on selecting the proper radiation-detection equipment and ensuring it is properly and currently calibrated, licensees may refer to NUREG 1556, Volume 7, Appendix M, "Consolidated Guidance About Materials Licenses - Program Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope." This document is accessible at the NRC website at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>.

#### Process for Amending Licenses for Decay-in-Storage

All new licenses granted under Part 35, listing byproduct material with half-lives less than 120 days, will be issued with the authority to process radioactive waste in accordance with the decay-in-storage provision in 35.92. All new licenses granted under Parts 30, 32, 33, and 39, will be issued with authority to process radioactive waste consistent with this revision. All existing similar Parts 30, 32, 33, 35, and 39 licenses will be written to incorporate the decay-in-storage provision at the time of license renewal or amendment, whichever occurs first. Licensees who desire to use the decay-in-storage provision in the near future must submit an amendment request and receive the amended license before implementation of the less restrictive decay-in-storage provisions.

#### Decay-in-Storage for Reactor Licensees

The NRC staff has considered whether the provisions of the decay-in-storage option would be applicable to reactor licensees and believes this option would present some difficulties to them. Power reactors generate a mix of byproduct materials with a wide range of half-lives. Because

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<sup>2</sup> An exception to this requirement is labels on materials that are within containers and that will be managed as biomedical waste after release from the licensee.

of these mixtures, a power reactor licensee would have to separate out the short half-life materials from the long half-life materials. This generally is neither easy nor cost-effective.

Although research and test reactors (RTRs) also generate mixed byproduct materials with a wide range of half-lives, some RTRs generate byproduct materials that are more distinct and are short-lived. Notwithstanding these considerations, should power reactor and/or RTR licensees desire to pursue the decay-in-storage option, the provisions of this RIS would be applicable to such reactor licensees.

### **FEDERAL REGISTER NOTIFICATION**

A notice of opportunity for public comment on this RIS was not published in the *Federal Register* because this RIS is informational, and does not represent a departure from current regulatory requirements.

### **SMALL BUSINESS REGULATORY ENFORCEMENT FAIRNESS ACT**

NRC has determined that this action is not subject to the Small Business Regulatory Enforcement Fairness Act of 1996.

### **RELATED GENERIC COMMUNICATIONS**

The generic communication previously released on this subject, on November 23, 2004, is RIS 2004-17, "Revised Decay-in-Storage Provisions for the Storage of Radioactive Waste Containing Byproduct Material."

### **PAPERWORK REDUCTION ACT STATEMENT**

This RIS does not contain information collections and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501, et seq.).

This RIS requires no specific action nor written response. If you have any questions about this RIS, please contact the technical contacts listed below, or the appropriate regional office.

/RA/

Charles L. Miller, Director  
Division of Industrial and  
Medical Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

Technical contacts: Angela R. McIntosh, NMSS  
(301) 415-5030  
E-mail: [arm@nrc.gov](mailto:arm@nrc.gov)

Pamela J. Henderson, R-I  
(610) 337-6952  
E-mail: [pjh1@nrc.gov](mailto:pjh1@nrc.gov)

Attachment: "List of Recently Issued NMSS Generic Communications"

**Recently Issued NMSS Generic Communications**

Date	GC No.	Subject	Addressees
2/11/05	BL-05-01	Material Control and Accounting at Reactors and Wet Spent Fuel Storage Facilities	All holders of operating licenses for nuclear power reactors, decommissioning nuclear power reactor sites storing spent fuel in a pool, and wet spent fuel storage sites.
8/25/05	RIS-05-18	Guidance for Establishing and Maintaining a Safety Conscious Work Environment	All licensees, applicants for licenses, holders of certificates of compliance, and their contractors subject to NRC authority
8/10/05	RIS-05-16	Issuance of NRC Management Directive 8.17, "Licensee Complaints Against NRC Employees"	All licensees and certificate holders.
8/3/05	RIS-05-15	Reporting Requirements for Damaged Industrial Radiographic Equipment	All material licensees possessing industrial radiographic equipment, regulated under 10 CFR Part 34.
7/13/05	RIS-05-13	NRC Incident Response and the National Response Plan	All licensees and certificate holders.
7/11/05	RIS-05-12	Transportation of Radioactive Material Quantities of Concern NRC Threat Advisory and Protective Measures System	Licensees authorized to possess radioactive material that equals or exceeds the threshold values in the Additional Security Measures (ASM) for transportation of Radioactive Material Quantities of Concern (RAMQC) under their 10 CFR Part 30, 32, 50, 70, and 71 licenses and Agreement State licensees similarly authorized to possess such material in such quantities under their Agreement State licenses.
7/11/05	RIS-05-11	Requirements for Power Reactor Licensees in Possession of Devices Subject to the General License Requirements of 10 CFR 31.5	All holders of operating licenses for nuclear power reactors and generally licensed device vendors.

Date	GC No.	Subject	Addressees
6/10/05	RIS-05-10	Performance-Based Approach for Associated Equipment in 10 CFR 34.20	All industrial radiography licensees and manufacturers and distributors of industrial radiography equipment.
4/18/05	RIS-05-06	Reporting Requirements for Gauges Damaged at Temporary Job Sites	All material licensees possessing portable gauges, regulated under 10 CFR Part 30.
4/14/05	RIS-05-04	Guidance on the Protection of Unattended Openings that Intersect a Security Boundary or Area	All holders of operating licenses or construction permits for nuclear power reactors, research and test reactors, decommissioning reactors with fuel on site, Category 1 fuel cycle facilities, critical mass facilities, uranium conversion facility, independent spent fuel storage installations, gaseous diffusion plants, and certain other material licensees.
2/28/05	RIS-05-03	10 CFR Part 40 Exemptions for Uranium Contained in Aircraft Counterweights - Storage and Repair	All persons possessing aircraft counterweights containing uranium under the exemption in 10 CFR 40.13(c)(5).
7/29/05	IN-05-22	Inadequate Criticality Safety Analysis of Ventilation Systems at Fuel Cycle Facilities	All licensees authorized to possess a critical mass of special nuclear material.
6/23/05	IN-05-17	Manual Brachytherapy Source Jamming	All medical licensees authorized to possess a Mick applicator.
5/17/05	IN-05-13	Potential Non-conservative Error in Modeling Geometric Regions in the Keno-v.a Criticality Code	All licensees using the Keno-V.a criticality code module in Standardized Computer Analyses for Licensing Evaluation (SCALE) software developed by Oak Ridge National Laboratory (ORNL)
5/17/05	IN-05-12	Excessively Large Criticality Safety Limits Fail to Provide Double Contingency at Fuel Cycle Facility	All licensees authorized to possess a critical mass of special nuclear material.

Date	GC No.	Subject	Addressees
4/7/05	IN-05-10	Changes to 10 CFR Part 71 Packages	All 10 CFR Part 71 licensees and certificate holders.
4/1/05	IN-05-07	Results of HEMYC Electrical Raceway Fire Barrier System Full Scale Fire Testing	All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel, and fuel facilities licensees.
3/10/05	IN-05-05	Improving Material Control and Accountability Interface with Criticality Safety Activities at Fuel Cycle Facilities	All licensees authorized to possess a critical mass of special nuclear material.

Note: NRC generic communications may be found on the NRC public website at <http://www.nrc.gov>, under Electronic Reading Room/Document Collections.