



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

June 28, 2013

Docket No. 030-38333

License No. 06-00183-08

Peter Salovey, Ph.D.
Provost
Yale University
Environmental Health and Safety
135 College Street, First Floor Suite 100
New Haven, CT 06510

SUBJECT: NRC INSPECTION REPORT NO. 030-38333/2013-001, YALE UNIVERSITY,
THE PET RESEARCH CENTER, NEW HAVEN, CONNECTICUT AND NOTICE
OF VIOLATION

Dear Dr. Salovey:

On May 14, 2013, Betsy Ullrich of this office conducted a safety inspection at the PET Research Center, 801 Howard Avenue, New Haven, Connecticut of activities authorized by the above listed NRC license. The inspection was an examination of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspector, interviews with personnel, and a selective examination of representative records. Additional information provided in correspondence dated May 23, 2013, and the telephone conversation on June 5, 2013, between Tammy Stemen of your organization and this office were also examined as part of the inspection. The findings of the inspection were discussed at the conclusion of the inspection during a telephone conference on June 25, 2013, between Betsy Ullrich of my staff and the following members of your staff: Cindy Smith, Associate Provost for Health Affairs and Academic Integrity; Pete Reinhardt, Director, Environmental Health and Safety; Matt Varughese, Associate General Counsel (Health and Research Affairs); Tammy Stemen, Radiation Safety Officer; and Kevin Charbonneau, Alternate Radiation Safety Officer.

Based on the results of this inspection and in accordance with the NRC Enforcement Policy, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation involved the failure to restrict the actual quantities of radionuclides with half-lives of greater than 120 days to the quantities for which the \$225,000 prescribed amount of financial assurance is required under 10 CFR 30.35(d). In accordance with 10 CFR 30.35, when a combination of radionuclides is possessed, the unity rule must be applied (that is, the sum of the ratios of quantity of each radionuclide possessed divided by the applicable quantity as defined in 10 CFR 30.35(d) must be compared to 1[unity]). Specifically, for the actual quantities of licensed materials estimated by your staff to be possessed as of March 31, 2013, the sum of ratios was calculated to be 54 (greater than unity) when compared to the quantities for which the \$225,000 prescribed amount is required, and the sum of fractions is 5.4 (greater than unity) when compared to the quantities for which the \$1,125,000 prescribed amount of financial assurance is required. Because the sum of the ratios exceeds 1 for the \$1,125,000 prescribed amount of financial assurance, the current prescribed amount of financial assurance of \$225,000 is not sufficient. The larger prescribed amount of financial assurance must be

provided OR you may submit a Decommissioning Funding Plan (DFP) and cost estimate that demonstrates a lower amount of financial assurance should be accepted. The guidance in NUREG-1757, "Consolidated Decommissioning Guidance," Volume 3, "Financial Assurance, Recordkeeping, and Timeliness" should be used to develop the DFP and cost estimate.

The violation is cited in the enclosed Notice of Violation (Notice), because the violation was identified by the NRC.

During our inspection exit conference on June 25, 2013, members of your staff indicated that they are already working to revise the amount of financial assurance to be provided for this license. In addition, staff indicated that they would continue tracking the inventory of materials possessed under this license to ensure that the amounts of materials remain below the limits authorized by the revised amount of financial assurance. Staff members emphasized that Yale University is committed to radiation safety and to compliance with NRC regulations and licensed conditions.

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

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

The NRC's Safety Culture Policy Statement became effective in June 2011. While a policy statement and not a regulation, it sets forth the agency's *expectations* for individuals and organizations to establish and maintain a positive safety culture. You can access the policy statement and supporting material that may benefit your organization on NRC's safety culture Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html>. We strongly encourage you to review this material and adapt it to your particular needs in order to develop and maintain a positive safety culture as you engage in NRC-regulated activities.

Please contact Betsy Ullrich at (610) 337-5040 if you have any questions regarding this matter.

Sincerely,

Original signed by Judith A. Joustra

Judith A. Joustra, Chief
Commercial and R&D Branch
Division of Nuclear Materials Safety

Enclosure:
Notice of Violation

cc:
Tammy Stemen, C.H.P., Radiation Safety Officer
State of Connecticut

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Judith A. Joustra, Chief
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Enclosure:
Notice of Violation

cc:
Tammy Stemen, C.H.P., Radiation Safety Officer
State of Connecticut

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OFFICE	DNMS/RI	N	DNMS/RI		DNMS/RI		
NAME	EUllrich/bu		JJoustra/jj				
DATE	6/28/13		6/28/13				

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NOTICE OF VIOLATION

Yale University
New Haven, CT

Docket No. 030-38333
License No. 06-00183-08

During an NRC inspection conducted on May 14 and 23, and June 5 and 25, 2013, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Items 8.G (any byproduct material with atomic numbers 1 through 83 and half-life greater than 120 days except tungsten 181, as incidentally activated products in fixed parts and concrete), 8.H (any byproduct material with atomic numbers 1 through 83 and half-life greater than 120 days except manganese 54, as incidentally activated products, removable components), 8.I (manganese 54 as incidentally activated products in removable components) and 8.J (tungsten 181, as incidentally activated products in fixed parts and concrete) of License No. 06-00183-08 limit the quantities of material to specified quantities and the restrictions of License Condition 13.

License Condition 13 requires that, in addition to the limits in Item 8, the licensee shall further restrict the possession of unsealed byproduct material to quantities less than the applicable limits in Appendix B of 10 CFR Part 30 as specified in 10 CFR 30.35 for the financial assurance already provided by the licensee.

The Certification of Financial Assurance (CFA) dated October 29, 2010, states that Yale has provided \$225,000 for decommissioning as prescribed by 10 CFR Part 30.35.

10 CFR 30.35(d) states that the \$225,000 amount of financial assurance for decommissioning is applicable to those licensees who possess greater than 10^3 but less than 10^4 times the applicable quantities of Appendix B to Part 30 in unsealed form. (For a combination of radionuclides, if R, as defined in 10 CFR 30.35(a)(1) divided by 10^3 is greater than 1 but R divided by 10^4 is less than or equal to 1.)

Contrary to the above, as of March 31, 2013, the licensee did not restrict the possession of unsealed byproduct material to quantities less than the applicable limits in Appendix B of 10 CFR Part 30 as specified in 10 CFR 30.35 for the financial assurance already provided by the licensee (\$225,000 prescribed amount). Specifically, on May 23, 2013, the licensee provided calculations to the NRC of the inventory of licensed materials actually possessed under this license as of March 31, 2013. For this combination of radionuclides and quantities, the application of the unity rule determined that R divided by 10^4 was calculated to be 5.4, a value that is greater than 1; and R divided by 10^3 was calculated to be 54, a value greater than 1. The calculations indicated that the licensee possessed quantities of licensed materials in excess of those for which the prescribed amount of \$225K is allowed. Based on the calculations, the prescribed amount of \$1,125K for financial assurance must be provided, or a decommissioning funding plan and cost estimate may be used to determine an alternate amount of financial assurance to be provided.

This is a Severity Level IV violation (Section 6.3).

Pursuant to the provisions of 10 CFR 2.201, Yale University is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region I, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, any response which contests an enforcement action shall be submitted under oath or affirmation.

Your response will be placed in the NRC Public Document Room (PDR) and on the NRC Web site. To the extent possible, it should, therefore, not include any personal privacy, proprietary, or safeguards information so that it can be made publically available without redaction. However, if you find it necessary to include such information, you should clearly indicate the specific information that you desire not to be placed in the PDR, and provide the legal basis to support your request for withholding the information from the public.

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

Dated This 28 day of June 2013