

# Gettysburg College



# Radioactive Material Safety Program

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## **I. Introduction and Purpose**

The use of radioactive material necessitates safety measures to protect the health and safety of Gettysburg College employees and the general public.

To meet this requirement, Gettysburg College has prepared the following Radiation Safety Program. It is expected that all persons using radioactive material (RAM) abide by this program and its specific procedures. In general, persons using RAM distributed as an Exempt Quantity or Exempt Concentrations as defined in 10 CFR 30.18, are exempt from these rules. This mainly applies to small radioactive check sources and standards.

Your full cooperation in participating in this program is essential to safety and health and the College license requirements to the Nuclear Regulatory Commission (NRC) and the Commonwealth of Pennsylvania, Department of Environmental Protection, Bureau of Radiation Protection (PABRP).

## **II. Scope**

This program applies to all faculty, administrators, staff, and students and also to any visitors, post-docs, or others who may occasionally work at the College.

## **III. Responsibilities**

- A. The **Radiation Safety Officer(s)** is responsible for implementing the radiation safety program, including but not limited to:
1. Reviewing and approving designated use areas and all protocols for use of RAM.
  2. Providing individual workers with training, advice, and assistance on all matters pertaining to the safe use of RAM.
  3. Reviewing work practices to determine compliance with regulations and approved procedures.
  4. Performing appropriate radiation surveys of RAM use areas.
  5. Performing leak tests of sealed sources.
  6. Ensuring that radiation survey instruments are properly calibrated at required frequencies.
  7. Determining the need for, distributing and receiving personnel dosimeters; timely review of results and issuing of reports.
  8. Performing incident analyses involving the use of RAM.
  9. Ensuring proper disposal of RAM including maintenance of waste in storage (e.g. decay in storage) and disposal records.
  10. Maintaining records of RAM inventory, receipt and transfer of licensed material, radiation surveys, leak tests, personnel dosimetry, calibration records, and training.

11. Terminating any work involving the use of RAM which he/she deems unsafe.
12. Ensuring that all required signs and labels are applied.
13. Providing supervision and assistance for the management of emergency, accident, spill, or exposure situations.
14. Ensuring that licensed materials are properly secured against unauthorized removal at all times when not in use.

B. **Authorized Users** are responsible for assuring the safe use of RAM in his/her work area, including but not limited to:

1. Participating in radiation safety training
2. Complying with and enforcing the radiation safety program requirements
3. Assuring that all personnel are properly trained in the safe use of RAM.
4. Assuring instruction of female radiation workers of the risks associated with working with RAM during pregnancy.
5. Assuring that required monitoring devices, personal protective equipment, and contamination control methods are used as required.
6. Properly opening and inspecting packages of RAM.
7. Properly packaging RAM for shipment.
8. Surveying areas where RAM is used.
9. Reviewing in advance all lab procedures using RAM.
10. Assuring the integrity of equipment (e.g. – vacuum systems) to be used in conjunction with RAM.
11. Maintaining control of visitors to prevent radiation exposures
12. Maintaining records required by the Radiation Safety Officer or the Environmental Health and Safety Officer.

C. **Individual Researchers/Students** working with RAM are responsible for complying with all requirements established by the Gettysburg College Radiation Safety program, including but not limited to:

1. Participating in radiation safety training
2. Using only techniques and procedures that have been approved by the authorized user
3. Wearing prescribed personnel dosimeters and PPE.
4. Properly labeling, storing, and disposing of RAM
5. Reporting any incidents to the authorized user and the RSO.

#### **IV. Inventory/Accountability of RAM**

The radiation safety officer(s) will review all orders for RAM requested by authorized users at the College. The RSO will ensure that the requested RAM are authorized by the license and will not exceed license possession limits if received.

A logbook will be maintained of all RAM in possession at any time, and will be reviewed at intervals not exceeding six months. This log will show the following data for each purchase:

- Order #
- Lot #
- Date Received
- Isotope
- Chemical/Physical form
- Reference Date
- Amount of Activity
- Results of Package Leak Survey

Additionally, after each use of RAM, the user will record the date of use, amount used, purpose, and sign his/her name.

This RAM inventory data will be properly reviewed by the RSO at each new purchase to determine the new possession quantity for that radioisotope.

## **V. Storage and Security of RAM**

All RAM will be properly stored and secured against unauthorized access or removal whenever it is not under the direct supervision of authorized personnel. The following methods may be employed to secure RAM:

- RAM labs are kept locked when authorized users or any of their trained staff/students are not present to maintain control.
- Refrigerators, freezers, or other suitable storage cabinets where RAM is stored are locked when authorized personnel are not present.
- Other lockable containers that are soundly secured inside a larger cabinet, refrigerator, or freezer that is not lockable may be used to secure RAM when authorized personnel are absent and not under control.

## **VI. Radiation Surveys**

The radiation safety officer is responsible for performing radiation surveys and ensuring that radiation surveys are performed by others in accordance with the following:

### **A. Initial Surveys**

An initial survey will be made by the RSO of areas where radioactive material will be used and/or stored before operations are initiated or changes approved, to assure the facilities and equipment are adequate for personnel safety and contamination control and removal.

**B. Periodic Surveys**

Areas where radioactive materials are used and or stored shall be surveyed periodically pursuant to the license requirements with the NRC or PABRP (see attached licenses in Appendix A).

Survey results including monitoring points with results, statements of any hazard present, any recommendation as to shielding, procedural changes, etc. . . will be recorded and maintained by the RSO.

**C. Researcher Surveys**

Authorized users, individual researchers, and students shall survey their work area on a regular basis in concert with their use of RAM to ensure that radiation and/or contamination levels are kept as low as reasonably achievable.

**D. Special Surveys**

The RSO is responsible for performing the following special surveys:

1. A close-out survey of any lab where RAM will no longer be used shall be completed before releasing the area for use by others.
2. A follow-up survey shall be performed at any lab where a spill has occurred after clean-up to ensure that all removable activity has been thoroughly lifted up and any fixed activity has been located and measured.

**VII. Calibration of Survey Instruments**

All portable radiation survey instruments shall be calibrated at least once each year. A current list of survey instruments and their calibration service follows.

**A. Packard Tri-Carb 2200CA Liquid Scintillation Counter**

Calibration of LSC:

$^3\text{H}$  external standard source: <0.2  $\mu\text{Ci}$ , 256,000 dpm, reference date  
24 February 1995



$^{14}\text{C}$  external standard source:  $<0.1 \mu\text{Ci}$ , 133,000 dpm, reference date 24 February 1995.

The two external standards are used during the counting of every set of samples. This machine receives servicing, including calibration checks, by service representatives from Packard (a division of Perkin-Elmer).

- B. Mini-Instruments Limited Rad-Monitor 9000, Model GM Radiation/Contamination Survey meter with End Window detector type GM-1.

This instrument receives calibration service from:

Ecology Services, Inc.  
10220 Old Columbia Road  
Columbia, MD 21046  
410-381-2600  
MD License # MD-27-061-01

- C. Victoreen Thyac III Model 490 Geiger meter equipped with a Model 489-4 GM probe with retractable beta shield.

This instrument receives calibration service from:

JRT Calibration Services, Inc.  
120 East High St., Suite 111  
Pottstown, PA 19464  
610-327-9610  
NRC License # 37-30298-01

- D. Victoreen Model 471

This instrument receives calibration service from:

JRT Calibration Services, Inc.  
120 East High St., Suite 111  
Pottstown, PA 19464  
610-327-9610  
NRC License # 37-30298-01

- E. Inovision Model 451P

This instrument receives calibration service from:

JRT Calibration Services, Inc.

120 East High St., Suite 111  
Pottstown, PA 19464  
610-327-9610  
NRC License # 37-30298-01

### **VIII. Leak Tests of Sealed Sources**

Each sealed source containing licensed material shall be leak tested periodically, but at no greater than 6 month intervals (unless stated otherwise by licensing).

The test shall be capable of detecting 0.005  $\mu\text{Ci}$ . If the test reveals 0.005  $\mu\text{Ci}$  or more of removable contamination a report must be filed with the NRC in accordance with 10 CFR 30.50(c)(2) and the source must be removed immediately from service and decontaminated, repaired, or disposed of.

### **IX. Dose Limits**

Detailed information regarding dose limits and risks from occupational exposure can be found in Appendix B—"NRC Reg Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure".

#### **A. Adults**

Persons 18 years or older may not receive an occupational dose exceeding 5000 mRem/year total effective dose equivalent (TEDE), 15000 mRem/yr lens dose equivalent, or 50000 mRem/yr shallow dose equivalent to the skin or extremities. Additionally adults may not receive an occupational dose exceeding 50000 mRem/yr total organ dose equivalent (TODE).

#### **B. Minors**

Persons under 18 years of age may not receive an annual occupational dose exceeding 10% of the dose limits for adult workers.

#### **C. Declared Pregnant Women**

Qualified scientists have recommended that the dose to an embryo or fetus as a result of occupational exposure of the expectant mother not exceed 500 mRem/gestation period. Since this dose is lower than the dose generally permitted to adult workers, women may want to take special actions to avoid receiving higher exposures, just as they might stop smoking or drinking during pregnancy to reduce possible risks to their unborn children.

If an occupationally exposed woman declares her pregnancy to the College, the embryo/fetus may not receive an occupational dose exceeding 500 mRem during the entire pregnancy.

Because restricting the woman's occupational exposure, if she declares pregnancy, raises questions about individual privacy rights, equal employment opportunities, and possible loss of income, the declaration of pregnancy by a woman in radiation work is voluntary. Also the declaration of pregnancy can be withdrawn, for example, if the woman reconsiders and feels that her benefits from receiving the occupational exposure would outweigh the increased risk to her embryo/fetus from the radiation exposure.

A declaration of pregnancy form is attached in Appendix C—"NRC Reg Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure".

#### D. Public

Individual members of the public may not receive a total effective dose equivalent exceeding 100 mRem/year or 2 mRem/hr total effective dose equivalent (TEDE), as a result of College operations.

### X. Personnel Dosimetry

Detailed monitoring criteria can be found in Appendix D—"NRC Reg Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses".

Gettysburg College recognizes that adults who in the course of their work might be exposed to a deep dose equivalent of 500 mRem/yr or more, a lens dose equivalent of 1500 mRem/yr or more, a shallow dose equivalent to the skin or extremities of 5000 mRem/yr or more must be assigned to wear a personnel dosimeter. Additionally adults who in the course of their work might receive in one year in excess of 10% of the applicable ALIs for ingestion and inhalation must have internal exposure monitoring.

Gettysburg College recognizes that declared pregnant women who in the course of their work might be exposed to a deep dose equivalent of 50 mRem/yr or more, a lens dose equivalent of 1500 mRem/yr or more, or a shallow dose equivalent to the skin or extremities of 5000 mRem/yr or more must wear a personnel dosimeter. Additionally declared pregnant women who in the course of their work might receive in one year a committed effective dose equivalent in excess of 50 mRem/yr must have internal exposure monitoring.

Gettysburg College recognizes that minors who in the course of their work might be exposed to a deep dose equivalent of 50 mRem/yr or more, a lens dose equivalent of 150 mRem/yr or more, a shallow dose equivalent to the skin or extremities of 500 mRem/yr or more must wear a personnel dosimeter. Additionally minors who in the course of their work might receive in one year a committed effective dose equivalent in excess of 50 mRem/yr must have internal exposure monitoring.

Given the nature and amounts of radioisotopes used to date in our program, we have determined that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of these annual limits. Therefore, personnel dosimetry is not necessary for the program.

If, however, we begin to use high energy beta emitters and gamma emitters for in vivo labeling in liquid cultures, then employees working with mCi quantities will be assigned appropriate personnel dosimeters.

Personnel monitoring devices will be purchased from a qualified company (eg. Siemans, Landauer, ICN) on a monthly basis and distributed/collected by the RSO. The collected dosimeters/film will be sent back to the qualified company for analysis and recording. The RSO will receive all records of dose received by workers to ensure that no unwarranted exposures have been received, i.e., all doses are ALARA.

Records of dose will be made available to all personnel as required by the NRC or PABRP.

## **XI. Training**

All College personnel and students who will be required to use RAM shall receive training provided by the radiation safety officer.

### **A. Initial Training**

#### **1. Radiation Safety Officer**

The radiation safety officer must have a minimum of 6 months experience working with RAM as an authorized user or attend a 40 hour training class for Radiation Safety Officers.

#### **2. Authorized Users (including the RSO)**

Authorized users must have a minimum of 3 months experience working with radioactive materials.

Each authorized user must have received a minimum of 8 hours of training in radiation safety. The training can be any combination of: review of written materials, 1-on-1 training, viewing video tapes, or classroom instruction. The following topics must have been addressed:

- a. atomic structure and radioactivity
- b. biological effects of radiation including risk statistics
- c. review of Gettysburg College radiation safety program
- d. review of 10 CFR 19, 10 CFR 20, our license and any amendments (see Appendices A, E, and F)
- e. inventory and security of radioactive materials
- f. use of dosimeters and/or bioassays
- g. using survey meters
- h. performing contamination surveys
- i. radioactive waste
- j. emergency procedures
- k. specific procedures for the safe use of RAM in their work area

Training at another facility can be used to meet this requirement if a review of the Gettysburg College Radiation Safety Program is provided. In addition, the RSO must review the authorized user's laboratory technique and procedures and offer critique and instruction as needed in a "1-on-1 session." The RSO will document the 8-hour training and the 1-on-1 training.

### 3. Individual researchers/Students

Individual researchers and students must work under the direct supervision of an authorized user. Each individual researcher or student is authorized by the RSO and must have received a minimum of 1 hour of training in radiation safety, including at least the following topics:

- a. instructions for safe use and storage of RAM in their work area.
- b. the hazards associated with exposure to RAM in their work area
- c. means to reduce exposure
- d. appropriate responses to warning signs and labels
- e. their responsibility to report violations

### 4. Ancillary Personnel

All ancillary personnel (e.g. housekeepers, security officers, maintenance workers) will receive instructions from the RSO concerning the appropriate performance of their work in areas where RAM may be used or stored.

#### **B. Annual Refresher Training**

The radiation safety officer will provide a minimum of 1 hour of annual refresher training on listed topics for each type of worker above. The training can be any combination of reading, 1-on-1 training, viewing video tapes, or classroom instruction. Lectures and written materials/examinations which are read and completed by radiation workers may also be used to complete annual refresher training.

### **XII. Emergency Procedures**

In general, no radioactive contamination can be tolerated. Surface contamination above background requires immediate decontamination.

#### **A. Minor Spill (less than 20 $\mu\text{Ci}$ total and less than 1 $\text{m}^2$ area)**

1. **NOTIFY:** Notify persons in the area that a spill has occurred and call the RSO.
2. **CLEAR THE ROOM:** Vacate all personnel not involved in the spill, **AFTER** they have been surveyed for contamination.
3. **PROTECT PERSONNEL:** Perform any personnel decontamination before proceeding with spill clean up.
4. **SURVEY:** Use a low-range, thin window GM survey meter for beta/gamma emitters; wipes and liquid scintillation counting for  $^3\text{H}$ . Check the area around the spill, hands, and clothing for contamination. Mark off the contaminated area with "RAD" tape.
5. **CLEAN UP:** Gather decontamination supplies. Wear PPE (minimum of splash goggles, lab coat, and gloves). Wear assigned dosimetry if applicable. Clean up the spill using dry paper towels or absorbent pads first. Use decontamination agents after dry techniques have been used. Work from the outside edge of the spill in toward the center. Use only 1 "pass" of the paper towel then place in radioactive waste.
6. **SURVEY AGAIN:** Use appropriate survey meter for direct measurements and take wipes and analyze for "removable" contamination. Continue decontamination until tests show background levels of radiation.
7. **WASTE DISPOSAL:** Dispose of absorbent materials and PPE as radioactive waste.

8. REPORT: Report the results of the decontamination effort to the environmental health & safety officer.

B. Major Spill (greater than 20  $\mu\text{Ci}$  total or greater than 1  $\text{m}^2$  area)

1. NOTIFY: Notify persons in the area that a spill has occurred and call the RSO.
2. CLEAR THE ROOM: Vacate all personnel not involved in the spill, but DO NOT allow them to leave the area until they have been surveyed for contamination.
3. CLOSE THE ROOM: Turn off hoods and ventilation systems. Leave the room and lock the door(s) to prevent entry.

**The remaining steps may be performed ONLY by the RSO.**

4. PROTECT PERSONNEL: Perform any personnel decontamination before proceeding with spill clean up.
5. SURVEY: Use a low-range, thin window GM survey meter for beta/gamma emitters; wipes and liquid scintillation counting for  $^3\text{H}$ . Check the area around the spill, hands, and clothing for contamination. Mark off the contaminated area with "RAD" tape.
6. CLEAN UP: Gather decontamination supplies. Wear PPE (minimum of splash goggles, lab coat, and gloves) and utilize appropriate shielding. Wear assigned dosimetry if applicable. Clean up the spill using dry paper towels or absorbent pads first. Use decontamination agents after dry techniques have been used. Work from the outside edge of the spill in toward the center. Use only 1 "pass" of the paper towel then place in radioactive waste.
7. SURVEY AGAIN: Use appropriate survey meter for direct measurements and take wipes and analyze for "removable" contamination. Continue decontamination until tests show background levels of radiation.
8. WASTE DISPOSAL: Dispose of absorbent materials and PPE as radioactive waste.
9. REPORT: Report the results of the decontamination effort to the environmental health & safety officer.

C. Personnel Contamination

1. NOTIFY: Notify persons in the area that a contaminating accident has occurred and call the RSO.
2. WASH THOROUGHLY: Wash body area involved thoroughly for 2 or 3 minutes, repeatedly "soaping" and rinsing. Consideration should be given to the chemistry of the

contaminant and an attempt made to find a suitable agent for dissolving it. Cleansing agents may be used, but soaps are preferred to synthetic detergents. Avoid prolonged use of any one decontamination procedure. Avoid the use of organic solvents as they may make the skin more permeable to radioactive contaminants.

3. **SEEK MEDICAL ASSISTANCE:** If washing thoroughly is not immediately and completely effective, the RSO shall contact emergency services and the USNRC for guidance about appropriate response and treatment.

#### D. Fire/Explosion

The following steps are basic protocol for handling a fire or fire-related emergency situation in the laboratory:

1. Pull the fire alarm.
2. Do NOT attempt to extinguish a fire unless you have first warned others and/or activated an alarm. Do not attempt to extinguish a fire if you have not been trained to do so or if a radiation hazard is immediately present.
3. Try to prevent water or extinguishing chemicals from coming into contact with RAM.
4. Control runoff, preventing it from entering drainage systems until it has been monitored.
5. Contact the RSO and Security Services.

### **XIII. Procedures for Ordering/Receiving/Opening RAM**

To ensure proper handling of RAM that will be delivered to the college, the following procedure must be followed:

#### A. Ordering

The radiation safety officer(s) will review all orders for RAM requested by authorized users at the College. The RSO will ensure that the requested RAM are authorized by the license and will not exceed license possession limits if received.

When RAM is ordered by an authorized user the following instructions shall be followed:

1. overnight delivery will be requested
2. a firm delivery date will be confirmed
3. once a date of delivery is established the authorized user will notify the RSO.



## B. Receiving

1. The RSO will inform the mailroom that a delivery is expected on the day of the confirmed delivery date.
2. The mailroom will then contact the RSO of the arrival.

If the RSO knows before hand that he/she will not be available on the delivery date, the mailroom will be notified of such and the RSO will inform the mailroom that the authorized user will sign for and take possession of the RAM.

3. The RSO (or authorized user in his/her absence) will meet the delivery person at the mailroom and sign for and take possession of the RAM.

If the package is opened, torn, or damaged it will be refused and the user notified.

4. The package will be checked for external contamination and logged in by the RSO within three hours of delivery to the mailroom.
5. The RSO will notify the authorized user of the receipt of the RAM and arrangements will be made for delivery/pickup.

## C. Opening

1. Visually inspect the package for any sign of damage. If damage is noted, stop procedure and notify the RSO who will assist you.
2. Measure exposure rate at 1 meter from the package surface and record. If  $> 10$  mR/hr, stop procedure and notify the RSO.
3. Measure surface exposure rate and record. If  $> 200$  mR/hr, stop procedure and notify RSO.
4. Open the package with the following precautionary steps:
  - a. open the outer package (following manufacturer's directions if supplied) and remove packing slip
  - b. open inner package and verify that contents agree with those on packing slip. Compare requisition, packing slip, and label on source containers.

- c. check integrity of final source container
- 5. Wipe external surface of final source container shield and remove wipe to low background area. Check wipes with GM survey meter and take precaution against the spread of contamination if necessary. Notify RSO if any removable contamination is detected.
- 6. Monitor the packing material and packages for contamination before discarding.
  - a. If contaminated, treat as radioactive waste
  - b. If not contaminated, obliterate radiation labels before discarding in regular trash

#### **XIV. Procedures for Transporting RAM**

Gettysburg College does not currently transport RAM, excluding radioactive waste. If and when transportation of RAM occurs, it will be conducted in accordance with the requirements of 10 CFR Part 71 and 25 Pa. Code Chapter 230.

#### **XV. Labeling Requirements**

##### **A. Labels**

Work areas, trays, racks, stock solutions, tools, equipment, etc. . . which contain RAM or are contaminated must be labeled with the radioactive warning symbol and the words “Caution: Radioactive Material(s)”. It is not reasonable to expect that each tube or vial be labeled, but the container, tray, or rack that holds them must be labeled. As a general rule of thumb, if there is radiation above the background level in or on something, it must be labeled.

For equipment which is used for RAM, but is not contaminated (equipment which the staff wishes to identify for radioactive use), a label stating, “Caution: Radioactive Materials” may be used; however, labels are not required if the equipment is not contaminated.

##### **B. Signs**

Each room in which RAM are used must bear a sign on the door. The sign must have the radioactive warning symbol, the words “Caution: Radioactive Material(s)” and the name and telephone number of the RSO who is knowledgeable about the RAM in the room. These labels are for emergency purposes and should have the non-working hours telephone numbers where the RSO may be reached in an emergency.

## **XVI. Radioactive Waste Management**

### **A. Short-lived RAM Solid Waste**

Short-lived RAM solid waste shall be segregated by isotope and placed into a labeled suitably shielded container for decay-in-storage. After the activity decays to background levels as determined by survey with a meter (at least 10 half lives), the decayed waste may be disposed of as regular trash after all labels denoting radioactivity have been removed.

### **B. Long-lived RAM Solid Waste**

Long-lived RAM solid waste shall be segregated by isotope and placed into a labeled suitably shielded container. Disposal of this low-level radioactive waste will be contracted through a qualified vendor.

### **C. Short-lived RAM Liquid Waste**

Aqueous liquids containing RAM shall be disposed of down a dedicated sink with a large volume of water sufficient to keep the sink drain flushed clean of RAM. The quantity disposed shall not exceed 1 mCi/day and 5 mCi/quarter.

Compliance with NRC release limits is monitored on a college level using RAM inventory and sewer release volume.

Non-aqueous/hazardous chemical liquids containing short-lived RAM (half life <120 days) must be held until after the activity decays to background levels as determined by survey with a meter (at least 10 half lives). The decayed waste shall then be disposed of as chemical waste after all labels denoting radioactivity have been removed.

### **D. Long-lived RAM Liquid Waste**

Non-aqueous/hazardous chemical liquids containing long-lived RAM (half life > 120 days) are known as “mixed” waste. At the present time it is not possible to dispose of this material. If your research will produce this kind of waste, you should discuss this with the RSO immediately.

### **E. Preparing Radioactive Waste for Disposal**

The user shall provide the following information on each container of radioactive waste:

- Label reading, “Radioactive Waste”
- Authorized User’s name

- Generation Date
- Isotope
- Reference Date
- Activity ( $\mu\text{Ci}$  or  $\text{mCi}$ )
- Survey Instrument Used
- Chemical Names/Hazards

## **XVII. Record Keeping**

### **A. Inventory Records**

All inventory records shall be maintained by the RSO for a period of no less than five years.

### **B. Survey Records**

All survey records shall be maintained by the RSO for a period of no less than three years. All survey records used to determine environmental release must be maintained until the NRC terminates the license requiring the record.

### **C. Leak Test Records**

All leak test records shall be maintained by the RSO for a period of no less than five years. Records shall be maintained in units of  $\mu\text{Ci}$ .

### **D. Instrument Calibration Records**

Instrument calibration records shall be maintained for a period of no less than four years.

### **E. Personnel Dosimetry Records**

Personnel dosimetry records shall be maintained for at least the duration of employment plus 30 years.

### **F. Waste Records**

All Uniform Low-Level Radioactive Waste Manifests must be maintained until the NRC terminates the license requiring the record.

### **G. Training Records**

Training records must be maintained until the NRC terminates the license requiring the record.

H. Audit Records

All audit records must be maintained for a period of no less than 3 years.

## Appendix A

NRC and PABRP Licenses and Amendments



## Appendix B

Reg Guide 8.29 “Instruction Concerning Risks from Occupational Radiation Exposure”





## Appendix C

Reg Guid 8.13 “Instruction Concerning Prenatal Radiation Exposure”



## Appendix D

Reg Guide 8.34 “Monitoring Criteria and Methods to Calculate Occupational Radiation Doses”



Appendix E

10 CFR 19 “Notices, Instructions, and Reports to Workers”



Appendix F

10 CFR 20 "Standards for Protection Against Radiation"



