



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE

Northwest Fisheries Science Center  
2725 Montlake Boulevard, East  
Seattle, WA 98112-2097

RECEIVED

June 4, 2010

JUN 10 2010

DNMS

Nuclear Materials Licensing Section  
U.S. Nuclear Regulatory Commission, Region IV  
612 E. Lamar Blvd., Suite 400  
Arlington, TX. 76011-4125

**Re: License Amendment Requests for NRC Materials License, License number 46-06377-04, Docket number 030-08203**

NOAA's Northwest Fisheries Science Center is requesting the following one change to the above-referenced license:

The Northwest Fisheries Science Center is requesting temporary jobsite authorization in order to conduct a field-based radioactive material protocol outside of the building where we presently hold our license. There are several key facts regarding this protocol. First: the isotope is Tritium. Secondly, a limited quantity of Tritium transported to a temporary jobsite is less than 200 microCuries per trip. Finally, all Tritium used will be contained within an impermeable container with absorbent material and will remain in the government van utilized to transport it. Details of a representative protocol are provided in the attachment.

If you have any questions or need additional information, please contact Ann Byar at (206) 499-6618 or Dr. William Reichert at (206) 860-3344.

Sincerely,

*S. Varanasi* 6-4-10  
for

Usha Varanasi, Ph.D.  
Science and Research Director  
Northwest Fisheries Science Center  
2725 Montlake Boulevard, East  
Seattle, WA 98112-2097



## **Proposed Procedure for Heterotrophic Production Measurements Using $^3\text{H}$ -leucine**

**Purpose:** To measure heterotrophic production in marine water samples.

**Limitation:** Production needs to be measured as soon as water samples are collected; samples that are stored cold or frozen before measurement will not result in accurate representation of in-situ production. Therefore, incubation with radiolabeled amino acid needs to be performed in the field.

**Reference:** Smith DC, Azam F (1992) A simple, economical method for measuring bacterial protein synthesis rates in seawater using  $^3\text{H}$ -leucine. *Mar. Microb. Food Webs* 6:107-114. (This is a widely used protocol for measuring productivity.)

### **Isotope preparation:**

- All of these procedures will be performed in a laboratory certified for radioisotope use and routinely monitored by the Radiation Safety Officer (Montlake room 413E).
  - Only personnel trained and certified to handle radioisotopes will conduct these procedures.
  - The total activity needed per trip will be  $\leq 37 \mu\text{Ci}$ .
1. Purchased isotope will be  $^3\text{H}$ -leucine (L-leucine,  $[4,5-^3\text{H}]$ , 4.44-7.03 TBq / mmol; PerkinElmer NET1166005MC).
  2. Purchased stock isotope will be diluted with distilled water to yield 20 nM leucine concentration.
  3. Diluted isotope will be dispensed into 2 ml screw-cap tubes (with O-rings) at  $\sim 1 \mu\text{Ci}$  per tube ( $\sim 20 \mu\text{l}$  of diluted isotope, depending on exact specific activity).
  4. Caps will be securely replaced, and tubes placed upright into a plastic, microfuge storage box. Tubes will be stored at  $< 4^\circ\text{C}$  until incubation.

### **Transport between lab and field:**

- The vehicle to be used is program-specific (i.e., not located in a general motor pool or released for use by other drivers), and it can be quarantined after each trip. (We control the keys and use.)
- All supplies and equipment will be transported in an off-the-shelf clear plastic box with a latching lid (see appendix A for an example). A box of this type can be safely moved into and out of the vehicle, and can be secured during transport.
- A commercially available spill clean-up kit will be carried in the vehicle.
- The 2 ml sample tubes, the tube storage box, and the waste containers will be labeled with radioactive warning tape. The exterior of the containment box will not be labeled, but the clear plastic will allow the warning tape to be visible from a close range.
- When researchers are not inside or within sight of the vehicle, all doors shall be locked.

### **Inoculation and incubation:**

- These procedures will be performed within the plastic containment box inside a vehicle in the field.

- Because the aerosol risk is very low (no vortexing, tube inversion, or pipet mixing required; tube caps include O-rings), a hood-type box was not necessary.
  - The interior base of the box will be covered with absorbent paper.
  - A disposal bag for non-liquid radioactive waste (e.g., pipet tips, gloves) will be included in the box.
  - An impervious rubber map will be positioned on the floor of the vehicle under the containment box.
  - Operator will wear disposable gloves, safety glasses, disposable shoe covers, and disposable lab coat.
  - Only personnel trained and certified to handle radioisotopes will conduct these procedures.
1. Ambient water for incubation bath (500 mL) will be placed into a small Styrofoam container and placed inside of the containment box.
  2. Water samples will be transported into the containment box in screw-cap 15 ml tubes.
  3. To each 2 ml tube containing  $^3\text{H}$ -leucine, 1.5 ml of water will be added with a disposable barrier tip pipet. Pipet tips will then be ejected into the radioactive waste container located in the containment box.
  4. Caps will be secured on the 2 ml tubes, and the tubes placed in a floating, plastic tube rack into the incubation bath.
  5. The bath will be covered with a lid, and incubation continued for 1 hour.
  6. Tubes will be removed from the floating rack and 89  $\mu\text{l}$  of 100% trichloroacetic acid will be added.
  7. Tubes will be stored upright in a plastic box on ice for transport back to the lab.
  8. Bath water will be transferred into a wide mouth, screw-cap jar for transport back to the lab for testing.
  9. At the end of sample processing, gloves will be disposed into the radioactive waste container in the containment box.

**Monitoring field equipment:**

- This monitoring will be performed immediately upon return to the lab.
1. The following areas will be monitored with wipe samples:
    - each vehicle door handle (interior and exterior)
    - steering wheel
    - vehicle keys
    - exterior of containment box
    - impervious rubber mat beneath the containment box
    - interior of containment box (once everything is removed)
    - incubation bath water
  2. Results of the wipe survey will be reported to and retained by the Radiation Safety Officer.

**Sample analysis:**

- All of these procedures will be performed in a laboratory certified for radioisotope use and routinely monitored by the Radiation Safety Officer (Montlake room 413E).
- Only personnel trained and certified to handle radioisotopes will conduct these procedures.

- All micropipet tips will be disposed into a dry radiation waste container.
  - The microfuge will have a dedicated rotor with a sealing lid. Before the body of the microfuge is removed from the work area, the rotor will be removed and the body will undergo a thorough wipe survey by the Radiation Safety Officer.
1. Incubated samples in 2 ml tubes will be centrifuged at 16,000xg for 10 min.
  2. Supernatant will be manually aspirated with a micropipet and disposed into radioactive liquid waste container.
  3. 1.5 ml of 5% trichloroacetic acid will be added to each sample tube, and the tubes will be centrifuged at 16,000xg for 10 min.
  4. The second supernatant will be manually aspirated with a micropipet and disposed into radioactive liquid waste container.
  5. 1.5 ml of 80% ethanol will be added to each sample tube, and the tubes will be centrifuged at 16,000xg for 10 min.
  6. The third supernatant will be manually aspirated with a micropipet and disposed into radioactive liquid waste container.
  7. 0.5 ml of scintillation cocktail will be added to each sample tube.
  8. The sample tube will be placed into a 7 ml plastic scintillation vial with a screw cap, and read in the scintillation counter located in room 421E at Montlake.
  9. Waste disposal: L-leucine is soluble in water in a 2.4% solution. The maximum disposed concentration of L-leucine used will be 0.000000262% (in water).

#### **Emergency procedures**

1. If a spill occurs, the Radiation Safety Officer will be immediately notified. Spills outside of the containment box are not likely to occur, because all procedures will be conducted inside of the box. All spills will be immobilized by absorbent pads, which will be disposed into the waste bag located in the plastic containment box.
2. The Radiation Safety Officer will be immediately notified of any positive wipe samples obtained from monitoring after the field trip.

Appendix A. Example of a containment box with a lid that can be secured.

[Sign Up For Emails](#) | [Member Account](#) | [Clear Storage](#) | [Log In](#)

[LEARN MORE](#)

[Home](#) | [Browse by Product](#) | [Browse by Room](#) | [Organizing Ideas](#) | [Where to Buy](#) | [Community](#)

[SEARCH](#)

[View All](#) | [Clear Storage](#) | [Clear Storage Premium Latch Containers](#)

**Clever Store Premium Latch - Clear Lid**

Clever Store containers have a straight wall design that maximizes storage space. Featuring a clear lid with a latch, these containers are the perfect solution for the home and office. They have a sturdy design and are made from high-quality plastic. The premium latch has a reinforced internal structure for extra strength and safety. The reinforced latch is designed to hold up to 100 lbs. for easy stacking.

Not available for purchase on Rubbermaid.com. View Other Shopping Options.

**Premium Latch - Clear Lid** [ENLARGE](#)

| Item No. | Description                                 | Size                        | Color                    |
|----------|---------------------------------------------|-----------------------------|--------------------------|
| 3300     | Clever Store Premium Latch Clear Lid 15 qt. | 15.7" L x 11.3" W x 8.7" H  | <input type="checkbox"/> |
| 3301     | Clever Store Premium Latch Clear Lid 20 qt. | 16.7" L x 13.3" W x 11.3" H | <input type="checkbox"/> |
| 3302     | Clever Store Premium Latch Clear Lid 25 qt. | 18" L x 15" W x 12" H       | <input type="checkbox"/> |
| 3303     | Clever Store Premium Latch Clear Lid 30 qt. | 19.5" L x 16.5" W x 13" H   | <input type="checkbox"/> |
| 3304     | Clever Store Premium Latch Clear Lid 35 qt. | 20.5" L x 17.5" W x 13.5" H | <input type="checkbox"/> |
| 3305     | Clever Store Premium Latch Clear Lid 40 qt. | 22" L x 18.5" W x 14.5" H   | <input type="checkbox"/> |

**Join the Rubbermaid Club**

Get email newsletters with helpful tips, special offers, coupons & more.

[Sign Up Today](#)

**ACCEPTANCE REVIEW MEMO (ARM)**

**Licensee:** Dept of Commerce (NOAA) **License:** 46-06377-04  
**Docket:** 030-08203 **Mail Control:** 573024  
**Type of Action:** Amendment **Date of Requested Action:** 06/04/2010  
**Reviewer Assigned:** ARM reviewer(s): Cook, J.

| Response | Deficiencies Noted During Acceptance Review                                                                                                                                                                                                             |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p><b>[X] Open ended possession limits.</b> Submit inventory. <b>Limit possession.</b><br/> <b>[ ]</b> Submit copies of latest leak test results.</p> <p><b>REVIEWER: CONFIRM that no radioactive material will be released to the environment.</b></p> |

**Reviewer's Initials:** \_\_\_\_\_ **Date:** \_\_\_\_\_

- ☐ Yes ☐ No Request for unrestricted release Group 2 or >. Consult with Bravo Branch.  
☐ Yes ☐ No Termination request < 90 days from date of expiration  
☐ Yes ☐ No Expedite (medical emergency, no RSO, location of use/storage not on license, RAM in possession not on license, other)  
☐ Yes ☐ No TAR needed to complete action.

**Branch Chief's and/or HP's Initials:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**SUNSI Screening according to RIS 2005-31**

☐ Yes ☒ No **Sensitive and Non-Publicly Available** if any item below is checked

**General guidance:**

- \_\_\_\_\_ RAM = or > than Category 3 (Table 1, RIS 2005-31), use Unity Rule  
 \_\_\_\_\_ Exact location of RAM [suite #, bldg. #, location different from mailing address] (whether = or > than Category 3 or not)  
 \_\_\_\_\_ Design of structure and/or equipment (site specific)  
 \_\_\_\_\_ Information on nearby facilities  
 \_\_\_\_\_ Detailed design drawings and/or performance information  
 \_\_\_\_\_ Emergency planning and/or fire protection systems

**Specific guidance for medical, industrial and academic (above Category 3):**

- \_\_\_\_\_ RAM quantities and inventory  
 \_\_\_\_\_ Manufacturer's name and model number of sealed sources & devices  
 \_\_\_\_\_ Site drawings with exact location of RAM, description of facility  
 \_\_\_\_\_ RAM security program information (locks, alarms, etc.)  
 \_\_\_\_\_ Emergency Plan specifics (routes to/from RAM, response to security events)  
 \_\_\_\_\_ Vulnerability/security assessment/accident-safety analysis/risk assess  
 \_\_\_\_\_ Mailing lists related to security response

**Branch Chief's and/or HP's Initials:** MAC **Date:** 7/1/10

This is to acknowledge the receipt of your letter/application dated  
6-04-2010 and to inform you that the initial processing,  
which includes an administrative review, has been performed.

7-13-2010  
DATE

☒ There were no administrative omissions. Your application will be assigned to a technical reviewer. Please note that the technical review may identify other omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card:

The action you requested is normally processed within 90 days.

☐ A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 572034.  
When calling to inquire about this action, please refer to this mail control number.  
You may call me at 817-860-8103.

Sincerely,

*Colleen Murnahan*

Licensing Assistant

BETWEEN:

Accounts Receivable/Payable  
and  
Regional Licensing Branches

[ FOR ARPB USE ]  
INFORMATION FROM LTS

Program Code: 03620  
Status Code: Pending Amendment  
Fee Category: 3M  
Exp. Date:  
Fee Comments:  
Decom Fin Assur Req: N

## License Fee Worksheet - License Fee Transmittal

### A. REGION

#### 1. APPLICATION ATTACHED

Applicant/Licensee: COMMERCE, DEPARTMENT OF  
Received Date: 06/24/2010  
Docket Number: 3008203  
Mail Control Number: 573024  
License Number: 46-06377-04  
Action Type: Amendment

#### 2. FEE ATTACHED

Amount: \_\_\_\_\_  
Check No.: \_\_\_\_\_

#### 3. COMMENTS

Signed: \_\_\_\_\_

*Colleen Murnahan*

Date: \_\_\_\_\_

*6-24-2010*

### B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered / / )

1. Fee Category and Amount: \_\_\_\_\_

#### 2. Correct Fee Paid. Application may be processed for:

Amendment: \_\_\_\_\_

Renewal: \_\_\_\_\_

License: \_\_\_\_\_

3. OTHER \_\_\_\_\_  
\_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

A. Bayar, RSC

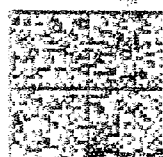
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL MARINE FISHERIES SERVICE  
NORTHWEST FISHERIES SCIENCE CENTER  
2725 MONTLAKE BOULEVARD EAST  
SEATTLE, WA 98112-2097

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

3 0 2 4

SEATTLE WA 98112

NOV 01 2010 PM 10



02 PM  
000425228 JUL07 2010  
MAILED FROM ZIP CODE 98112

Nuclear Materials Licensing Section  
U.S. Nuclear Regulatory Commission,  
Region IV  
612 E. Lamar Blvd., Suite 400  
Arlington, TX 76011-4125

760114125

000425228 JUL07 2010