



Lynsay Belche, Vice President
Enterprise Administrative and
Business Services
330 Sterrett Drive
Blacksburg, VA 24061
540-231-6512

MEMORANDUM

To: Betsy Ullrich, Senior Health Physicist
USNRC Region I
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406

From: Ms. Lynsay Belche 
Vice President for Enterprise Administrative and Business Services

Date: 10/29/2021

Subject: Designation and Delegation of Authorities for Radiation Safety
Officer

Donald E. Conner, Jr. is the appointed Radiation Safety Officer for Virginia Polytechnic Institute & State University and is responsible for ensuring the safe use of radioactive material. The Radiation Safety Officer is responsible for managing the radiation safety program; identifying radiation safety problems; initiating, recommending, or providing corrective actions; verifying implementation of corrective actions; and ensuring compliance with rules for the use of radioactive material.

The Radiation Safety Officer is hereby delegated the authority necessary to meet these responsibilities. The Radiation Safety Officer has the authority to stop, immediately, any operations involving the use of radioactive material in which health and safety may be compromised or may result in non-compliance with NRC and/or Virginia Department of Health requirements. The Radiation Safety Office is required to notify management, AVP for Environmental Health and Safety, if individuals do not cooperate and do not address radiation safety issues. In addition, the Radiation Safety Officer is free to raise issues with the Nuclear Regulatory Commission at any time.

xc: Dr. Lance Franklin, Asst. VP, Environmental Health and Safety
Dr. Carla Slebodnick, Chair Radiation Safety Committee, Dept of Chemistry



Memo

To: Elizabeth Ulrich
United States Nuclear Regulatory Commission, Region I
2100 Renaissance Blvd.
King of Prussia, PA 19406-2713

From: Donald Conner dcon@vt.edu
RSO, on behalf of Virginia Polytechnic Institute and State University

Re: VIRGINIA TECH UNIVERSITY, ENVIRONMENTAL HEALTH AND SAFETY,
REQUEST FOR ADDITIONAL INFORMATION, MAIL CONTROL NO. 628219

October 4, 2021

Elizabeth,
Thank you for your patience as we work through applying for a new NRC license. As I intimated in the initial application, Virginia Polytechnic Institute and State University (Virginia Tech University, Virginia Tech) previously had an NRC license, which we suspended once our Co-60 irradiator was decommissioned about 8 years ago.

I will address each of your bullet points in this memo, and I do hope I answer your queries to your satisfaction.

Best Regards. - Donald

Donald Conner, Jr. BS, MA
University RSO, Off-Site Safety Coordinator
Virginia Tech Environmental Health and Safety
575 Beamer Way Blacksburg, VA 24061
(540) 231-5364 phone (540) 231-3944 fax
<http://www.ehss.vt.edu> dcon@vt.edu

Donald E. Conner, Jr.



1. When submitting your response, and any future license amendments, please have the document signed by a management representative rather than the Radiation Safety Officer. The NRC views a letter signed by a management representative as indication that management has reviewed the application and concurs in the statements and representations contained therein.

A. Please find completed application signed by Dr. Lance Franklin, management representative of Virginia Tech’s Radiation Safety Committee, 2021

2. Item 2 of your NRC Form 313 provided the name of the applicant as “Virginia Tech University, Environmental Health and Safety.” Please clarify the legal name of the applicant. A radioactive materials license 121-225-1, issued by the Commonwealth of Virginia, lists the name of the licensee as “Virginia Polytechnic Institute & State University.” In addition, if license 121-225-1 is not your corresponding Commonwealth of Virginia license, please provide a copy of your Agreement State license.

A. As you have correctly identified on our Commonwealth of Virginia broad scope license, the official name is Virginia Polytechnic Institute and State University. We are also legally referred to as Virginia Tech University. For the sake of clarity we will use Virginia Polytechnic Institute and State University for the application.

3. Item 3 of your application states that the location of use will be at the Children’s National Hospital, Innovation Campus, Virginia Tech – Level 6, 7144 13th Place NW, Washington DC.

Please confirm the correct name of the location where you will be working with materials. Based on an internet search, it appears that the correct name may be “Children’s National Research & Innovation Campus.”

**A. The Address is:
Children’s National Research & Innovation Campus
Virginia Tech – Level 6, 7144 13th Place NW, Washington DC 20010.**

The Children’s National Hospital possesses a medical license of broad scope from the NRC. Confirm if activities under their NRC license, or any other licensed entity performing activities with NRC-regulated material, also occur at the Innovation Campus. If so, describe how you will maintain separate facilities and control of licensed materials received, transferred, and disposed of, separately from any other licensed entity at the Innovation Campus.

A. Children’s National Hospital and the Children’s National Innovation Campus Virginia Tech Facility will maintain separate licenses for RAM use, as well as possessing a separate EPA ID number for hazardous waste



production. The Children’s National licensed material will not be used at the Level 6 specified area for Virginia Tech use nor does our RAM program have any relationship with the Children’s National RAM program. Virginia Tech RAM waste will be held in a separately allocated waste location in Virginia Tech spaces, and disposed of by a separate contract with a third-party vendor.

4. Item 5.A of the application referenced the definition for research and development from 12VAC5-481-10. Please note that research and development authorized under an NRC license will fall under the definition in 10 CFR 30.4. No response is necessary to this item.

A. Thank you for this correction. No response necessary

5. Item 5.B of the application requested any radionuclide with atomic numbers 1 through 83, as sealed sources or foils, 250 millicuries per source and 4 curies total.

This quantity and form of licensed materials is encompassed by the requested form “any” in Item 5.A. Explain why a separate line item for sealed sources is required, when the quantities per source do not exceed those in “any” form. In addition, explain why 4 curies of such sealed sources would be required for the research you expect to perform under the requested license. Alternately, you may amend your request for sealed sources.

A. This was a carryover from the language of our Commonwealth of Virginia Broadscope license, and completely unnecessary. I would like to revise this request to completely leave out any requests involving specified sealed source quantities and/or form as well as any references to 4 curies of sealed sources.

A. Also note that the total of material has been amended to 100mCi per source and 1 Ci total.

b. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.5.1, “Unsealed or Sealed Byproduct Material,” provide the manufacturer’s name and model number for each requested sealed source and device so that the NRC can verify that they have been evaluated in a SSD registration certificate or specifically approved on a license. For sources and devices not registered, as allowed by 10 CFR 32.210(g)(2), the applicant must have adequate training and experience and facilities and equipment to handle comparable quantities of material in any form under 10 CFR 30.33(a)(2) and (3) and must provide information about the unregistered sealed sources and devices in accordance with 10 CFR 30.32(g)(4)

B. We do not plan to have any unsealed or sealed byproduct material/ sealed source material. This language is a carryover from the extant



Commonwealth of Virginia license, 121-225-1. This has been removed from the request.

6. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.5.2, "Financial Assurance and Recordkeeping for Decommissioning," provide:

- a. the statement for maintaining records important to decommissioning; and
- b. The required financial assurance for the materials for which you requested authorization. Please note that there are a variety of ways to adjust your requested authorized materials that will affect the amount of financial assurance required, or eliminate the need for financial assurance.

Per your recommendation and current known research, we will opt under NUREG 1757 Volume 3 Rev. 1:

No financial assurance is required for a 10 CFR Part 70 license authorizing the possession or use of unsealed special nuclear material in amounts less than or equal to 10^3 times the applicable quantities of Appendix B to 10 CFR Part 30 or, for a combination of isotopes, if R divided by 10^3 is 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.

H-3 no financial assurance for unsealed sources < 1mCi Current authorized maximum research planned will use/store 100uCi H-3
P-32 half-life <120 days 1mCi Current authorized maximum research planned will use/store 200uCi P-32

7. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.7.1, "Executive Management," provide an organization chart that describes the management structure, reporting paths, and the flow of authority between executive management, the RSC, and the RSO. Although your description of the RSC references an organization chart contained in Appendix 1 of your Radioactive Material Safety Program, this Appendix was not part of your license application.

- A. **Please find attached a revised organization chart with the position of Dr. Lance Franklin as university management representative.**

8. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.7.2 "Radiation Safety Committee," please provide additional information:

For many of these points I completed the NUREG schedule C form, hopefully organizing my answers in a better available format.



a. Criteria for selecting members of the RSC, including what members and the number of members which constitute a quorum;

➤ **Answered in document ‘Complete appendix C’**

c. Confirm if you are requesting the authorization for flexibility to make certain program changes and revise select procedures previously approved by the NRC without a license amendment. If so, additional information should be provided concerning a description of:

c. We are requesting this license to cover current and potential small-scale research in the laboratory. Currently, the only hired researcher wants to use 3H and 32P, however we want freedom to add certain isotopes within reason without requesting a license update each time.

i. Review and approval of permitted program and procedural changes prior to implementation;

ii. Implementation of program and procedural changes;

iii. Audit of licensed operations to determine compliance;

iv. Appropriate actions taken when noncompliance is identified, including analysis of the cause, corrective actions, and actions to prevent recurrence; and

v. The process for procedure and program review and approval, including documentation of the specific change (At a minimum, documentation should state the reason for the change and summarize the radiation safety matters that were considered prior to approval of the change.).

9. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.7.3, “Radiation Safety Office,” submit a statement delineating the RSO’s duties and responsibilities, and a radiation safety officer delegation of authority memorandum signed by the licensee’s executive management.

A. Please find attached as requested

11. Item 8 of your license application “Training for Individuals Working In or Frequenting Restricted Areas” briefly described your training program only for all individuals working with radioisotopes in laboratories. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 8.8,

➤ **Answered in document ‘Complete appendix C’**

c. Confirm if you are requesting the authorization for flexibility to make changes to this training program without a license amendment. If so, please describe the process that will be used to revise and implement the submitted training programs.



c. This is n/a. Initial request for authorization/license.

11. Item No. 9 of your license application “Facilities and Equipment” describes the address for your proposed location(s) of use and includes a commitment regarding security.

a. Provide additional information delineating your space in the Innovation Center, such as the floors(s) on which you will be located (Level 6 may or may not be the 6th floor); the approximate size (number of laboratories etc) that you will have and the number of expected labs in which licensed materials will be used; the location of receipt, storage and/or disposal facilities for material if it is other than within your Level 6 space; and any other pertinent description of the potential locations where licensed materials may be approved for use under this license.

a. Per the attached facility map RAM manipulation and storage of the source material and waste-holding in the designated lab space of the Virginia Tech 6th floor space.

b. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 9, “Facilities and Equipment,” describe the criteria the RSC will use to review and approve facilities and equipment (e.g. research laboratories, waste storage facilities, survey and counting equipment, etc.). The description must include the method of classifying laboratories based on type, toxicity, and quantity of byproduct material being requested. A description or sample diagrams should be provided for facilities where radioactive materials may become airborne, with a description of the ventilations system(s). Answered in document ‘Complete appendix C’

c.

c. In accordance with NUREG-1556, Vol. 11, Rev. 1, Section 9, “Facilities and Equipment,” describe facilities used in special applications, such as synthesis of labelled compounds, areas where licensed materials may become airborne, hot cells, waste treatment, or animal research and housing. Item 5 of your application requested authorization for research and development, including animal studies. In accordance with NUREG-1556, Volume 11, Revision 1, Section 8.9, please provide additional information include specific locations and a description of the animal handling and housing facilities sufficient to address the applicable sections of NUREG-1556, Volume 7, Revision 1, Section 8.9 “Facilities and Equipment” and “Contamination Control” in Volume 7’s Appendix D “Guidance for Laboratory Animal and Veterinary Medicine Uses.” A link to that document is: <https://www.nrc.gov/reading-rm/docollections/nuregs/staff/sr1556/v7/index.html> .

c. Per current protocols: All experiments will be performed with non-volatile radiolabeled compounds that will not be metabolized to volatile compounds.

Per current protocols, no radiolabeling of lab animals will be performed. No housing of radiolabeled lab animals will be performed.

12. The application contained a portion of your “Radioactive Material Safety Program” but was not sufficient to meet the requirements of our guidance for broad scope license. Rather than submit the document in full, please review NUREG-1556, Vol. 11, Rev. 1,

Section 8.10 “Radiation Safety Program,” and provide the information requested in the

“Response from Applicant” in each sub-section. You may also use Appendix B “Suggested Format For Providing Information Requested in Items 5 through 11 of U.S. Nuclear Regulatory Commission Form 313.” Responsive information may be contained in your Radioactive Material Safety Program, of which only the first pages were included in your application. You may choose to submit the responsive portions of this document. If you choose to provide the document in its entirety, note that the entire document will be listed as a commitment of the license and any revision of the document will require amendment of the license. If the entire document is provided, clearly label or otherwise call out the responsive sections to each pertinent request.

➤ **Answered in document ‘Complete appendix C’**

13. In accordance with Section 8.11, “Waste Management,” provide the procedures for waste collection, storage, and the disposal by any of the authorized methods described in that section.

➤ **Answered in document ‘Complete appendix C’**

NRC FORM 313
(01-2020)
10 CFR 30, 32,
33, 34, 35, 36,
37, 39, and 40



U.S. NUCLEAR REGULATORY COMMISSION

**APPLICATION FOR
MATERIALS LICENSE**

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 01/31/2023

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1566 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/>. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

MATERIALS SAFETY LICENSING BRANCH
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

IF YOU ARE LOCATED IN:

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER _____
- C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT (Include zip code)

Virginia Polytechnic Institute and State University
575 Beamer Way
Blacksburg, VA 24061

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

Children's National Research & Innovation Campus
Virginia Tech -- Level 6
7144 13th Place NW
Washington, DC 20010

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Donald Conner, RSO Virginia Tech

BUSINESS TELEPHONE NUMBER
540-320-8305

BUSINESS CELLULAR TELEPHONE NUMBER

BUSINESS E-MAIL ADDRESS
dcon@vt.edu

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*) (See 10 CFR 170 and Section 170.31)

*Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.

FEE CATEGORY	AMOUNT ENCLOSED \$

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: <https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html>.

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Lance Franklin, Asst. VP, Environmental Health and Safety

SIGNATURE

DATE

11/01/2021

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

SENIOR VICE PRESIDENT & CHIEF BUSINESS OFFICER
Dwayne Pinkney

VICE PRESIDENT FOR ENTERPRISE ADMINISTRATIVE & BUSINESS SERVICES
Lynsay Belshe

Deputy to VP VACANT	Business Services Interim Executive Director Jim Hillman	Emergency Management Assistant Vice President Mike Mulhare	Environmental Health & Safety Assistant Vice President Lance Franklin	Police Department Chief of Police & Director of Security Mac Babb
Business Center Executive Assistant	Mail Services Transportation Services	Emergency Management	Biosafety Fire Safety Occupational Safety Lab Safety Radiation Safety	Police Rescue Squad

If you check a box in the column marked "Description Attached," then you must provide that information on separate sheets.

Donald Conner, Jr.

Item No.	Suggested Response	Description Attached
5.	<p>RADIOACTIVE MATERIAL</p> <p>Unsealed and Sealed Sources</p> <p>Applicants for a Type A broad scope license should request any form of byproduct material with atomic numbers from 1 through 83. The applicant should state the maximum quantity of each radionuclide to be possessed at any one time and the total cumulative quantity for all radionuclides. The applicant should list separately individual radionuclides needed in much larger quantities or in much smaller quantities than that described in the atomic number 1–83 request. The maximum quantities of nuclides with atomic numbers above 83 also should be listed separately.</p>	[X]
<p>5 <i>response</i></p>	<p>5. RADIOACTIVE MATERIAL</p> <p>a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time</p> <p>A. Any radioactive material with atomic numbers 1 through 83</p> <p>B. Any</p> <p>C. 100 millicuries per radionuclide; total not to exceed 1 curies</p>	
6	<p>PURPOSE FOR WHICH LICENSED MATERIAL WILL BE USED</p> <p>Describe in general terms the use or purpose of each requested radionuclide. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED</p>	[x]

<p style="text-align: center;">6 <i>Response</i></p>	<p>The material will be used as follows: Research and development as defined in 10 CFR 30.4;</p> <p>Licensed material is to be used as follows: For non-human research and development activities</p> <p>For animal studies, no studies are proposed at this time, and the current map and floorplan do not include vivarium or other animal use.</p> <p>For teaching and training of students</p>	
<p style="text-align: center;">7</p>	<p>INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM (Cont'd)</p> <p>Radiation Safety Officer</p> <p>For Type A, Type B, and Type C applicants:</p> <ul style="list-style-type: none"> • Submit the name of the proposed RSO. • Describe the training for the proposed RSO that demonstrates the individual is qualified to perform the duties required under the license. • Address the RSO's experience in performing each of the duties listed in the section 8.7.3, "Radiation Safety Officer," when and where the experience was gained, and the type, form, and quantity of radionuclides involved. • Submit a statement delineating the RSO's duties and responsibilities. • Submit a "Radiation Safety Officer Delegation of Authority" form signed by the licensee's executive management. 	<p style="text-align: center;">[X]</p>

<p>7 Response</p>	<ul style="list-style-type: none"> • Donald E. Conner, Jr is the Radiation Safety Officer for Virginia Tech. • His training and experience is as follows. <p>VPI&SU, B.S. Animal Science, 1991 Oakridge Associated Universities, Applied Health Physics course, 5 weeks, 2006 Dade Moeller, 40 Hour RSO course, 2004</p> <p>Virginia Tech University, Radiation Safety Officer, April 2017 – present. Duties and responsibilities are delineated above. Assistant to the RSO January 2010 to April 2017 Duties included all RAM lab inspections, all sealed source inspections and leak tests. Emergency response duties.</p> <ul style="list-style-type: none"> • See signed delegation of authority memo attached <p>The Radiation Safety Committee (RSC) is the highest decision making body for all radiation safety matters at Virginia Tech. The RSC reports to the Vice President for Research. The Department of Environmental, Health and Safety (EHS) administers the university radiation safety policies on a daily basis, through its Radiation and Laboratory Safety groups. EHS reports to the Vice President for Operations</p> <ul style="list-style-type: none"> • The RSC holds quarterly meetings. • The RSO or designee (e.g., a member of the RSC) will perform an initial review of the lab license, research protocol, or amendment, soliciting from the PI any corrections or clarifications deemed necessary to allow for an adequate review of the procedures and safety precautions. • Non-substantive changes (e.g., additions or deletions of personnel) can be administratively approved by the Chair or RSO and do not require a convened RSC meeting. <p>The RSC:</p>	
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	<ul style="list-style-type: none"> • Reviews and approves all applications for use of radiation devices and radioactive material by university personnel • Reviews and approves radiological hazard analyses of new procedures used by laboratories. • Ensures any modifications or improvements it considers necessary in the interest of radiation safety or compliance with federal, state, or internal regulations are implemented • Donald Conner as RSO will be responsible for day to day operations of Radiation Safety under this agreement 	
8	<p>TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS (INSTRUCTIONS TO WORKERS)</p> <p>Submit a description of the radiation safety training program developed for each group of workers, including: topics covered, qualifications of the instructors, method of training, method for assessing the success of the training, and the frequency of training and refresher training. Alternately, identify the model training program described in the appropriate base NUREG corresponding to your particular type of licensed program and submit a statement that this training program will be implemented.</p>	[X]
8 <i>response</i>	<p>Every person who is expected to work with or handle radioisotopes as a part of their job duties and/or research is required to take the Virginia Tech initial certification training for radiation safety training. The course is administered by the University RSO or delegate.</p> <ul style="list-style-type: none"> • The content of the class is as follows: <ol style="list-style-type: none"> 1. Half-life, Principal Emissions and Activity 2. Principal Risks of radioactive material 3. Control Measures Controlling the risk, the Dosimetry program 4. Contamination Monitoring – An overview of requirements of RAM users to ensure 	

	<p>control and where necessary cleanup of contamination in RAM operations</p> <ul style="list-style-type: none">5. Laboratory Specific Training – A discussion of laboratory operations, and the requirement that lab specific training is completed for the new users.6. Emergency Response – What to do, who to call in case of accidental release, or other contamination event. <p>Each person upon finishing the course-instruction must complete a standard quiz with an 80% grade or higher in order to successfully complete the course. This is the minimum of training that must be met in order to work with RAM and/or be considered for the university dosimetry program under Virginia Tech radiation safety.</p> <ul style="list-style-type: none">a. Ancillary workers who may come into contact with RAM in the course of their assigned duties, as identified are required to complete the on-line training “Radiation Safety for non-radiation workers”b. Further training for each group of workers. This training program may be required at any regular periodicity (e.g. annually), or if individuals who are absent from applicable laboratories after a period of time would be required to re-take this training prior to working with these laboratories again.c. The cycle of both RAM workers safety course and the Ancillary workers course is set to 4 years. After this, the training is due again. Current RAM workers will review the course materials and retake the course quiz. Current ancillary workers will review the material and take the course quiz.d. Discussion of the RSC has already been made in section 7.	
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<p>9</p>	<p>FACILITIES AND EQUIPMENT</p> <p>Describe the criteria your RSC and RSO, as appropriate, will use to review and approve facilities and equipment (research laboratories, iodination facilities, waste storage facilities, survey and counting equipment, etc.). Your description will need to include your method of classifying laboratories based on type, toxicity, and quantity of byproduct material being requested. Sample diagrams should be provided for each classification scheme.</p>	<p>[X]</p>
<p>9 Response</p>	<ul style="list-style-type: none"> • As per the map (attached) the area that will currently be used in the Children’s National innovation center footprint is a very small section of the lab. The map has marked areas where RAM will be used, and stored. • Current approved research will use <200uCi of RAM, with appropriate shielding for beta-radiation to ensure ALARA conditions for lab workers. • There will be virtually no potential for exposure to the public, and there are strict security measures in place for all lab personnel. • Thorough consideration will be given to any and every future protocol to ensure safety of personnel as per previous discussion of the university Radiation Safety Committee. 	
<p>10</p>	<p>RADIATION SAFETY PROGRAM</p> <p>Audit Program</p> <p>Describe the mechanisms used by executive management to ensure that adequate oversight of the program is exercised. In addition, if you are upgrading your limited scope license to a Type A broad scope license or you are renewing your Type A broad scope license, describe the RSC’s involvement in these oversight mechanisms.</p> <p>In addition, if you are a Type A broad scope licensee or applicant and you want the flexibility to revise the</p>	<p>[X]</p>

	<p>audit mechanism implemented by the RSO without amendment of the license, as discussed in Chapter 1, "Purpose of Report," and Section 8.7.2, "Radiation Safety Committee," of this document, describe the process you will use to revise and implement your audit program.</p>	
<p>10 answered</p>	<p>Per the university document "Virginia Tech RSC Governance Document"</p> <ul style="list-style-type: none"> • Key Individuals Four individuals are considered key to the success of the Radioactive Materials Program – the Institutional Official or designee, the Assistant Vice President for Environmental Health and Safety, the RSC Chair, and the Radiation Safety Officer (RSO). • Institutional Official or designee Appointment: The Virginia Tech President, as Chief Executive Officer, appoints/designates the "Institutional Official" (IO) The IO is delegated the responsibility to approve/appoint the RSC Chair and its members. • The AVP of EHS and the University RSO are ex officio members of the RSC. They are not voted on or appointed, and the 'positions' do not cycle off of the RSC. • The Chair of the RSC is a 3 year position with the option to accept reappointment. Executive management seeks to ensure and maintain the integrity of the radiation safety program by ensuring that the RSO, the RSC chair and the RSC membership are so trained and appropriately diverse as to ensure a breadth of knowledge across the working sphere of the use of ionizing radiation at the university. 	
<p>...Audit response</p>	<p>Radiation Safety personnel will conduct announced or unannounced inspections of each active laboratory. Labs that use unsealed or sealed sources will be inspected at least annually. Inspections will include:</p> <ul style="list-style-type: none"> • Review of facility conditions • Contamination surveys (when appropriate) 	

	<ul style="list-style-type: none"> • Radiation surveys (when appropriate) • Records review (annually) • Inventory review (annually) • Follow-up inspections on identified contamination concerns <p>Recommendations will be made, in writing, to the Laboratory Authority. It is the responsibility of the Laboratory Authority to carry out the recommendations within 90 days.</p>	
<p>...Instruments</p>	<p>RADIATION SAFETY PROGRAM Instruments</p> <p>Provide the criteria used by your RSC and RSO, as appropriate, to review and approve radiation monitoring instrumentation to ensure that appropriate radiation monitoring equipment will be used during licensed activities.</p> <p>Discuss how the RSC and RSO, as appropriate, will ensure that instruments are properly calibrated at prescribed frequencies.</p>	<p>[x]</p>
<p><i>Instruments response</i></p>	<p>Laboratories using isotopes other than 3H must:</p> <ul style="list-style-type: none"> • Be equipped with suitable portable radiation detection instruments or have access to an instrument from a nearby laboratory • Have instruments approved by the Radiation Safety Officer • Use instruments at least daily for checks on contamination levels • Have all portable survey instruments calibrated annually by the Radiation Safety Office • Portable survey instruments are calibrated annually and after any maintenance that may affect the calibration. This will be done by the Radiation Safety Office or qualified commercial firms. Instruments are calibrated using 137Cs reference standards and/or are calibrated electronically in accordance to guidelines posited in NUREG-1556 Volume 11, Rev.1 appendix H. • Each scale is calibrated at two points, located at approximately 25 percent and 75 percent of full scale. Acceptable calibration is within 10 percent of the calculated exposure or count rate. Response factors or graphs are used as necessary to interpret meter readings to within accepted tolerances. • Other reference standards (e.g. 14C, 90Sr, 129I, 57Co) are used to determine efficiencies of detection. Multipliers are 	

	determined for use whenever the CPM to DPM conversion is needed. The multipliers result in a value that is within 10 percent of the calculated DPM of the reference standard	
...Materials receipt	<p>RADIATION SAFETY PROGRAM Material Receipt and Accountability</p> <p>Describe your administrative procedures to ensure control of procurement and use of byproduct material. Describe your method for maintaining accountability of licensed material at all times.</p>	[x]
Materials receipt response	<p>Radioactive Material Control</p> <p>The university inventory control consists of the following:</p> <ul style="list-style-type: none"> • RSO approval is required for any receipt of radioactive material • Upon material receipt the laboratory verifies the contents, records are maintained for annual documentation. • Waste removal from laboratories is documented • Transfers from one laboratory to another are documented • Transfers from a laboratory to external locations are documented • Waste disposal from the university is documented • Sealed sources of radioactive material are inventoried on a semi-annual basis • Unsealed sources of radioactive material are inventoried on an annual basis 	
Occupational Dose	<p>Occupational Dose</p> <p>Submit a description of the method for demonstrating compliance with the referenced regulations or a statement that an evaluation has disclosed that individuals do not require monitoring.</p>	[x]
Occupational dose response	<p>“We will monitor individuals in accordance with the criteria in the section titled, ‘Radiation Safety Program–Occupational Dose’ in NUREG–1556, Vol. 11, Rev. 1, ‘Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Licenses of Broad Scope.’”</p>	

Public Dose	<p>RADIATION SAFETY PROGRAM</p> <p>Public Dose</p> <p>No response is required from the applicant, but the NRC will examine records and written materials documenting compliance during inspection. Licensees must be able to provide documentation demonstrating, by measurement or calculation, that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual limit for members of the public. For guidance about accepted methodologies for determining doses to members of the public, see Appendix L of this document.</p>	
Public Dose Response	<p>We do not believe there is any reasonably expected dose to public and/or personnel who are not directly utilizing RAM.</p>	
Emergency plan	<p>Emergency Plan</p> <p>If an emergency plan is required, provide either: An evaluation showing that the maximum off-site dose due to a release of radioactive materials would not exceed 0.01 Sv (1 rem) effective dose equivalent or 0.05 Sv (5 rem) to the thyroid; or</p> <p>An emergency plan is not required under the criteria of 10CFR 30.72 schedule C</p>	
Safe use/Emergency procedures	<p>Safe Use of Radionuclides and Emergency Procedures</p> <p>Submit your procedures for safe use of radionuclides, including security of materials and emergencies.</p>	
Safe use /Emergency procedures Response	<p>We will adopt the procedures for the safe use of radionuclides and emergencies as published in Appendix 'K' of NUREG-1556, Volume 11, Revision 1, 'Program-Specific Guidance about Licenses of Broad Scope.'"</p>	
Surveys	<p>RADIATION SAFETY PROGRAM</p> <p>Surveys</p> <p>Submit procedures to evaluate radiological hazards, both external and internal.</p> <p>Leak Testing – no sealed sources, so leak testing procedures are not a part of this document.</p>	<p>[x]</p> <p>[o]</p>

<p>Surveys Response</p>	<p>Labs using at least 200 microcuries at any one time must conduct the following:</p> <p>Daily:</p> <ul style="list-style-type: none"> • Contamination survey of the immediate work areas to be done at the end of the work day or at the completion of the day's work (only on days that activity is used) • documentation of results required • portable instrument surveys may be performed • swipe surveys must be performed by tritium users <p>Weekly:</p> <ul style="list-style-type: none"> • comprehensive surveys of entire laboratory and areas adjacent to exit points • portable instruments may be used to pinpoint areas of concern • swipe surveys must be performed • all results must be documented <p>Labs using less than 200 microcuries at any one time must conduct the following:</p> <p>Daily:</p> <ul style="list-style-type: none"> • contamination survey of the immediate work areas to be done at the end of the work day or at the completion of the day's work (only on days that activity is used) • documentation of results required • portable instrument surveys may be performed • swipe surveys must be performed by tritium users <p>Monthly:</p> <ul style="list-style-type: none"> • comprehensive surveys of entire laboratory and areas adjacent to exit points • portable instruments may be used to pinpoint areas of concern • swipe surveys must be performed • all results must be documented <p>NOTE: Comprehensive surveys of entire laboratory and areas adjacent to exit points are required at least monthly even if no radioactive material is used by active authorizations</p>	
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Financial Assurance	<p>Financial Assurance and Recordkeeping for Decommissioning</p> <p>Applicants requesting authorization to possess licensed material in excess of the limits specified in 10 CFR 30.35, 10 CFR 40.36, and 10 CFR 70.25 must submit a decommissioning funding plan (DFP) or certification of financial assurance for decommissioning as described in NUREG-1757, "Consolidated NMSS [Office of Nuclear Material Safety and Safeguards] Decommissioning Guidance," Volume 3, "Financial Assurance, Recordkeeping, and Timeliness."</p>	[x]
<i>Financial assurance response</i>	<p>No financial assurance is required for a 10 CFR Part 70 license authorizing the possession or use of unsealed special nuclear material in amounts less than or equal to 10^{-3} times the applicable quantities of Appendix B to 10 CFR Part 30 or, for a combination of isotopes, if R divided by 10^{-3} is 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.</p> <p>H-3 no financial assurance for unsealed sources < 1mCi Current authorized maximum research planned will use/store 100uCi H-3</p> <p>P-32 half-life <120 days 1mCi Current authorized maximum research planned will use/store 200uCi P-32</p>	

Item No.	Suggested Response	Description Attached
11.	<p>WASTE MANAGEMENT</p> <p>Provide procedures for waste collection, storage, and disposal by any of the authorized methods described in this section. Applicants should contact the appropriate regional office of the NRC for guidance to obtain approval of any</p>	[X]

	<p>method(s) of waste disposal other than those discussed in this section.</p>	
<p>11 <i>response</i></p>	<p>Final Disposition Of Waste Short-, and Intermediate-Lived Waste</p> <ul style="list-style-type: none"> • Waste containers are surveyed for radiation using portable GM or ion-chamber survey instruments. • Contamination surveys are performed with filter paper swipes that are analyzed in a liquid scintillation counter. This waste will be stored for 10 half-lives. <p>After this decay period the waste will be processed by a vendor and/or processed in-house without the associated radioactive material hazard, once the waste is surveyed to ensure that it has reached background levels.</p> <ul style="list-style-type: none"> • dry solids to the landfill or medical incinerator • liquids to the sanitary system, and <p>Long-Lived Waste</p> <ul style="list-style-type: none"> • Containers are surveyed for radiation and contamination levels as in the previous section. • The containers are stored in the RAM area until processed by a commercial 3rd party vendor. It is understood here that appropriate record keeping is/will be in place for the purpose of all hazardous material shipments from Virginia Tech facilities. 	

SENIOR VICE PRESIDENT & CHIEF BUSINESS OFFICER
Dwayne Pinkney

VICE PRESIDENT FOR ENTERPRISE ADMINISTRATIVE & BUSINESS SERVICES
Lysay Belshe

Deputy to VP VACANT	Business Services Interim Executive Director Jim Hillman	Emergency Management Assistant Vice President Mike Mulhare	Environmental Health & Safety Assistant Vice President Lance Franklin	Police Department Chief of Police & Director of Security Mac Babb
Business Center Executive Assistant	Mail Services Transportation Services	Emergency Management	Biosafety Fire Safety Occupational Safety Lab Safety Radiation Safety	Police Rescue Squad

