



UNIVERSITY OF CENTRAL FLORIDA

April 13, 2018

USNRC Region I
2100 Renaissance Boulevard
Suite 100
King of Prussia, PA 19406

RE: Request for New License

To Whom It May Concern,

On behalf of the University of Central Florida, I am requesting a license to allow for possession and use of a Carbon-14 sealed source at the Arecibo Observatory, Esperanza, Puerto Rico.

Included in this letter is a completed NRC Form 313 and attachments, along with the new application fee payment.

If you need further information or clarification, please contact me at (407) 823-3747 or via email at renee.michel@ucf.edu.

Cordially,

Renee Michel
Director of Environmental Health and Safety

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PROGRAM MATERIALS-001



**APPLICATION FOR
 MATERIALS LICENSE**

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 06/30/2019

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-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NE08-10202, (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-1556 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)

University of Central Florida
 Environmental Health and Safety
 P.O. Box 163500
 Orlando, FL 32816-3500

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

Arecibo Observatory
 Route 625
 Esperanza,
 Arecibo, PR 00612

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Adrienne Showman

BUSINESS TELEPHONE NUMBER
 (407) 823-1470

BUSINESS CELLULAR TELEPHONE NUMBER
 -

BUSINESS E-MAIL ADDRESS
 adrienne.showman@ucf.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.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

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	3P	AMOUNT ENCLOSED \$	3,300.00
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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

Renee Michel, Director of Environmental Health and Safety

SIGNATURE

Renee Michel

DATE

4.13.18

FOR NRC USE ONLY

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



UNIVERSITY OF CENTRAL FLORIDA

Application for Materials License

Attachment: Items 5—11

5. Radioactive Material

- a. Element and mass number: Carbon-14
- b. Chemical and/or physical form: Sealed source registered pursuant to 10 CFR 30.32 and 32.210 or equivalent Agreement State regulation
- c. Maximum amount: One source, 7.5 millicuries
 - a. United States Radium Corporation Model 759(s) *See attachment 2.*

6. Purpose for Which Licensed Material Will Be Used

Calibration of Instrumentation

7. Individuals Responsible for Radiation Safety Program

Adrienne Showman: Radiation Safety Officer

Description of Training & Experience	Training Provider & Location	Date	Duration
Principles & practices of radiation protection including ALARA principles	Dade Moeller Radiation Safety Academy; Las Vegas, NV UCF; Orlando, FL	04/24/2017— 04/28/2017 08/2013-Present	40 hours 7 years, 8 months
Radioactivity measurements	Dade Moeller Radiation Safety Academy; Las Vegas, NV UCF; Orlando, FL	04/24/2017— 04/28/2017 08/2013-Present	40 hours 7 years, 8 months
Use of radiation detection instruments and monitoring techniques	Dade Moeller Radiation Safety Academy; Las Vegas, NV UCF; Orlando, FL	04/24/2017— 04/28/2017 08/2013-Present	40 hours 7 years, 8 months

Biological effects of radiation	Dade Moeller Radiation Safety Academy; Las Vegas, NV	04/24/2017— 04/28/2017	40 hours
	UCF; Orlando, FL	08/2013-Present	7 years, 8 months
Shipping Dangerous Goods and Radioactive Materials by Air DOT HAZMAT Security Awareness	IATA/FedEx Dangerous Goods/Radioactive Materials Seminar; Boston, MA	04/11/2017— 04/14/2017	32 hours
UCF Specific Radiation Safety Operating and Emergency Procedures	Renea Carver, Interim Director of Environmental Health and Safety; Orlando, FL	08/2013-Present	7 years, 8 months
	Renee Michel, Director of Environmental Health and Safety; Orlando, FL		

Shikha Raizada, Authorized User, Arecibo Observatory

Description of Training & Experience	Training Provider & Location	Date	Duration
Radiation Safety for C-14 Sealed Source Users	Jonathan Schulter, SRI: Arecibo Observatory, PR	11/4/2014	1 hour
PhD, Physics	Planetary Atmospheres and Aeronomy Division, Gujarat University, India	[REDACTED]	-

Eva Robles, Authorized User, Arecibo Observatory: B.A. Physics

Description of Training & Experience	Training Provider & Location	Date	Duration
Radiation Safety for C-14 Sealed Source Users	Jonathan Schulter, SRI: Arecibo Observatory, PR	11/4/2014	1 hour
Experience of 7.5 mCi Carbon-14 sealed source	Arecibo Observatory, PR	2003	15 years

Christiano Garnett Marques Brum, Authorized User, Arecibo Observatory

Description of Training & Experience	Training Provider & Location	Date	Duration
Radiation Safety for C-14 Sealed Source Users	Jonathan Schuler, SRI: Arecibo Observatory, PR	11/4/2014	1 hour
PhD, Space Geophysics	National Institute for Space Research, Sao Jose dos Campos, Brazil	[REDACTED]	5 years

Raul Garcia, Authorized User, Arecibo Observatory

Description of Training & Experience	Training Provider & Location	Date	Duration
Radiation Safety for C-14 Sealed Source Users	Jonathan Schuler, SRI: Arecibo Observatory, PR	11/4/2014	1 hour
Nuclear weapons handling and control of radioactive contamination: Aviation Ordinance Technician	U.S. Marine Corp	1965 - 1969	4 years
Experience of 7.5 mCi Carbon-14 sealed source	Arecibo Observatory, PR	1973 - 2018	45 years

8. Training for Individuals Working in or Frequenting Restricted Areas

All individuals handling licensed sealed sources have received radiation safety instructions in 2014, and will receive refresher training provided by the UCF RSO. Topics covered in the UCF RSO training include: properties of radiation, forms of radioactive materials, sealed versus unsealed radioactive materials, biological and health effects of radiation, units of radiation, occupational dose limits, ALARA, handling and use procedures, as well as security of radioactive materials.

9. Facilities and Equipment

The 7.5 mCi Carbon-14 source will be stored in a locked cabinet within the designated facility laboratory (Building Number 27), with secured access control. Due to the nature of this sealed source and that this is the only licensed material being requested in this application, no additional engineering controls are applicable.

10. Radiation Safety Program

The material requested in the scope of this application is one 7.5 mCi Carbon-14 sealed source. This sealed source is to be used for calibration of instrumentation.

Contamination Control

Sealed source leak testing will be conducted at six month intervals. Personnel authorized to perform leak tests are the RSO and authorized users listed in Section 7 of this attachment. Leak tests may be conducted using a leak test kit supplied by an organization authorized by the Florida Bureau of Radiation Control (BRC), the U.S. Nuclear Regulatory Commission, or other state radiation control agencies. Leak tests will be done according to the sealed source manufacturer and kit supplier's instructions.

The source shall be tested for leakage prior to any use or transfer to another licensee, unless a leak test has been accomplished within six months prior to the date of use or transfer. Records indicating the date a source is placed in storage, its latest leak test date and results, and storage location will be maintained for inspection.

Analysis of samples will be performed only by vendors specifically licensed to provide the service by the Florida Bureau of Radiation Control (BRC), the U.S. Nuclear Regulatory Commission, or other state radiation control agencies.

If the test reveals the presence of 0.005 microcurie or more of removable contamination, the sealed source shall be immediately withdrawn from use and shall be decontaminated and repaired, returned to the manufacturer, or disposed of, as appropriate. A report shall be filed within five days of the test with the U.S. Nuclear Regulatory Commission, describing the equipment involved, the test results, and the corrective action taken.

Records of the leak test results shall be kept in units of microcuries and maintained for 5 years for inspection.

Inventory

The sealed source is inventoried by the RSO or authorized users listed under Section 7 of this attachment at intervals not to exceed six months. Physical inventory may be completed in conjunction with sealed source leak testing. Records of the inventory shall be maintained for a period of 5 years from the date of each inventory, and shall include the radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

Audit Procedures

On a biannual basis in conjunction with leak testing, an inspections of procedures to ensure accountability of licensed material will be conducted. Criteria that will be reviewed include:

Verification of current copy of NRC license on file.
Verification that copies of sealed source leak test results for at least the previous 5 years are on file.
Verification that NRC "Notice to Employees" posters in both English and Spanish are present.
Verification that all users have received radiation safety training, and access to sealed source remains secure.
Verification that C-14 source use log book is complete and current.

Verification of up-to-date "C-14 Radioactive Light Standard Procedure" is on file, and document version recorded
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Verification that sealed source (U.S. Radium Corp., model LAB 759, carbon-14, 7.5 mCi) is present, and location recorded.

Transfer of Radioactive Materials to Other Labs or Facilities

Transfers of the sealed source to a different laboratory must be documented and conducted in coordination with the RSO.

Transfers of the sealed source to another facility must be coordinated with the RSO. Such shipments must be properly packaged, labeled, and wipe tested, as necessary. The RSO must have a copy of the recipient's license number as proof of authorization to receive the material.

Exposure Monitoring

A prospective evaluation has determined that unmonitored individuals are not likely to receive over the course of 1 year a radiation dose in excess of 10 percent of the allowable limits in 10 CFR Part 20.

11. Waste Management

Due to the nature of the 7.5 mCi Carbon-14 sealed source, radioactive waste will not be generated. In the event of sealed source final disposal, a licensed professional waste vendor will be contacted to dispose of the material.



ACKNOWLEDGEMENT - RECEIPT OF CORRESPONDENCE

Name and Address of Applicant and/or Licensee University of Central Florida Environmental Health and Safety ATTN: Renee Michel, Director of Environmental Health and Safety P. O. Box 163500 Orlando, FL 32816-3500	Date April 23, 2018
	License Number(s) New License Application
	Mail Control Number(s) 608517
	Licensing and/or Technical Reviewer or Branch Commercial, Industrial, R&D, & Academic Branch

This is to acknowledge receipt of your: Letter and/or Application Dated: 04/13/2018

The initial processing, which included an administrative review, has been performed.
 Amendment Termination New License Renewal

There were no administrative omissions identified during our initial review.

This is to acknowledge receipt of your application for renewal of the material(s) license identified above. Your application is deemed timely filed, and accordingly, the license will not expire until final action has been taken by this office.

Your application for a new NRC license did not include your taxpayer identification number. Please complete and submit NRC Form 531, Request for Taxpayer Identification Number, located at the following link: <http://www.nrc.gov/reading-rm/doc-collections/forms/nrc531.pdf>
Follow the instructions on the form for submission.

The following administrative omissions have been identified:

Your application has been assigned the above listed MAIL CONTROL NUMBER. When calling to inquire about this action, please refer to this control number. Your application has been forwarded to a technical reviewer. Please note that the technical review, which is normally completed within 180 days for a renewal application (90 days for all other requests), may identify additional omissions or require additional information. If you have any questions concerning the processing of your application, our contact information is listed below:

Region I
U. S. Nuclear Regulatory Commission
Division of Nuclear Materials Safety
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713
(610) 337-5260, (610) 337-5313,
(610) 337-5398, or (610) 337-5239