

May 22, 2010

Attn: Mr. Loren Hueter  
United States Nuclear Regulatory Commission  
Region III  
Licensing Section, Suite 210  
2443 Warrenville Road  
Lisle, Illinois 60532-4352

Re: Request a license amendment for Rose-Hulman Institute of Technology (RHIT).

Dear Mr. Hueter,

This communication is to request an amendment to our license 13-17582-02.

The two main points addressed in this communication are; addition of Tritium (H-3) in steroid form to our license, and permission to add Dr. Ross Weatherman's name to the list of people who are allowed to supervise the use of radioactive sources under our license (other two being myself and Mr. Albert McGarvey). I will provide a supporting narrative along with necessary documentation that will hopefully illustrate the steps we have taken to comply with the necessary and relevant regulations.

#### **Proposed Source to be Used**

| <u>Nuclide</u> | <u>Chemical Form</u> | <u>Max mCi/Order</u> | <u>Storage (mCi)</u> |
|----------------|----------------------|----------------------|----------------------|
| H-3            | Steroid              | 0.05 mCi             | 0.25 mCi             |

#### **User Background**

Prof. Weatherman has been a user of radioactivity in biochemical research projects since 1991. He was director of a project similar to the work proposed here while a professor from 2001-2009 at Purdue University and has had a number of students under his supervision who were approved users of radioactive materials. He is now a tenure track faculty member in the chemistry department at Rose-Hulman Institute of Technology.

#### **Purpose of the Project and Safeguards**

The proposed use for the radioactive source is to use tritium-radiolabeled steroid hormone compounds in receptor binding assays. The ligand will be added to a mixture of receptor and the above mentioned compound and allowed to incubate. The mixture will then be centrifuged through a micro-spin column to isolate the radiolabeled ligand the bound receptor. Liquid scintillant will then be added and the radioactivity will be counted in a liquid scintillation counter. Twenty-five *ng* purified human estrogen receptor will be incubated with 1 nM 3H-estradiol and unlabeled competitor in tubes. After 1 hour incubation in the tubes, the solutions will be transferred to the micro spin columns and centrifuged for 15 minutes. The columns will be discarded and the liquid in the tubes will then be transferred to a scintillation vial and counted. Additionally,

- No reactions which will change the form of the labeled material are part of the measurement, and
- There is no chance that radioactive gas or particulates will be formed

Swipe tests will be performed using a scintillation counter present in the lab

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## Storage and Containment

This work will be carried out in a lab at the West Campus. Appropriate Warning and Safety signage will be displayed on the doors that lead in and out of the lab.

Labeled compounds will be stored in freezer compartment of refrigerator with appropriate warning labels. Work will be done on a bench labeled with radiation warning tape. Absorbent paper will be used on the radiation benches to prevent spills from spreading. Additionally, the following precautions and procedures will be employed to keep the exposure as low as reasonably achievable.

- a. Everyone will wear the necessary safety equipment such as gloves, safety glasses and lab coats dedicated solely to radioisotope work.
- b. Radioisotope work will be confined to dedicated benches to minimize exposure.
- c. Material will be stored in a lockable freezer in a locked lab to be unlocked by only authorized personnel
- d. Dedicated pipettes and safety equipment will be used for radioisotope work and not allowed to leave that bench.

We thank you for considering this amendment request and we will promptly provide any additional information that you may require to complete your evaluation. Please contact Maarij Syed (RSO) at 812 877 8957 with any questions regarding the issues in this correspondence.

Respectfully,



Maarij Syed  
RSO  
Off: 812 877 8957  
Fax: 812 877 8023

**ROSE-HULM**  
INSTITUTE OF TECHNOLOGY



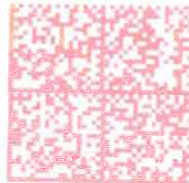
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