

Materials Licensing Branch
United States Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Suite 210
Lisle, Illinois 60532-4352

June 5, 2012

To Whom It May Concern:

Please find enclosed a license renewal application and completed NRC Form 313, original plus one copy, for Michigan Technological University license number 21-00278-02, Docket Number 030-00810. If you have any questions or would like additional information please feel free to contact me via email or telephone.

Sincerely,



Dr. Allen Niemi, Director, RSO
Occupational Safety and Health Services
Email: anniemi@mtu.edu
Phone: (906)487-2118
AN
Enc.

RECEIVED JUN 08 2012

APPLICATION FOR MATERIALS LICENSE

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-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-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 APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
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
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

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

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 21-002778-02

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

Michigan Technological University
1400 Townsend Dr
Houghton, Michigan 49931

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Michigan Technological University
1400 Townsend Dr
Houghton, Michigan 49931

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Allen Niemi

TELEPHONE NUMBER

(906) 487-2118

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 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 (See 10 CFR 170 and Section 170.31)

FEE CATEGORY **Exempt** AMOUNT ENCLOSED \$

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, 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 82 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

Allen Niemi, Director

SIGNATURE

Allen Niemi

DATE

6/5/2012

FOR NRC USE ONLY

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

License Renewal Application

for

NRC # 21-002778-02

Michigan Technological University

1400 Townsend Drive

Houghton, MI 49931

June 5, 2012

Docket No. 030-00810

Item 5, Radioactive Material

| Nuclide | Chemical/physical form | Maximum Possession Amt |
|------------------------|--|--|
| A. Hydrogen-3 | Any | A. 30 millicuries |
| B. Carbon-14 | Any | B. 30 millicuries |
| C. Phosphorus-32 | Any | C. 25 millicuries |
| D. Phosphorus-33 | Any | D. 20 millicuries |
| E. Sulfur-35 | Any | E. 15 millicuries |
| F. Cobalt-57 (New) | Plated onto palladium foil incorporated into a sealed Mössbauer source (New) | F. 25 millicuries for storage only (New) |
| G. Cesium-137 | Any | G. 0.1 millicuries |
| H. Cesium-134 (Remove) | Any (Remove) | H. 0.1 millicuries (Remove) |
| I. Barium-133 (Remove) | Any (Remove) | I. 1.0 millicuries (Remove) |
| J. Nickel-63 | Foils or plated sources incorporated in a compatible gas chromatograph | J. 200 millicuries Note: this is an increase from current license limit. |

The university has no inventory of the nuclides requested for removal from our license, above, and no need for their use in the future.

Item 6, Purpose For Which Licensed Material Will Be Used

Items A through E are used in a wide variety of biological and water ecology research in our Biology, Civil and Environmental Engineering, and Forestry Departments. **Item F is a commercial device, not previously required to be licensed, used as part of a Mossbauer effect demonstration in our Physics Department.** Items G and J are sealed sources used in some liquid scintillation counters and gas chromatographs, respectively. The names of the authorized users on our current license are listed below with notations for the removal of some inactive and retired users. We are not seeking any changes in possession limits other than an increase in the Nickel-63 limit noted in the table above, which is to allow an increase in the number of gas chromatographs utilizing electron capture tubes on our campus.

| User Name | Authorized Use |
|--|--|
| Gary P. Agin, Ph.D. (remove) | All |
| Donald A. Daavettila (remove) | All |
| John H. Adler, Ph.D. (remove) | Hydrogen-3 and Carbon-14 |
| Donald R. Lueking, Ph.D. (remove) | Phosphorus-32, Hydrogen-3, Carbon-14, Sulfur-35 |
| Pushpalatha P. Murthy, Ph. D. (remove) | Phosphorus-32, Hydrogen-3, Carbon-14 |
| David L. Perram | Licensed material in Item 7.J. in gas chromatograph |
| Allen Niemi, Ph.D. | Hydrogen-3, Carbon-14 |
| Noel R. Urban, Ph.D. | Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 |
| Martin T. Auer, Ph.D. | Hydrogen-3, Carbon-14, Phosphorus-33 |
| Chandrashekar P. Joshi, Ph.D. | Carbon-14, Hydrogen-3, Phosphorus-32, Phosphorus-33, Sulfur-35 |
| Chung-Jui Tsai, Ph.D. (remove) | Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 |
| Ramakrishna Wusirika, Ph.D. | Phosphorus-32, Phosphorus-33, Hydrogen-3, Carbon-14, Sulfur-35 |

Item 7, Individuals Responsible For Radiation Safety Program And Their Training Experience

1. Rudy Luck, Ph.D., associate professor, Department of Chemistry, and chair of the Radiation Safety Committee has been involved in research using x-ray diffraction for many years.
2. Allen Niemi, Ph.D., Director of Occupational Safety and Health Services and RSO has been active in implementing all phases of the radiation safety program at Michigan Technological University since 1994, first assisting then-RSO Donald Daavettila, and then taking over as RSO.

Item 8, Training For Individuals Working In Or Frequenting Restricted Areas

The basic element of the training program is the Documented Responsible User (DRU), aka Authorized User. These persons have been authorized by the NRC to use isotopes in their

research and specifically named in our license. The DRUs are responsible for selecting, training, and supervising their workers.

In general, worker training begins with a three-volume video series covering radiation hazards and protection, NRC regulations, and general laboratory protocols. The DRU provides hands-on training in procedures specific to their particular lab and research.

An annual refresher training program is conducted for all who work directly with licensed materials which includes specific regulatory issues and emergency procedures as well as an opportunity to ask questions. This training is conducted by the Radiation Safety Officer with assistance from the DRUs. . The radiation safety program rules are outlined in a radiation safety manual that is provided to each authorized user (DRU) and is available online at <http://www.sas.it.mtu.edu/fm/oshs/pdf/RadSafetyMan2012.pdf>.

Ancillary workers involved in maintenance, security, and package receipt are given training specific to their roles and potential exposures.

Item 9, Facilities And Equipment

Each radioisotope laboratory has a spill kit, a survey meter suitable for the radiation involved, and radioactive waste containers. All laboratories are isolated from other parts of the building by locking doors, fume hoods, chemical work benches, wash sinks, and emergency response and communication facilities.

The university maintains a master survey meter (Victoreen 440B) that is calibrated annually by an off-campus firm.

Item 10, Radiation Safety Program

Radiation safety program oversight is provided by the radiation safety committee, which to date has met once per quarter except for the summer quarter when most faculty were off. Due to a change from quarters to semesters and the much smaller scale of research activity using radioactive materials **we propose that future radiation safety committee meetings be held at least twice per year** rather than quarterly. The radiation safety committee chair is appointed by

the VP for Research and reports to the VP via the Executive Director of Compliance Integrity and Safety in that role.

Audits are performed by the RSO at least once per year in each laboratory to ensure that the safety and security procedures and records are in order, a contamination spot check, and that workers understand the importance of working safely. The results of these inspections are documented and discussed during the next radiation safety committee meeting.

Each DRU is responsible for implementing the program in their laboratory, including a working survey meter. A radiation meter maintained by the RSO is calibrated annually and this instrument is used to verify the operation of the instruments used for contamination detection in the laboratory.

Radioisotope purchases are initiated with an approval request to the RSO, who reviews the request to ensure that the DRU is approved for that isotope, the purchase will not exceed their personal possession limit, and it will not cause the university to exceed its total possession limit. After RSO approval the DRU is free to place their order. The radioisotope package is received at the main department office by staff that have been given training in basic radiation safety, how to recognize isotope packages and potential indications of damage. At no time is the package allowed to be left unattended unless it is in a secure location. The DRU or one of the lab workers is immediately notified to pick up the package and they follow the package contamination procedure outlined in 10 CFR part 20. A record of the contamination survey is maintained in the laboratory. Each isotope laboratory has inventory log books, a hot sink log, and radioactive waste storage records.

Radiation exposure monitoring badges are routinely used by those working with radioactive materials even though measurable exposures are unlikely. Because many of the isotope use areas are located in labs where unrelated research work is also performed, all exposures are maintained at or below those allowable to the public. This is confirmed via radiation badge exposure readings for those working directly with isotopes.

All transportation of radioisotopes incidental to research and waste management is performed manually on foot and never by motor vehicle using public roadways. Liquid isotopes transported between laboratories are always placed in sealed containers.

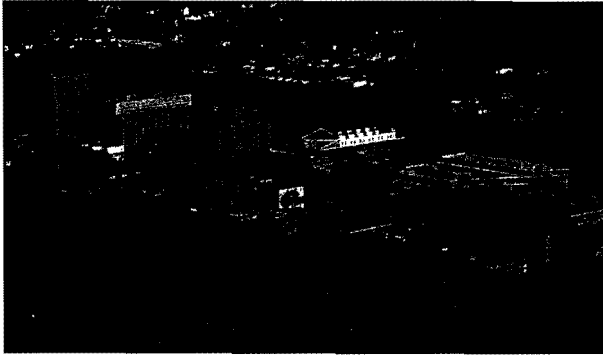
Radioisotope users are trained in general radiation safety, safe handling and laboratory procedures, and emergency procedures. Each laboratory has a spill kit and a nearby secure shower for removing personal contamination. Contamination minimization is accomplished by the performance of daily personal and area checks using a survey meter and/or swipe tests and area swipe tests at least monthly.

Item 11, Waste Management

Isotopes that are not disposed in the sewer or held for decay are stored in designated laboratory waste containers for removal by a radioactive waste disposal contractor. Logs and records are maintained for all waste, which includes amounts, types, and disposal method (sewer via hot sink, held for decay, held for contractor removal). Waste held for decay in storage is surveyed prior to disposal in the regular trash and all applicable records are maintained.

MichiganTech

Michigan Technological University
1400 Townsend Drive, Houghton, MI 49931-1295



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MAILED FROM ZIP CODE 49931



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Region III
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Lisle, Illinois 60532-4352