



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

January 11, 2017

Director, Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

70-398

ATTN: T.D. Naquin, Program Manager, License No. SNM-362

Dear Mr. Naquin:

I have attached NIST's response to the NRC's Request for Additional Information (RAI) – License Amendment Request (LAR) Regarding Radiation Safety Officer (RSO) Training and Qualification (Cost Activity Code L60423). NIST received the RAI in the mail on December 14, 2016.

Please contact Janna Shupe at 301-975-5804 or janna.shupe@nist.gov if you have any questions about NIST's response.

Sincerely,

Richard F. Kayser
NIST Chief Safety Officer
Director, Office of Safety, Health, and Environment
Executive Management Representative, NIST Ionizing Radiation Safety Committee

Enclosure: NIST Response to RAI
(includes body of response and table referenced in body of response)

cc: Janna Shupe, Interim Radiation Safety Officer
Alan Thompson, Chair, NIST Ionizing Radiation Safety Committee
Manny Mejias, Acting Chief, Gaithersburg Radiation Safety Division

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NIST

**NIST Response to Request for Additional Information – License Amendment
Request (LAR) Regarding Radiation Safety Officer (RSO) Training and Qualification
(Cost Activity Code L60423)**

January 11, 2017

- 1) **Explain the benefit or purpose in no longer needing the specific expertise in health physics or the 5 years of professional level experience in applied health physics.**

Table 1 summarizes the training and qualifications required of the NIST Gaithersburg RSO from the point of view of the **current language**;¹ the **requested language**;² the guidance in NUREG 1556, Vol. 11, Rev. 1, Sec. 8.7.3; and the requirements of the U.S. Office of Personnel Management (OPM) qualification standard for the health physics series (1306).

The **requested language** aims to enhance the requirements for the training and qualifications of the NIST Gaithersburg RSO by aligning those requirements with the guidance in NUREG 1556, Volume 11, Revision 1, Section 8.7.3 and the requirements of OPM qualification standard for the health physics series (1306). It requires the specific expertise and experience in health physics necessary to be the NIST Gaithersburg RSO; most important, it requires training and experience commensurate with the scope of licensed activities, the radiation hazards to be identified and controlled, and the regulations to be applied.

The **current language** requires no training or experience specific to the radioactive material and associated activities authorized at NIST Gaithersburg. It also creates requirements that do not conform in two ways with the OPM qualification standard for the health physics series (1306). First, it could restrict NIST from selecting an individual who does not possess a certification in health physics or a college degree at the bachelor level but who is nevertheless the best qualified candidate for the position based on training and experience. Second, it creates a five-year experience requirement that does not conform with the OPM requirement of one year of specialized experience at the GS-14 level (one year of specialized experience at one level lower than level of the position to be filled).

Summary: The purpose of the LAR is to establish appropriate training and qualification requirements for the NIST Gaithersburg RSO by aligning those requirements with the

¹ The **current language** resides in the License Renewal Application (LRA) dated June 5, 2013 and the NRC-issued Safety Evaluation Review (SER).

² The **requested language** resides in the LAR dated November 14, 2016.

guidance in NUREG 1556, Vol. 11, Rev. 1, Sec. 8.7.3 and the requirements of the OPM qualification standard for the health physics series (1306). The **requested language** is much more stringent than the **current language**, which requires no experience specific to the licensed radioactive material and associated activities at NIST Gaithersburg; the vast majority of persons meeting the requirements of the **current language** would not have the training and experience necessary to be the NIST Gaithersburg RSO. The **requested language** is also necessary for NIST to be able to comply with Federal personnel requirements.

- 2) **Describe what amount and content of equivalent training would be acceptable in lieu of a college degree. Provide specific examples of training required, including duration, subject matter, and evidence of comprehension. Provide a brief discussion, with specific examples of acceptable experience applicable to licensed activities.**

In filling positions such as that of the NIST Gaithersburg RSO, NIST must consider not only training but the sum total of the requirements of the position, including years of experience, level of experience, and relevance of experience to the position to be filled.

When combining education and experience, the NIST Office of Human Resource Management (OHRM) determines the applicant's total qualifying education as a percentage of the education required for the grade level, determines the applicant's experience as a percentage of the experience required for the grade level (as defined by the specialized experience in the vacancy announcement), and adds the two percentages. The total percentage must equal or exceed 100 percent to qualify an applicant for the grade level. For example, the education requirement for a GS-5 health physics position is the successful completion of a full 4-year course of study in an accredited college or university leading to a college degree at the bachelor level OR a combination of education and experience. Based on the method described above, an applicant who has completed 60 undergraduate semester hours (equivalent to 2 years of undergraduate education), including 30 semester hours of courses required by the OPM qualification standard for the health physics series (1306), and 2 full years of specialized experience would qualify for a GS-5 position. The servicing human resources specialist may collaborate with a position-specific subject matter expert (SME) in making the necessary determinations. The hiring manager, in collaboration with the servicing human resources specialist, defines the specialized experience required for the position.

The requirements embodied in the **requested language** derive from the OPM qualification standard for the health physics series and NUREG Vol. 11, Rev. 1, Sec. 8.7.3. These

requirements include, at a minimum, completion of at least 30 semester hours in health physics, engineering, radiological science, chemistry, physics, biology, mathematics, and/or calculus; and one year of specialized experience at the GS-14 level,³ where specialized experience means:⁴

- Training and experience commensurate with the types, forms, and quantities of radioactive material authorized on the license;
- Training and experience sufficient to identify and control anticipated radiation hazards associated with the use, in research and development, of radioactive material authorized on the license; and
- Experience in applying knowledge of the regulatory requirements applicable to licensed activities.

When combining education and experience, NIST verifies the completion of the 30 semester hours by requiring official transcripts as part of the job application process. NIST evaluates the specialized experience by having an SME review the job applications to determine whether job applicants possess the required specialized experience. NIST confirms the specialized experience further through interviews and reference checks, as necessary.

The specialized experience in the bulleted items above applies directly to the radioactive material and associated activities authorized at NIST Gaithersburg. An SME familiar with the radioactive material program at NIST Gaithersburg can determine whether a particular job application provides evidence that the applicant possesses this specialized experience (for example, that the applicant has at least one year of training and experience at the GS-14 level commensurate with the types, forms, and quantities of radioactive material authorized on the license).

- 3) Item 3 identifies requirements for training and experience to identify and control anticipated radiation hazards in research and development, a very specific category of regulatory interest. However, other areas pertinent to the NIST license are not addressed for training and experience, such as manufacturing and distribution, special nuclear material, calibration, or irradiators. Clarify the specification in research and development. Describe the specific training and experience requirements needed for**

³ It normally takes many years of training and experience for most health physicists to reach the GS-14 level (if they ever reach that level), let alone the GS-15 level of the NIST Gaithersburg RSO position.

⁴ The specialized experience provided here is that in the **requested language**. NIST modified the **requested language** in the vacancy announcement to make the requirements intelligible to job applicants with little or no knowledge of the NIST license. See Table 1.

research and development and why there are no such requirements specified for other significant areas the NIST license.

As indicated in Table 1, NIST referred to “research and development” in the vacancy announcement and **requested language** because it was seeking an individual with radiation safety experience in a research and development environment such as that at NIST. NIST did not intend to narrow in any way the training and experience required for the RSO position or to omit areas of regulatory interest pertinent to the NIST license. Two possible options are to delete “research and development” in the **requested language** or to replace it with the contents of Section 6 of the SNM-362 license.

- 4) Confirm that the proposed RSO will have training and experience sufficient to perform the duties of the RSO as described in your license application.**

The NIST Chief Safety Officer confirms that the proposed RSO will have training and experience sufficient to perform the duties of the RSO as described in the license amendment request dated November 14, 2016.

Note: The current NIST Chief Safety Officer has been a member of the NIST Ionizing Radiation Safety Committee since 2009. He served as Chair from September 2009 until October 2014; he currently serves as the NIST Executive Management Representative.

- 5) Confirm that when a decision is made in regards to a prospective RSO, NIST will provide (1) a description of the training and experience for the proposed RSO that demonstrates that the individual is qualified to perform the duties required under the license; and (2) a Radiation Safety Officer Delegation of Authority signed by the licensee’s executive management.**

The NIST Chief Safety Officer confirms that when a decision is made in regards to a prospective RSO, NIST will provide (1) a description of the training and experience for the proposed RSO that demonstrates that the individual is qualified to perform the duties required under the license; and (2) a Radiation Safety Officer Delegation of Authority signed by the licensee’s executive management.

Note: NIST Chief Safety Officer Richard F. Kayser discussed this response with NRC Program Manager Tyrone D. Naquin on January 10, 2017.

Table 1. Training and Qualifications of NIST Gaithersburg RSO

January 11, 2017

	Current Language LRA dated 06/05/13	Requested Language LAR dated 11/14/16	NUREG Vol. 11, Rev. 1, Sec. 8.73	OPM Qualification Standard for the Health Physics Series (1306)	Comments
Basic Requirements	<p>The NIST Gaithersburg RSO, at a minimum, must be certified in Health Physics by the American Board of Health Physics</p> <p>or</p> <p>must have a Bachelor's degree in a science or engineering field and have at least five years of professional-level experience in applied Health Physics</p>	<p>At a minimum, a college degree at the bachelor level or equivalent training and experience in physical, chemical, biological sciences, or engineering</p>	<p>At a minimum, a college degree at the bachelor level or equivalent training and experience in physical, chemical, biological sciences, or engineering</p>	<p>A. Degree: natural science or engineering that included at least 30 semester hours in health physics, engineering, radiological science, chemistry, physics, biology, mathematics, and/or calculus.</p> <p>or</p> <p>B. Combination of education and experience -- courses as shown in A above, plus appropriate experience or other education; or certification as a health physicist by the American Board of Health Physics, plus appropriate experience and other education that provided an understanding of sciences applicable to health physics comparable to that described in paragraph A.</p>	<ul style="list-style-type: none"> The requested language is identical to the NUREG and consistent with the OPM qualification standard, which is more specific than the NUREG. In filling the RSO position, NIST must follow the OPM classification standard. In the second part of the OPM qualification standard, "appropriate experience of other education" means the specialized experience required for the position, as detailed in the vacancy announcement.
Specialized Experience	<p>None specific to licensed radioactive material and associated activities at NIST Gaithersburg</p>	<p>NIST's synopsis of NUREG:</p> <ul style="list-style-type: none"> Training and experience commensurate with the types, forms, and quantities of radioactive material authorized on the license; Training and experience sufficient to identify and control anticipated radiation hazards associated with the use, in research and development, of radioactive material authorized on the license; and Experience in applying knowledge of the regulatory requirements applicable to licensed activities. 	<p>See NUREG.</p>	<p>Language used by NIST in the vacancy announcement for Gaithersburg Radiation Safety Division (GRSD) Chief/RSO position:</p> <p>One year of specialized experience equivalent to the GS-14 level (ZP-IV at NIST). Specialized experience is defined as training and experience sufficient to identify and control anticipated radiation hazards associated with the use, in research and development, of high-activity ($\geq 3.7\text{GBq}$) sealed and unsealed radioactive material (including special nuclear material) and high-activity irradiators; experience in applying knowledge of the regulatory protection, physical security, and transportation requirements for such materials; experience in managing ionizing-radiation-producing-machine safety programs; and experience supervising radiation safety professionals.</p> <p>NOTE: NIST posted the position at the GS-15 level. According to OPM rules, Federal agencies can require only one year of specialized experience at one grade lower than the level of the position to be filled, in this case, one year of specialized experience at the GS-14 level.</p>	<ul style="list-style-type: none"> The requested language requires specialized experience consistent with that in the NUREG, i.e., commensurate with the scope of licensed activities, the radiation hazards to be identified and controlled, and the regulations to be applied. The current language requires no such specialized experience. NIST aligned the language in the vacancy announcement with the requested language. NIST could not use phrases such as "authorized on the license" or "applicable to licensed activities", as such wording would have presumed that job applicants had detailed knowledge of the license and licensed activities. NIST referred to "research and development" in the vacancy announcement and requested language because it was seeking an RSO with radiation safety experience in a research and development environment such as that at NIST. NIST did not intend to narrow in any way the training and experience required for the RSO position.