



University Radiation Safety Office

Dennis Lawyer  
Health Physicist  
License Assistance Team  
U.S. Nuclear Regulatory Commission Region I  
2100 Renaissance Boulevard, Suite 100  
King of Prussia, Pa 19406-2713

September 15, 2015

NRC License No. 47-05<sup>a</sup>972-02 *dmj*  
Docket No. 03001142

Dear Mr. Lawyer:

This letter is written in response to your review of our application to renew Nuclear Regulatory Commission License No. 47-05972-02, Docket No. 03001142.

1. Response to the question about the mailing address for our license

We want to maintain the complete mailing address. Please use the following address on our license and for our mailing address:

Marshall University  
University Radiation Safety Office  
BBSC 301J  
One John Marshall Drive  
Huntington, WV 25755-2505

2. Response to the question about item 3 in our application regarding the specific buildings where radioactive materials may be used:

This is to confirm that specifically licensed materials may be used and possessed only in the following buildings at Marshall University:

(1) Marshall University Main Campus  
Robert C. Byrd Biotechnology Science Center  
1700 Third Avenue  
Huntington, West Virginia 25755

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Specifically licensed materials may be used and possessed only in the following buildings at Marshall University (continued):

(2) Marshall University Main Campus  
Science Building  
1705 Third Avenue  
Huntington, West Virginia 25755

(3) Marshall University  
Robert W. Coon Education Building  
1542 Spring Valley Drive  
Huntington, West Virginia 25704

In the original application, I did not include the street number for the Science Building but I did add it above.

3. Response to concerns regarding Item 5:

After carefully consideration of the options presented in your review of item 5 in our license renewal application, it was concluded that the Type B specific license of broad scope best suits the needs of Marshall University. To stay within the limits of the Type B specific license of broad scope, the following items were picked up for disposal on September 11, 2015.

(1) A Model 28-5 Beam Calibrator (SN: 5055) with a Cs-137 source  
Manufacturer: U.S. Nuclear (ICN)  
Original activity: 100 mCi (Reference date: 25 September 1979)

(2) A Model 773 Beam Calibrator (SN: 419) with a Cs-137 source  
Manufacturer: Amersham  
Original activity: 144.7 mCi (Reference date 24 January 1991)

(3) A Ra-Be source containing 5 mCi of Ra-226

(4) A 2 mCi Am-241 source

In addition, Item 5 of our renewal application was rewritten to include the limiting condition for a Broad Scope B license that wishes to stay "below the amount of material to have a prescribed value of \$1,200,000 and not use a Decommissioning Funding Plan" that you described in your e-mail of July 8, 2015. See attachment 1.

Furthermore, a new *Certification of Financial Assurance* was written and signed by the President of the University to reflect these conditions. This document also includes a written statement that commits Marshall University to maintaining an inventory below the stated levels. See attachment 2.

4. Response to the concern about sealed sources in our possession that do not appear to be in the Sealed Source Registry.

Two of the sources that were not found on the Sealed Source Registry, the Ra-Be source that was used with an Atomic Accessories Neutron Howitzer and the 2 mCi AM-241 sealed source, were shipped out for disposal as part of our plan to comply with the limits of a type B license as described above. The H-3 source in the Picker-Dresser Model 2920 Neutron Generator was also sent out for disposal. All of these sources were leak-tested before being picked up for disposal.

The two I-129 sources that we have are used for the sole purpose of calibrating well detectors.

- (1) The following information was provided with the LKB Wallac Source:

Product Number: 1270-102; Batch No, 8704A.

Activity: 0.0260  $\mu\text{Ci}$

Use: its sole use is as a standard capsule for a LKB Wallac Gamma Counter.

Specification of Standard Capsule: the standard consists of iodine-129 in crystalline form.

The I-129 standard was prepared by the manufacturer by dispensing a  $^{129}\text{I}$ -labeled NaI solution into a hollow polyester resin mold. The  $\text{H}_2\text{O}$  was then evaporated and the active NaI powder was sealed with more polyester to prevent the release of free iodine. The standard was sealed with a plastic plug which was then glued into position.

Preparation Date: 23 October 1987.

- (2) The NEN I-129 Source is a rod-shaped source that is also used for calibration in well detectors. It has an activity of 0.119  $\mu\text{Ci}$ . The reference date is 31 July 1979. Its product number is NES-211S.

5. Response to question regarding Item 6 (Purpose for Which Licensed Material Will Be Used)

We are specifically requesting the authorization to use byproduct materials in research involving laboratory animals. These studies will be limited to projects approved by both the Institutional Animal Care and Use Committee (IACUC) and the RSO.

Limitations on the use of by product materials in research involving animals

Marshall University has a state-of-the-art animal resources facility that is designed primarily for work with small animals. Therefore, *in vivo* studies involving the administration of radionuclides to animals that are housed in cages after the administration of the radionuclide will be limited to smaller animals such as rats and mice. *In vivo* administration of radionuclides will be limited to <sup>3</sup>H- and <sup>14</sup>C-labeled compounds.

For larger animals such as rabbits, radionuclides may be used in studies involving organs, tissues or cells only after the organs, tissues and cells have been harvested from the animal and placed in an approved *in vitro* incubation system. Similarly, *in vitro* studies using organs, tissues, and cells from smaller animals may be performed. The radionuclides used for *in vitro* studies will depend on the requirements of the project and the training and expertise of the User.

6. Response to the question about procedures for leak-testing

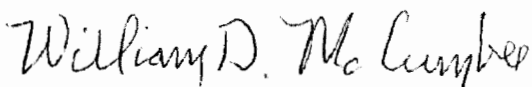
The following statement is for part 10.7 (Surveys) under Item 10 (Radiation Safety Program)

- Leak testing

We will implement the model leak test program published in Appendix T of NUREG-1556, Volume 11, 'Program-Specific Guidance About Licenses of Broad Scope'

7. The Self-Guarantee was amended so that Recital 19 references paragraph 18. See attachment 3.

Thank you for reviewing our application and working with us in getting our license into compliance with the limitations of a Type B specific license of broad scope.



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Item No. 5. RADIOACTIVE MATERIAL

8.5.1 Unsealed and/or Sealed Byproduct Material

Type of Material	Amount of Material
As specified in Section 33.100, Schedule A of 10 CFR 33 (Type B Specific License of Broad Scope)	A. If only one radionuclide is possessed, the possession limit is the quantity specified for that radionuclide in 10 CFR 33.100, Schedule A, Column 1. If two or more radionuclides are possessed, the possession limit is determined as follows: For each radionuclide, determine the ratio of the quantity possessed to the applicable quantity specified in 10 CFR 33.100, Schedule A, Column 1 for that radionuclide. The sum of the ratios for all radionuclides possessed under the license shall not exceed unity.
	B. Notwithstanding Paragraph A of this condition and 10 CFR 33.100, Schedule A, Column 1, the applicable quantities for the following radionuclides are reduced to:  Carbon 14 10 curies Krypton 85 10 curies Iodine 129 10 millicuries Any byproduct material other than alpha emitting byproduct material not listed in 10 CFR 33.100, Schedule A 10 millicuries

In addition to the limits described above, the licensee shall further restrict the possession of:

(1) unsealed byproduct material to amounts less than  $10^5$  times the applicable quantities of Appendix B to 10 CFR Part 30 as specified in 10 CFR 30.35(d). For a combination of isotopes,  $R$  divided by  $10^5$  shall be less than or equal to 1 when  $R$  is defined as the sum of the ratios of the quantity of each isotope to the applicable value in Appendix B to 10 CFR Part 30.

(2) sealed sources to amounts less than  $10^{10}$  times the applicable quantities of Appendix B to 10 CFR Part 30 as specified in 10 CFR 30.35(d). For a combination of isotopes,  $R$  divided by  $10^{10}$  shall be less than or equal to 1 when  $R$  is defined as the sum of the ratios of the quantity of each isotope to the applicable value in Appendix B to 10 CFR Part 30.

Marshall University is committed to maintaining an inventory below the levels stated above. See *Certification of Financial Assurance* document.