



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Center for Coastal Environmental Health and Biomolecular Research
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

Br.2

39-19399-02
03017547

2009 JUL -9 AM 11:08

RECEIVED

Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Dear Sir:

Our Radiation Safety Program underwent a complete review and revision which I am submitting to replace the original Radiation Safety Program written in 1980. Though our program has not changed significantly our level of licensed material usage has decreased and the revised program manual incorporates updated NRC requirements.

If further information is required please contact me at 843-762-8521 or

Email john.bemiss@noaa.gov

Sincerely;

John A. Bemiss
RSO



143898
NPS/RCNI MATERIALS-002

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 Records and FOIA/Privacy 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
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

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 39-19399-02 **03017547**
- C. RENEWAL OF LICENSE NUMBER

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

**US Dept of Commerce NOAA
National Ocean Service
219 Fort Johnson Rd
Charleston, SC 29412-9110**

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

**US Dept of Commerce NOAA
National Ocean Service
219 Fort Johnson Rd
Charleston, SC 29412-9110**

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

John A. Bemiss

TELEPHONE NUMBER

(843) 762-8521

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 **N/A** AMOUNT ENCLOSED \$ **0.00**

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 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

John A. Bemiss

SIGNATURE

John A Bemiss

DATE

07/08/2009

FOR NRC USE ONLY

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

143898

RADIATION SAFETY PROGRAM

REVISION July 2009

National Ocean Service (NOS)

Hollings Marine Laboratory (HML)

and

Center for Coastal Environmental Health and
Biomolecular Research (CCEHBR)

219 Fort Johnson Rd
Charleston, SC 29412

*Note Hollings Marine Laboratory houses both State and Federal agencies, per NRC directive. State agencies within HML come under Agreement State control. Therefore, this program is only applicable to Federal agencies.

Radiation Safety Program

1. OBJECTIVE

Develop and implement a radiation protection program based on sound radiation protection principles in order to achieve doses as low as is reasonably achievable (ALARA).

2. REFERENCES

2.1 10 CFR part 20.1101

2.2 NUREG 1556

3. RADIATION SAFETY COMMITTEE

3.1 Purpose of Committee

The Radiation Safety Committee is a user oriented group concerning issues of safety and licensed material usage.

3.2 Committee

Due to the small scope of the licensed material usage at the CCEHBR facility the committee will be composed of the Radiation Safety Officer, Licensed Users and the Laboratory Safety Officer.

3.3 Responsibilities of the Committee

1. To ensure the safe use of licensed materials and radioactive devices within the CCEHBR facility.

2. Discuss NRC updates, notes, regulation changes and disseminate to supervised licensed material users.

3.4 Meeting of the Committee

The Radiation Safety Committee will meet on an as needed basis due to the low level of licensed material usage. Any

member of the committee can request a meeting at any time. As new licensed users are identified on the NRC license they then become members of the committee. The RSO will be responsible to record and post meeting discussions and notify the Laboratory Directory of any changes to the program.

4. RADIATION SAFETY OFFICER RESPONSIBILITIES

- 4.1 Provide users with copies of the radiation safety manual and copies of all pertinent record keeping forms.
- 4.2 Review on the basis of radiation safety and approve all requests for licensed materials or radiation devices.
- 4.3 Receive, catalogue, and survey all procured licensed material.
- 4.4 Provide a means of radioactive waste disposal for all laboratory users.
- 4.5 Train new users in the basics of radiation safety and laboratory practices.
- 4.6 Act as CCEHBR and HML representative with the NRC in issues of license renewal, amendments and inspections.

5. GENERAL USE OF LICENSED MATERIALS

5.1 Procurement of licensed materials

All licensed materials shall be procured through the RSO; this includes the so-called 'licensed exempt' radioactive materials refer to **SOP 3.0** "Procurement of Licensed Materials" for complete instructions.

5.2 Receiving licensed material

The RSO or designate (licensed user) shall receive and survey all licensed material prior to transfer to licensed user refer to

SOP 4.0 "Receiving Licensed Materials" for complete instructions.

5.3 Approval to use licensed materials or radiation producing devices.

1. Request **Form 4** "Request to Use Licensed Materials" can be obtained from the RSO and should be submitted in duplicate to the RSO. Approval will be determined based on completion of **Form 4** and a review by the RSO or designate.

5.4 Authorization of personnel to use licensed material

1. Personnel will be authorized usage based on past experience, type of work proposed and previous training.

2. The RSO will train the non-licensed user in the basics of laboratory radiation safety, concepts of contamination and contamination control. This training can be in the form of on line courses, DVD/tapes or hands on training.

3. The licensed user is responsible for training the non-licensed user in the specific bioassay or laboratory procedure using a specific licensed material. The licensed user shall submit the completed "Non-Licensed User Laboratory Proficiency Certification" **Form 2** to the RSO. The RSO will review and grant authorization to work without direct supervision in a restricted area with licensed material.

5.5 Authorization of laboratory space for the use of licensed material

Licensed materials are to be used only in those facilities cited in the NRC license. Laboratory space within the cited facility will be approved by the RSO and designated as a restricted area.

1. Designated laboratories will be posted as such by the RSO and only authorized individuals may enter via the electronic key system or keyed.
2. Each restricted area will be provided a properly calibrated monitoring instrument.
3. The RSO will ensure if necessary special shielding, handling tools are provided to ensure ALARA is achieved.
4. Radioactive waste generated in the restricted area will be removed by the RSO as needed.

6. LICENSED USER RESPONSIBILITIES

Those persons cited in the NRC license are responsible for the safe use of licensed material and over see the usage of non-licensed users (students, contractors, FTE's, visiting personnel)

- 6.1 Ensure monthly surveys are performed and copies are given to RSO. Surveys are performed for specific isotopes (e.g. P-32). Consult with RSO for requirements.
- 6.2 Notify RSO when licensed material can be removed from the inventory list due to usage or half life decay by providing the completed **Form 5** "Licensed Materials Work Sheet".
- 6.3 Ensure waste is properly segregated and notify the RSO when waste needs to be removed from the restricted area.

7. SPECIFIC RESPONSIBILITIES OF ALL USERS

It is the responsibility of all users to ensure ALARA is achieved.

- 7.1 Check work areas periodically for contamination and decontaminate when necessary.
- 7.2 Report immediately to RSO spills or other accidents involving licensed material.

- 7.3 Wear recommended personal radiation detection such as film badges when required. Use protective clothing, gloves and shielding when necessary. **Form 8** "Report of Missing Dosimeter" shall be completed by all users when needed.
- 7.4 Label radiation equipment; **do not** remove equipment or other material from the restricted area without RSO approval.

8. CLASSIFICATION OF WORK AREAS

Areas within CCEHBR designated as licensed material work areas shall have controlled entry and will be designated as restricted areas regardless of whether the dose level conforms to the standards of unrestricted areas.

- 8.1 Historically licensed material usage in CCEHBR has not exceeded a dose of 2 mrem/hr nor 100 mrem in 7 consecutive days or an annual dose of 500 mrem/year.
- 8.2 Restricted areas shall be posted with caution radiation area; access will be controlled via electronic keyed or keyed entry.
- 8.3 Work area classifications:
1. **Radiation Area:** dose in excess of .005 rem in 1 hour 30 cm from source.
 2. **High Radiation Area:** dose in excess of .1 rem in 1 hour 30 cm from source. (None classified as such in CCEHBR)
 3. **Very High Radiation Area:** dose in excess of 500 rads in 1 hour 30 cm from source. (None classified as such in CCEHBR)

9. RADIATION SAFETY PROCEDURES

In order to minimize contamination and prevent entrance of radioactive materials into the body the following rules shall be observed in the laboratory where unsealed licensed material is used. The goal is to achieve ALARA.

9.1 Protective rules for preventing personal contamination

1. Eating, drinking, food storage and application of cosmetics shall not be allowed nor shall food containers be used to store source materials.
2. Mouth pipetting is **forbidden**, remote devices shall be used.
3. Personnel shall not be permitted to work with open cuts and or abrasions. They must be covered.
4. Any source material subjected to volatilization must be confined to a suitable hood or glove box. In addition organic solvents may make skin more permeable and increase the potential for skin contamination. Gloves shall be worn with appropriate solvent resistance.
5. Dry runs should be conducted by licensed user when training non licensed users in bio-assays or other experimental procedures involving source material.
6. Monitoring of work area and hands should be performed upon completion of experimental procedures and all protective clothing and PPE shall remain in the restricted work area.
7. In order to protect the unborn, women in the radiation program have the option of requesting reduced exposure or reassignment. **SOP 1** "Declared Pregnant Woman" and **Form 1** "Declaring and Rescinding Pregnancy" are available to pregnant women and those planning a pregnancy.
8. The RSO or designate will provide **Form 9** "Radiation Exposure Report" to the user in the event of a reported unusual exposure. (CCEHBR in its history has never had an overexposure). Consult 10 CFR20 subpart C Occupational Dose Limits section 20.1201 Occupational dose limits for adults

2. Leak tests are to be performed by NRC or Agreement State authorized personnel. Copies will be kept by the RSO and a copy will be given to the sealed source user.

3. Levels of contamination cannot exceed .005 uCi. Leak tests > .005 uCi removable contamination, the source must be immediately removed and steps taken to prevent and control the spread of contamination.

4. Leaking sources must not be repaired by user but be either disposed of as radioactive waste or returned to the manufacturer for repair or disposal.

10.3 Sealed Source Labeling

1. Any sealed source containing by-product material (as defined by the NRC) which is used outside of its shielded container shall be labeled with an attached tag not less 1" x 1" bearing the radiation symbol and the words "**Caution Radioactive Material Do Not Handle-Notify Civil Authorities if Found**" color magenta/yellow.

2. Sealed sources mounted in devices or shields shall be tagged on the device or shield with "**Caution Radioactive Material**". Also the nuclide and date of the assay shall be included. Color magenta/yellow.

11. DISPOSAL OF RADIOACTIVE WASTE

It is the goal of the Radiation Safety Program to minimize waste generation. This can be accomplished by preplanning work and decay in storage for those isotopes (P-32) allowed by the NRC.

11.1 Waste Disposal Procedures

1. All waste must be collected by the RSO or designate. **No radioactive materials shall be disposed of directly into the sewage system or non-radioactive trash.**

9.2 Minimizing Contamination of Laboratory Facilities and Equipment

1. Contamination shall not be allowed to remain on working surfaces or floors. Contamination is considered to be amounts >100dpm beta/gamma activity and 20dpm alpha (area 10 cm x 10 cm) $dpm = cpm / \text{counting efficiency}$
2. Laboratory equipment used for licensed materials shall be monitored for contamination as part of the monthly survey or in the case of P-32 after each usage. Equipment with fixed contamination shall not be removed from the restricted area.
3. Care should be taken to minimize non essential equipment usage during research activities.
4. The use of auxiliary containers (non porous), blotters and disposable covers are recommended.

10. SEALED SOURCES

A sealed source is defined as a licensed material permanently encapsulated in plastic, glass, lacquer or some other material in order to prevent leakage with the intent to use the radiation emitted.

10.1 Handling sealed sources

1. Sealed sources are to be used only as designated by the manufacturer.
2. Handling of a sealed source **do not** use bare hands. When handling high activity (CCEHBR/HML has none on site) sources use remote handling tools

10.2 Leak Testing Sealed Sources

1. 10 CFR20 section 34.27 sealed sources shall be leak tested at 6 month intervals. The RSO will notify the user when test is required.

2. The RSO will collect all waste upon request of the users. The RSO will arrange for waste pick-up and disposal by a commercial contractor. The RSO will pack waste in accordance with waste contractor guidelines.

11.2 Dry Waste

1. All dry waste will be secured in a locked area and posted pending disposal.
2. Dry waste will be segregated, glass and metal in a container, paper, plastic and latex gloves in another. Scintillation vials will be placed in a separate container.
3. Radioactive emissions from any external surface of the storage container may not exceed 0.5 mrem/hr.

11.3 Liquid Waste

1. Liquid waste generated by the users must be stored and the RSO contacted for disposal.
2. Procedures for liquid waste disposal are covered in **SOP 5** "Discharge of Liquid Waste to Sanitary Sewer".
3. **Form 6** "Liquid Waste Discharge Work Sheet" shall be completed for each sewer discharge and placed in the master radiation file.

12. Emergency Procedures

12.1 The basics for responding to radiation emergencies are covered in **Supplement 1** "Radiation Emergency Procedures". These will be posted in all restricted areas for reference. It must be realized that each situation is unique; however the basic responses are the same for all.

National Ocean Service (NOS)
Center for Coastal Environmental Health and Biomolecular
Research (CCEHBR)
Hollings Marine Laboratory (HML)

Supplement 1

Radiation Emergency Procedures

Emergencies resulting from accidents in isotope laboratories may range from minor spill of radioactivity, involving relatively no personal hazard to major radiation incidents and spills, involving extreme hazards and possible bodily injury. Because of the wide range and variety of hazards, set rules of emergency procedure cannot be made to cover all possible situations. In any emergency, however the primary concern must be the protection of personnel from radiation hazards. The secondary concern is the confinement of the contamination to the local area of the accident if possible.

Note Accidental releases of activity into the environment **must be reported immediately** to the RSO or designate. The release will be evaluated and reported to the NRC, applicable surveys will be maintained by the RSO.

The following procedures are regarded as recommendations except with asterisks (*) which are required.

Minor Spills: Non Hazard to Personnel

1. Notify all other people in the area immediately. Notify the RSO or designate as soon as possible.
2. Permit only the minimum number of persons necessary to deal with the spill into the area.
3. Confine the spill immediately. Potential air borne, secure the building air system.
4. Liquid spills: wear protective gloves and use absorbent paper on spill.

5. Dry spills: wear gloves and use dampened absorbent paper on spill. Oil should not be used; water may be used provided air borne contamination will not result from any chemical reaction.

6.* Permit no one to resume work in the area until cleared by the RSO or designate.

Major Spills: Hazard to Personnel

It is unlikely that a major spill will occur considering the activity levels and quantities of isotope used at CCEHBR

1. Notify all other persons in the immediate area of hazard.
- 2.* Request persons not involved in the spill to vacate the area at once; notify the RSO or designate give details of spill.
3. Make no attempt to clean up the spill. If spill is liquid and hands are protected right the container.
4. If a spill is on the skin, flush thoroughly with cool water (do not use hot water which opens pores and may cause deeper skin contamination. Do not use cold water which closes pores preventing contamination removal) If spill is on clothing discard outer clothing at once in radiation waste container. RSO or designate will conduct surveys of skin areas to determine further action.
- 5.* Turn off all ventilation.
- 6.* Vacate the area and prohibit entrance to contaminated area. Permit no person to work in area until approval by RSO or designate is obtained
7. Under no circumstances should an untrained person attempt to examine or clean up the radioactive material.

Accidents Involving Radioactive Dusts, Mists, Fumes, Organic Vapors and Gases

The potential for this occurrence at CCEHBR is low considering the type of research, activity, quantity and chemical form of isotopes used.

1. Notify all those not involved in the spill to vacate the immediate area.
- 2.* Holding breath, close all windows and escape valves. Secure air circulating system if time permits
3. Vacate the area.
- 4.* Notify the RSO or designate ASAP.
5. Ensure all doors giving access to the area are closed and locked if possible. If not it may be necessary to post guards to prevent access.
- 6.* Do not enter the area until approval of the RSO or designate is obtained.

Fires Involving Radioactivity

- 1.* Pull the fire alarm
2. Attempt to put out small fires if radiation hazard is not an immediate threat.
- 3.* Notify the RSO or designate via the lab intercom system.
4. Direct fire fighting or other emergency activities until RSO or designate is on the scene and inform as to radiation type, quantity and form.

Injuries to Personnel Involving Radiation Hazards

1. Wash minor wounds immediately with **cool running water** (do not use hot or cold) spread edges of gash type wounds

2. * Notify the RSO or designate and who will arrange for medical attention if required (EMS). The RSO will inform EMS of radiation hazard conditions.

3. Permit no person involved in a radiation injury to return to work without approval of the RSO or designate

4. The radiation safety committee will evaluate any accidents to determine measures to prevent a reoccurrence.

Over- Exposure or Ingestion

A review of historical annual dose reports NRC form 5 indicates over exposure is a low risk at CCEHBR, however ingestion involving any quantity is a potential risk when working with isotopes

1. * Any person who suspects over-exposure to radiation from any source must report immediately by phone or in person to the RSO or designate. Exposure in excess of 1.25 rem whole body delivered in a period of 13 weeks or less is regarded as an over exposure for purposes of this safety manual.

2. * Any person who swallows, injects, absorbs occupational radioactive materials must report the intake to the RSO or designate who will refer person to the appropriate medical professionals.

Spill kits designed for radioactive spills are located in the restricted areas.

Spill reminder for action SWIMS

S Stop the spill

W Warn others

I Inhalation prevention secure air system

M Measure activity

S Secure the area

**Contact: John Bemiss (Radiation Safety Officer) 8521
Rick Meitzler (Laboratory Safety Officer) 8842**

**National Ocean Service (NOS)
Center for Coastal Environmental Health and Biomolecular
Research (CCEHBR)
Hollings Marine Laboratory (HML)**

Supplement 2

Radiation Emergency Procedures/ STOP work authority

The Radiation Safety officer or designate has the authority (in concurrence with the Laboratory Director) to stop all work in the restricted work areas when procedures or conditions pose a threat to safety. Off limit postings will be made on all entrances to the affected restricted areas. Only the Radiation Safety Officer or designate has the authority to remove a stop work order when conditions have been determined to no long pose a threat to safety.

The above statement pertains to the entire laboratory radiation activities in Charleston, SC.

Supplement 3

Radiological Safety Instructions for Radioactive Animals

1. Objective

This instruction delineates the required procedures for handling animal subjects and animal material that are radioactive.

2. References

1.1 10 CFR part 20 Standards for Protection against Radiation

1.2 NRC license 39-19399-02

1.3 NUREG-1556, Vol 7 Appendix H

3. Responsibilities

3.1 Scientific personnel shall comply with disposal procedures described in radiation safety program.

3.2 Animal caretaker personnel shall manage all animal housing areas and storage areas for animal carcasses.

3.3 All persons handling radioactive animals and animal materials shall comply with the handling techniques described below.

4. Contamination Control and Waste Handling

4.1 Radioactive animals are those that have been injected, activated or contaminated; any animal that contains < .05 uCi/gram of H-3 or C-14 may be disposed of as general waste.

4.2 Study animals shall be housed separately from other animals.

4.3 The facility, stalls or cages shall be secure to prevent unauthorized access to animals.

4.4 Individuals caring for study animals should wear gloves, lab coats and eye protection if needed. Wash hands after contact with animal or litter.

4.5 Bedding material and animal waste may contain radioactivity, therefore should be properly disposed of (place in rad waste container).

4.6 Animal carcass shall be placed in rad waste bag and placed in freezer designated for licensed material. The RSO will arrange disposal via waste carrier. Animals will be tagged; tags may be obtained from the RSO.

4.7 Animals exposed to licensed material that have not been sacrificed shall not be released into the general animal population without first consulting the RSO or designate. Dose levels to the general public must conform to levels specified in 10 CFR 20.1301.

4.8 Pregnant women should avoid any contact with the animal or its urine/or feces.

4.9 The RSO or designate will post the animal area as required by the NRC and any posting removal is the responsibility of the RSO.

5. Training

5.1 Per UREG 1556 training may be in the form of videos which cover:

- A. principles and practices of radiation protection
- B. radioactive measurements, monitoring techniques, and using instruments
- C. biological effects of radiation
- D. It is the responsibility of the licensed user overseeing the experimental procedure to train non licensed users in the specifics of the procedure. It is recommended dry runs be performed prior to using dosed animals. Form 2 "Non licensed user laboratory proficiency certification" must be completed and submitted to the RSO prior to any work being performed.
- E*. Required animal species-related training

*This training will NOT be administered by the RSO; laboratory procedures using animals will be administered by the licensed user overseeing animal dosing.

For a more comprehensive guideline consult NUREG 1556 Vol 7 Appendix H

Reference 2.1 further requires CCEHBR to monitor occupational exposure to radiation and to require the use of individual monitoring devices by declared pregnant women who are likely to receive greater than 10% of the applicable dose limit in one year from sources outside the body. CCEHBR must also monitor occupational intakes of radioactive material and assess the dose from the intake to declared pregnant women who are likely to receive a committed effective dose equivalent greater than 50 mrem in 1 year.

Operations involving sources of radiation at CCEHBR are not expected to result in exposure to workers. Worker exposure at CCEHBR have been < 10% of the applicable dose limit for all monitored workers over the past 10 years, therefore no special precautions are necessary. The scope of activities authorized under CCEHBR radioactive material license indicates that no special actions are necessary for pregnant women.

Information concerning biological risks should be obtained from the RSO. It is the responsibility of the worker to notify the company of the pregnancy condition if desired. The declaration may be rescinded at any time and for any reason. A female employee who expects to become pregnant within the next 30 to 60 days may request placement into the "Expectant Pregnant" category. This category restricts radiation exposure to the limits stated above. Notification of the workers supervisor is required every sixty days in order to continue in this category.

Although it is unlikely that employees will receive a significant dose of radiation as discussed above, CCEHBR employees who are authorized to use radioactive material may choose to declare their pregnancy, if they so desire. CCEHBR Declared Pregnant women policy allows a woman to declare that she is pregnant or attempting to become pregnant. This declaration must be in writing to either her supervisor or the RSO, and confidentiality shall be maintained. CCEHBR personnel involved in the process of implementing this procedure shall maintain the confidentiality of the worker.

Although not required by 10 CFR 20 or necessary based on the potential for radiation exposure, if requested by the declared pregnant

woman CCEHBR may reassign the individual to activities that do not involve working with, or in the vicinity of licensed sources.

6. INSTRUCTIONS

6.1 Worker Process for Declaring Pregnancy

6.1.1 Notify the RSO of the desire to declare pregnancy

6.1.2 INITIATE Form 1 Declaring and Rescinding Pregnancy and forward to RSO

6.2 RSO Post-declaration Requirements

6.2.1 ARRANGE for a meeting with the worker to discuss the Radiological risks (Reference 2.2) and the declaration process.

6.2.2 DETERMINE the appropriate exposure controls needed for the worker, if any and ensure that the worker acknowledges these controls in writing.

6.2.3 If the exposure controls impede the workers' normal functions, then notify the workers supervisor of the restrictions

6.2.4 COMPLETE Form 1 Declaring and Rescinding Pregnancy.

6.2.5 MAINTAIN the complete form on file. Provide a copy of the completed form to the worker. Information will remain confidential.

6.3 Worker Process for Rescinding Pregnancy Declaration

6.3.1 NOTIFY the RSO to rescind the declaration.

6.3.2 OBTAIN original Form 1 from the RSO and COMPLETE Section II

6.3.3 Maintain the completed form on file.

6.4 RSO Responsibility after the Worker Rescinds Pregnancy

6.4.1 MEET with the worker and ensure that the worker completes Section II of Form 1 Declaring and Rescinding Pregnancy.

7. FORMS AND ATTACHMENTS

7.1 Form 1--- Declaring and Rescinding Pregnancy

National Ocean Service (NOS)
Center for Coastal Environmental Health and Biomolecular Research
(CCEHBR)
Hollings Marine Laboratory (HML)

Standard Operating Procedure

Routine Radiological Surveys

SOP 2.0

Revision 0

RSO Approval: John Benn Date: 4/28/09
Management Approval: J. Curran Date: 4-28-09

Routine Radiological Surveys

1. OBJECTIVE

The objective of this procedure is to provide guidance in performing routine radiation and contamination surveys of the CCEHBR facility. Surveys to support decommissioning of the CCEHBR facility are beyond the scope of this procedure because of the different objectives, contamination limits, documentation requirements, etc. that may apply to the decommissioning surveys.

2. REFERENCES

- 2.1 CCEHBR Radiation Safety Program
- 2.2 10 CFR Part 20 Title Code of Federal Regulations Part 20
- 2.3 US Nuclear Regulatory Commission Procedures (NRC) IEC-81-07, Control of Radioactively Contaminated Material, May 14, 1981
- 2.4 NRC Health Physics Position Paper HPPOS_072 (PDR-9111210170), Guide on "how Hard you Have to Look" as Part of Radioactive Contamination Control Program.
- 2.5 American National Standards Institute, ANSI n.323A "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments".

3.

This procedure establishes the guidelines for receiving licensed material at the CCEHBR facility. The goal is to ensure accountability, prevention of loss of control of licensed material, prevention of unplanned exposure and the prevention of potential contamination within the CCEHBR facility.

National Ocean Service (NOS)
Center for Coastal Environmental and Biomolecular Research
(CCEHBR)

STANDARD OPERATING PROCEDURE

Procurement of Licensed Materials

SOP 3.0

Revision 0

RSO Approval: John Bern Date: 1/28/09
Management Approval: D. Brown Date: 4-28-09

Procurement of licensed Materials

1. OBJECTIVE

The objective of this procedure is to provide guidelines for licensed material ordering and subsequent accountability and compliance with the CCEHBR NRC license.

2. REFERENCES

2.1 CCEHBR Radiation Safety Program

2.2 10 CFR part 20

2.3 NRC license #39-19399-02

3. DISCUSSION

CCEHBR is committed to meeting the requirements set forth in the NRC license stating allowable licensed material, form and quantities. This guide establishes procedures for meeting those requirements.

4. INSTRUCTIONS

4.1 Obtain a Procurement Request Form CD- 435

4.2 Only licensed users cited on the NRC license #39-19399-02 shall sign the CD-435 section "Title of Requesting Authorization Official". This must be signed prior to order processing.

4.3 Complete CD-435 listing licensed material and quantity.

4.4 CD-435 shall be given to the RSO who will authorize order after reviewing the NRC license and current licensed material inventory.

4.5 Provided request is within the NRC license the RSO will forward signed and dated CD-435 to procurement. A copy will be returned to the licensed user.

Note: Procurement has been instructed not to process any CD-435 that does not have RSO signature.

National Ocean Service (NOS)
Center for Coastal Environmental Health and Biomolecular Research
(CCEHBR)
Hollings Marine Laboratory (HML)

Standard Operating Procedure

Receiving Licensed Materials

SOP 4.0

Revision 0

RSO Approval: John Dem Date: 4/28/09
Management Approval: J. Loren Date: 4-28-09

Receiving Licensed Material

1. OBJECTIVE

The objective is to establish procedures for receiving licensed material shipped to the CCEHBR facility.

2. REFERENCES

2.1 CCEHBR Radiation Safety Program

2.2 10 CFR Part 20 Title Code of Federal Regulations 20.1906

2.3 NRC license #39-19399-02

3. DISCUSSION

This procedure establishes the guidelines for receiving licensed material at the CCEHBR facility. The goal is to ensure accountability, prevention of loss of control of licensed material, prevention of unplanned exposure and the prevention of potential contamination within the CCEHBR facility.

4. INSTRUCTIONS

4.1 Licensed material is typically shipped via UPS or Fedex and deliveries are made to the front desk. Upon receiving the receptionist shall call the RSO. In the event the RSO is not available precede down the call list posted at the front desk Form 3 "Receptionist Receipt of Licensed Materials".

4.2 Monitoring of the package is required soon after receiving but not later than 3 hours during normal business hours. Non business hours package shall be monitored not later than 3 hours after beginning of next work day.

- 4.3 Monitor the external surfaces of the package for radiation levels and levels and radioactive activity particularly if the package is degraded (crushed, wet or damaged).
- 4.4 Monitor licensed material package (vial, ampoule) for radiation levels and radioactive contamination and record results on **Form 5**. Record activity in dpm and mrem.
- 4.5 Assign an inventory number to licensed material. Enter on Appendix E and on Master inventory log also record isotope type, date received, quantity of material and licensed user it was transferred to.
- 4.6 Licensed material (vial, ampoule): place date received, inventory number and name of licensed user on vial or storage container.
- 4.7 Transfer licensed material to licensed user along with completed copy of **Form 5** and CD-435 or shipping invoice. Place copies in RSO master file.
- 4.8 Reportable radiation levels exceeding limits set in CFR 20 section 71.87 shall notify the final delivery carrier and the NRC Regional Office. Activity levels of materials shipped to CCEHBR are sufficiently low that this has not been an issue at CCEHBR.

National Ocean Service (NOS)
Center for Coastal Environmental Health and Biomolecular Research
(CCEHBR)
Hollings Marine Laboratory (HML)

Standard Operating Procedure

Discharge of Liquid Waste to Sanitary Sewer

SOP 5.0

Revision 0

RSO Approval: John Penn Date: 4/28/09
Management Approval: J. Penn Date: 4-28-09

1. **OBJECTIVE**

This procedure provides guidelines for liquid waste discharge to the sanitary sewer system and establishes record keeping requirements.

2. **REFERENCES**

2.1 10 CFR part 20.2003 (a) (4) and 10CFR 20 appendix B

2.2 NUREG-1556, vol. 7 appendix T

3. **Equipment**

3.1 None

4. **Precautions**

4.1 Confirm sewerage system is a public system not a septic system, leach field or private sewage system.

4.2 Confirm liquid waste is soluble and discharge activity does not exceed 10 CFR 20 Appendix B.

5. **Discussion**

CCEHBR is committed to minimizing the discharge of waste to the sanitary sewer. In cases where it is necessary this procedure establishes the protocol for discharges and documentation.

6. **Instructions**

6.1 Calculate the amount of each radioisotope in order to ensure the monthly and annual discharge limits specified in 10 CFR 20.2003 and 10 CFR 20 Appendix B are not exceeded.

6.2 Record the date, radioisotope, estimated activity of each radioisotope, location where material is discharged (room #) and the initials of the individual discharging the waste

- 6.3 Liquid waste should be discharged via a designated sink or release point.
- 6.4 Discharge liquid waste slowly with running cold water from the faucet in order to flush and dilute discharge.
- 6.5 Survey sink and surrounding work surfaces to confirm that no residual material or contamination remains in the sink or work surfaces. If contamination is detected decontaminate and resurvey.
- 6.6 Maintain records of each isotope and its quantity that is released to the sanitary sewer.
- 6.7 Provide a copy of **Form 6** "Liquid Waste Discharge" to RSO or designate.

FORM 1
Declaring and Rescinding Pregnancy

I, _____, voluntarily declare that I (check which applies)

am pregnant: the estimated month and year of conception is

_____.

am expecting to become pregnant.

I have been informed of the potential risks of radiation exposure to the unborn, exposure limits and control, and the company policy on radiation exposure to the unborn. I have been given the opportunity to ask questions concerning this information. Understanding these risks and the impact on my employment, I voluntarily declare my pregnancy.

I understand that my exposure limits have been reduced to 50 mrem per month and 500 mrem for the pregnancy period. Or, if my declaration has occurred after receiving 450 mrem, my limit for the remainder of the pregnancy period is 50 mrem.

Declared Pregnant Woman Signature

Date

Briefing Provided by : _____
Radiation Safety Officer

Date

Section II Rescinding Pregnancy Declaration

I, _____, declare that I no longer wish to be considered a Declared pregnant woman

Formerly Declared Pregnant Woman

Date

CCEHBR

Form 2
Non licensed User Laboratory Proficiency Certification

Licensed users are required to directly supervise non licensed users in the safe use of licensed materials in the laboratory. Form 2 may be completed by the licensed user with concurrence with the RSO in order to allow non licensed users to perform specific laboratory assays requiring licensed material.

_____ has been
Name _____ Date _____

trained and is proficient in the specified laboratory assays requiring licensed materials.

	Assay	Isotope
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

Signature licensed user _____ Date _____

Signature non user _____ Date _____

Signature RSO _____ Date _____

CCEHBR

Form 3

RECEPTIONIST RECEIPT OF LICENSED MATERIALS

1. Licensed materials delivered by FedEx, UPS or USPS must be transferred to the RSO or designate in order for the radiological survey to be completed and materials added to the inventory list prior to transfer to user. Proceed down call list in order to transfer.

Contact list:

- 1. John Bemiss (RSO) 8521**
- 2. Tod Leighfield (licensed user) 8631**
- 3. Fran Van Dolah (licensed user) 8529**
- 4. Marie DeLorenzo (licensed user) 8515**
- 5. Rick Meitzler (Safety Officer) 8842**
- 6. Pat Fair (licensed user) 8533**
- 7.**

John Bemiss

RSO

Form 4

REQUEST TO USE LICENSED MATERIALS

Name of licensed user (print or type)

Project Title _____ Location _____

Licensed materials requested (List isotope, chemical form and maximum activity)

Isotope	Chemical form	Maximum activity
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

Project summary, briefly describe project and attach SOP if available

Participating Personnel

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

Approval

RSO signature _____ Date _____

Form 5
Licensed Materials Work Sheet

Inventory Number _____ Licensed User _____

Date Requisition _____ Supplier _____ PO # _____

Date Received _____ Isotope _____ Quantity (uCi) _____

Survey Date _____ Surface mRem/hr _____ @12" _____ Instrument _____

Wipe Date _____ BKG DPM _____ Sample DPM _____ Instrument _____

Signature RSO _____ Date _____ Signature license User _____ Date _____

Isotope Usage Record

	Date used	Amount used uCi	Use	Remarks	Name
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Disposal

Date	Amount uCi	Location	Remarks	Name
1				
2				
3				
4				
5				
6				
7				
8				
9				

Signature licensed user

Date

Signature RSO

Date

Amount received = amount used + amount disposed (method) _____

1. liquid waste 2. solid waste 3. decay

Form 6
Liquid Waste Discharge Work Sheet

Average monthly laboratory waste water sewer discharge _____ ml

Isotope(s) _____ Liquid waste volume _____ Activity _____ $\mu\text{Ci}/\text{ml}$

Calculated discharge to sewer activity

$$\frac{\text{_____ } \mu\text{Ci (total waste activity)}}{\text{_____ ml (total waste water monthly ~)}} = \text{_____ } \mu\text{Ci/ml}$$

not to exceed NRC limits

Date of discharge _____ Discharge location _____

Survey Room 411 Discharge Sink

Signature of licensed user _____ Date _____

Signature of RSO _____ Date _____

Form 8

Report of Missing Dosimeter

Date _____

Date of Missing Badge _____

Badge Number or Name on Badge _____

In order to keep adequate radiation exposure records as required by the NRC the badge must be returned or proved to the RSO each month for exchange. If the dosimeter is lost complete form 8. If it is later found return it with a copy of form 8 to the RSO or designate.

1. Reason dosimeter was not returned or unavailable for exchange.
2. Type of radiation to which you were exposed during the month in question. Provide a list and quantities of isotopes worked with along with the dates
3. Any unusual known radiation exposure during the month in question.

Signature of Dosimeter Wearer

Signature of RSO or Designate

Date

Form 9

Radiation Exposure Report

Date

It has been reported by the personnel dosimetry service that the dosimeter worn by _____, for the month of _____ has received a total _____ mremms

Please provide the following information in order to determine source of exposure.

- Adequate protection devices not available.
- Failure to use protection devices
- Badge exposed while not worn
- Badge partially destroyed by heat, water, chemicals
- None of the above explain:

Unknown

Explain all reasons checked

RSO or designate recommendations to prevent a reoccurrence of the exposure

Employee Signature

RSO or Designate Signature

Date

Form 10

Foreign National Visiting Scientist Licensed Material Usage
Authorization

Purpose: In order to control and account for licensed materials, only licensed users shall directly supervise foreign nationals and shall ensure section 1 is completed prior to any training/work performed. Section 2 shall be completed when training/work is completed. This policy has been established to comply with pending NOAA and/or Homeland security directives.

Section 1

Prior to training/work with licensed materials foreign nationals shall receive basic isotope training. This can be in the form of videos per NUREG 1556.

Name	Signature	Country of Origin	Date
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____

Training Received _____
RSO/designate signature _____ Date _____

Section 2

Licensed Material Used During Training/Work

Isotope/compound	Quantity	Date	Licensed user signature
1.			
2.			
3.			
4.			
5.			
6.			

Training/Work Completed

1			
Name	Signature	Date	

can verify that I can account for all isotopes and quantities used in the training/work conducted under my supervision.

This is to acknowledge the receipt of your letter/application dated

7/8/09, and to inform you that the initial processing which includes an administrative review has been performed.

Amendment (39-19399-02)
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

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

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** 143898.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.

NRC FORM 532 (RI)
(6-96)

Sincerely,
Licensing Assistance Team Leader