



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, ILLINOIS 60532-4352

August 5, 2021

EA-21-099

Samuel S. Hancock, Ph.D.  
Radiation Safety Officer  
Southeast Missouri Hospital  
1701 Lacey Street  
Cape Girardeau, MO 63701

SUBJECT: NRC SPECIAL INSPECTION REPORT NO. 03002264/2021002(DNMS) AND  
NOTICE OF VIOLATION – SOUTHEAST MISSOURI HOSPITAL

Dear Dr. Hancock:

From June 1 through July 20, 2021, an inspector from the U.S. Nuclear Regulatory Commission (NRC) conducted a special review of certain activities at your hospital in Cape Girardeau, Missouri. The purpose of the review was to follow up on information that you provided to the NRC in support of a request to amend your license in letters dated April 22 and May 24, 2021. Mr. Geoffrey Warren of my staff conducted a final exit meeting by telephone with you on July 23, 2021, to discuss the findings. This letter presents the results of the review.

During this review, the NRC staff examined your compliance with the Commission's rules and regulations as well as the conditions of your license. Within these areas, the review consisted of interviews with personnel and examination of selected procedures and representative records.

Based on the results of this review, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The violation concerned the failure to dispose of two gadolinium-153 (Gd-153) sources by authorized means, as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 35.92(a). The violation is cited in the enclosed Notice of Violation (Notice). The NRC is citing the violation in the enclosed Notice because it was identified by the NRC.

The improper disposal of the two sources is considered an example of the failure to control NRC-regulated material resulting in the loss of the material. This failure is a significant regulatory and security concern because of the potential for unauthorized possession or use of the material and because of the potential for uncontrolled exposure to radiation by members of the public. Such failures may include but are not limited to the loss, abandonment, improper transfer, or improper disposal of a device, source, or other form of regulated material. Notwithstanding the normal civil penalty assessment process, in cases where a licensee has failed to control or has lost regulated radioactive material, the NRC normally considers imposing a civil penalty. However, the NRC may mitigate or escalate this civil penalty amount based on the merits of a specific case.

The NRC concluded that the violation described in this letter merited mitigation to a Severity Level IV violation because the disposal resulted in negligible risk to members of the public. At

the time of the disposal, the total activity of the disposed material (2.8 nanocuries) was less than 1/1000 of the exempt quantity for Gd-153 (10 microcuries) and less than 1/1000 the activity of the 10 CFR 20 Appendix C quantity for Gd-153 (10 microcuries), and could not be distinguished from background radiation based on a survey performed prior to disposal. The sources were disposed through regular trash and are most likely now in a landfill where they offer even less risk to the general public. Therefore, no civil penalty or other escalated enforcement action will be imposed.

The inspector determined that the root cause of the violation was a misunderstanding of the regulatory requirement for decay-in-storage disposal of licensed materials, not recognizing that the regulation limits such disposals to licensed materials with a half-life less than or equal to 120 days; Gd-153 has a half-life of 240 days. As corrective actions to restore compliance and to prevent recurrence, you: (1) revised the written policy covering waste disposal to specify that decay-in-storage is only to be used with materials with half-lives less than 120 days; (2) trained nuclear medicine staff on the revised procedure; and (3) revised the quarterly audit form to include verification that decay-in-storage inventory does not include sources with a half-life greater than 120 days. These corrective actions were completed on June 2, 2021.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is already adequately addressed on the docket in this letter. Therefore, you are not required to respond to this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and any response you provide will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, any response should not include any personal privacy, proprietary, or safeguards information so that it can be made publicly available without redaction.

Please feel free to contact Mr. Warren of my staff if you have any questions regarding this inspection. Mr. Warren can be reached at (630) 829-9742 or [Geoffrey.Warren@nrc.gov](mailto:Geoffrey.Warren@nrc.gov).

Sincerely,

 Signed by Kunowski, Michael  
on 08/05/21

Michael A. Kunowski, Chief  
Materials Inspection Branch  
Division of Nuclear Materials Safety

Docket No. 030-02264  
License No. 24-00128-03

Enclosure:  
Notice of Violation

cc w/encl: State of Missouri

Letter to Samuel Hancock from Michael Kunowski dated August 5, 2021.

SUBJECT: NRC INSPECTION REPORT NO. 03002264/2021002(DNMS) AND NOTICE OF VIOLATION – SOUTHEAST MISSOURI HOSPITAL

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OFFICE	RIII-DNMS		RIII-EICS		RIII-DNMS		
NAME	GWarren:ps		KLambert		MKunowski		
DATE	08/04/2021		08/05/2021		08/05/2021		

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## NOTICE OF VIOLATION

Southeast Missouri Hospital  
Cape Girardeau, Missouri

License No. 24-00128-03  
Docket No. 030-02264  
EA-21-099

During a review of licensed activities by U.S. Nuclear Regulatory Commission (NRC) staff conducted from June 1, 2021, through July 20, 2021, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 of the *Code of Federal Regulations* (10 CFR) 35.92(a) states, in part, that a licensee may hold byproduct material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal without regard to its radioactivity.

Contrary to the above, as of October 2020, the licensee held byproduct material with a physical half-life of greater than 120 days for decay-in-storage before disposal in the normal trash without regard to its radioactivity. Specifically, on October 16, 2020, the licensee disposed of two gadolinium-153 sources, each containing approximately 1.4 nanocuries at the time of disposal, that had been stored for decay-in-storage into the normal, non-radioactive, trash. Gadolinium-153 has a physical half-life of 240 days.

This is a Severity Level IV violation (Section 6.7).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved, is already adequately addressed on the docket in the letter transmitting this Notice. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation, IR 03002264/2021002(DNMS) " and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region III, within 30 days of the date of the letter transmitting this Notice.

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this 5<sup>th</sup> day of August 2021.

Enclosure