

Dosimetry Contact Instructions and Responsibilities

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The University of Michigan (U-M), Environment, Health and Safety/Radiation Safety Service (RSS) issues radiation monitoring dosimeters to occupationally exposed individuals when required by regulation (or otherwise recommended by RSS). While RSS administers the Dosimetry Program and is the interface with the commercial dosimetry processor, Dosimetry Contacts and Dosimetry Supervisors play important roles in the administration and success of the Dosimetry Program.

General Responsibilities of Departments and Principal Investigators

- **Clinical X-ray Facilities:** Each Department and Unit engaged in functions requiring the use of dosimeters is responsible for: i) identifying personnel whose duties necessitate radiation monitoring in accordance with RSS policy and instructions; ii) obtaining dosimeters for those personnel; and iii) ensuring those personnel wear the dosimeters as required by Michigan Department of Licensing and Regulatory Affairs (LARA) regulations and RSS policy. All Departments and Units **must** designate an employee to serve as the Dosimetry Contact for each dosimetry series.
- **Research X-ray Facilities:** The Principal Investigator (PI) is responsible for ensuring that all personnel required to wear dosimeters receive and use them as required by State law and RSS policy. The Principle Investigator may serve as the Dosimetry Contact or designate the responsibilities to a staff member.
- **Radioactive Material Users:** An approved Authorized User of radioactive material is responsible for ensuring that all personnel required to wear dosimeters receive and use them as required by Federal or State law and RSS policy. The Authorized User may serve as the Dosimetry Contact or designate the responsibilities to a staff member.

Dosimetry Contact Responsibilities

- Act as administrative liaison to RSS on matters relating to radiation dosimetry.
- Initiate all requests to RSS for new dosimeters or other changes (e.g., deletions, changes, etc.) on behalf of personnel requiring or receiving dosimeters within the Department, Unit or lab (instructions below). Forms are available on the [EHS > Radiation > Dosimetry/Bioassay](#) webpage or by calling 764-4294.
- Notify wearers of, and administer, RSS dosimetry policy and procedures.
- Issue temporary dosimeters (or request them from RSS) for new personnel or when dosimeters are missing/lost.
- Provide information to wearers regarding the proper wear and maintenance of dosimeters.
- Exchange and return dosimeters to RSS at the end of each wear period.
- Report to RSS and help trace unreturned, lost, or damaged dosimeters, and notify the department administrator if dosimeters are not returned by wearers (or are returned unused).
- Notify RSS of any changes in departmental billing information.

- Notify dosimetry wearers of their results (as reported by RSS after each wear period). This can be done by circulating/posting dosimetry reports or notifying dosimetry wearers of the availability of results.
- Maintain dosimetry report files.
- Complete MLearning module RADI-10232 (Radiation Dosimetry Contact Training) annually.

Because the Dosimetry Program at U-M is large, **the series code MUST be included on all correspondence to ensure a timely and proper response.**

Definitions

- **Declared Pregnant Woman (DPW):** a female employee who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of delivery for the purpose of maintaining the fetal dose below the regulatory limit (50 millirem per month and 500 millirem for the duration of the pregnancy).
- **Dose (or Dose Equivalent):** measure of potential biological damage in living tissue as a result of ionizing radiation exposure; units are millirem.
- **Dosimeter:** a small device worn to measure and record the accumulated personal dose of ionizing radiation. In general, dosimeters are used as “whole-body” or “extremity” (i.e., finger rings), depending on the monitoring requirements. RSS provides the following types of dosimeters:



- **Over-apron:** worn by personnel working with x-ray and fluoroscopy machines who **must** wear a protective apron in accordance with LARA regulations. Worn on the upper torso at the top of (outside) the apron or on the thyroid collar to estimate unshielded exposure to the head/eyes. May be paired with an under-apron dosimeter.

- **Under-apron:** worn by select personnel working with x-ray and fluoroscopy machines who **must** wear a protective apron in accordance with LARA regulations. Worn under the apron, between the chest and waist. Always paired with an over-apron dosimeter.



Thermoluminescent dosimeter (TLD) ring to monitor radiation exposure of the hands (extremities).

- **Extremities:** the arms from the elbows to the hands (and the legs from the knees to the feet).
- **Fetal Monitor:** a dosimeter worn on the abdomen of a Declared Pregnant Woman to monitor the occupational radiation dose to the embryo/fetus.
- **Occupational Dose Limit:** the annual limit for occupational radiation exposure; limits are defined for whole body, eyes, and extremities. Regulatory limits are established with the objectives of limiting adverse health effects and ensuring that risks to occupationally exposed individuals are indistinguishable from the risks from exposure to background radiation. For more information about the risks of occupational radiation exposure, see NRC Regulatory Guide 8.29.
- **Series/Subaccount:** an administrative designation that identifies a group of employees receiving dosimeters; usually comprised of a Department or Unit, a section within a Department or Unit, or

the research laboratory of a PI. The series code is alphanumeric (e.g., “K1”). Series are created by RSS and the code is assigned by RSS.

- **Wearer (or Participant):** an individual who has been assigned dosimetry as a result of their work with radiation-producing machines or radioactive materials.
- **Wear Period:** the duration that an issued dosimeter is worn (quarterly or monthly). All dosimeters issued in a series are worn for the same wear period. Quarterly wear periods begin on the first day of January, April, July, and October; monthly wear periods begin on the first day of each month.
- **Whole Body:** the portion of the body not including the eyes or extremities.
- **Whole Body Dose:** dose estimates reported by the dosimeter processor, including Deep Dose Equivalent (DDE; dose to internal organs), Effective Dose Equivalent (EDE; for personnel who wear protective aprons, Lens Dose Equivalent (LDE; dose to lens of eye), and Shallow Dose Equivalent (SDE; dose to skin).

Instructions for Dosimetry Contacts

To assist with the above responsibilities, detailed instructions are provided below.

Addition of Personnel

The Dosimeter Request Form is used for addition of personnel to a series. All requested personal information (name, UMID, and DOB) **must** be provided. It is important to specify the maximum activity of each radionuclide that the employee will work with at any one time (i.e., if an employee is working with 250 μ Ci for an experiment, but is aliquotting from a 5 mCi stock solution, the maximum activity is 5 mCi). The specific type of radiation-producing machines that an individual will use or be exposed to is also required.

The Dosimeter Request Form **must** be completed in entirety by the Dosimetry Contact or Supervisor, signed/authorized by the Dosimetry Supervisor, and **must** include the series code. The series code appears under “Series” at the top of packing slips and Radiation Dosimetry Reports.

Wearers **must** complete appropriate radiation safety training at U-M (as indicated by “yes” checkbox next to the training statement) to receive dosimetry. As of September 1, 2015, all dosimetry requests **must** be accompanied by documentation that the individual has completed appropriate radiation safety training at U-M. Appropriate training includes one or more of the following:

- RADI-10115, Radiation Safety for Health Care Workers ([MLearning](#)); mandatory for personnel who participate in procedures involving radiation-producing machines
- RADI-10123, General Radiation Safety (MLearning); for personnel who care for patients containing radioactive material or radioactive sources
- Radiation Safety Orientation (via [MyLinc](#)); mandatory for personnel who handle unsealed radioactive materials
- Annual Radiation Safety Refresher Training (online, via [MyLinc](#)); for personnel who are required to complete the Radiation Safety Orientation
- Any other appropriate training conducted by Radiation Safety Service (typically, in-person)

Spare / Temporary Dosimeter Assignment (for series that receive spare dosimeters)

The Spare / Temporary Dosimeter Assignment Form **must** be completed and submitted for each spare dosimeter that is issued by a Department or Unit. All requested personal information (name, UMID, and DOB) and dosimeter information (Badge Type, Binary #, Temp Part #) **must** be provided. This form only assigns the spare dosimeter to an individual for a single wear period; a Dosimeter Request Form **must** be submitted for permanent assignment of a dosimeter.

Spare dosimeters should NOT be used as Fetal Monitors for Declared Pregnant Women. A Declaration of Pregnancy form must be completed and submitted to RSS for a Fetal Monitor.

Change to Personal Information

The Dosimeter Modification/Deletion Form is used to update/correct any information provided on a previous Dosimeter Request Form for a participant. This form is also used for requesting additional dosimeters for an active participant. It **must not** be used to change a participant from one series to another, unless you are the designated Dosimetry Contact for both series.

This form **must** be completed in entirety, signed/authorized, and **must** include the series code and participant number of the individual. This information is available on packing slips and Radiation Dosimetry Reports.

Deletion of Personnel

The Dosimeter Modification/Deletion Form is used to delete a participant from a series. The participant's current dosimeters should be returned with the form when the individual terminates, transfers to another series, or the dosimeter wear period ends (whichever comes first). This will improve compliance for your series by eliminating unused dosimeters and reducing the possibility of lost dosimetry.

This form **must** be completed in entirety and **must** include the series code and participant number of the individual.

NOTE: Generally, forms must be received by the 10th of the month **prior** to the next exchange (e.g., received by the 7th of March to effect the April issue) in order for changes to take effect for the next exchange.

No additions, changes, or deletions will be accepted by phone. Forms **must** be completed for ALL requests to provide appropriate documentation for each dosimeter/participant. Requests for dosimeters may be faxed to 764-6523, e-mailed, or sent by campus mail to:

**Dosimetry Coordinator
Radiation Safety Service / EHS
1239 Kipke Drive (CSSB) / 1010**

In-person issue and pickup of dosimeters may be arranged by calling RSS (764-4294).

DOSIMETERS WILL NOT BE ISSUED AND FORMS WILL BE RETURNED IF ALL NECESSARY INFORMATION IS NOT PROVIDED OR THE FORM IS NOT SIGNED/AUTHORIZED!

It is the responsibility of the Dosimetry Contact to ensure the form is complete, along with series code, campus address, phone number, and authorized signature.

Wear, Maintenance, and Exchange of Dosimeters

An important Dosimetry Contact responsibility is to inform wearers of the current policies and procedures regarding proper wear and maintenance of dosimeters. The following information should be provided to the wearers in your series:

- Dosimetry does not protect you from radiation, but it can help determine how well you protect yourself. If your results are higher than other personnel doing similar work, or if your dose increases when you change procedures, you should review your radiation protection practices.
- **NEVER WEAR ANOTHER INDIVIDUAL'S DOSIMETER!** Each dosimeter is assigned to a specific individual for a specific wear period.
- Wear your dosimeter on your collar or front lab coat pocket. When two dosimeters are issued, each dosimeter will be labeled. Wear the over-apron (red icon) dosimeter on the collar outside the protective apron. Wear the under-apron dosimeter (yellow icon) underneath the apron, between the chest and waist. Chest dosimeters (black icon) should be worn at the maximum exposed area between the neck and the waist.
- Wear your ring dosimeter on the hand that receives the highest exposure to radiation, with the label facing the radiation source. If you wear gloves, wear the ring inside the glove, but take care not to lose the ring when removing the glove.
- Never intentionally expose a dosimeter to liquids or heat, as damage and loss of dose information may result. Check lab coats before sending them to the laundry, as washing and drying may damage dosimeters. Report all incidents to RSS.
- Many dosimeters are lost when they are taken home. Identify a low-background area at work, away from sources of radiation, where dosimeters can be stored.
- Dosimeters returned to RSS are mailed to the dosimetry processor on a monthly or as-needed basis. Therefore, RSS **must** receive worn dosimeters within 10 working days after the end of a wear period. The dosimetry processor may charge an additional fee for lost or unreturned dosimetry, which will be rebilled to your Department.
- At the end of each wear period:
 - Promptly exchange all old dosimeters (from the previous wear period) for new dosimeters. Dosimeters should only be removed from the package by the wearer.
 - Dosimeters not worn during the wear period should be marked “NW” (or “not worn”) and SEPARATED from the rest of the returned dosimeters. Dosimeters should not be removed from the package (if not worn) or re-packaged in the original wrapper (if worn).
 - Return all old dosimeters (separate “worn” from “not worn”) to RSS in the same mailing envelope. Dosimeters should be packed securely and the envelope taped shut to prevent loss in the campus mail system. Mail to:

**Dosimetry Coordinator
Radiation Safety Service / EHS
1239 Kipke Drive (CSSB) / 1010**

RSS maintains a [dosimetry instructions document](#) and [poster](#) that Dosimetry Contacts can use to inform wearers of dosimetry requirements and responsibilities.

Replacement of Lost or Damaged Dosimeters

If a wearer loses or misplaces a dosimeter, call RSS (764-4294) and follow-up by e-mail to document the lost dosimeter. A replacement can be issued.

Emergency Procedures

If a wearer or dosimeter has been overexposed or contaminated, call RSS **IMMEDIATELY** (764-4294 or 764-4420). A Health Physicist will provide further instructions.

ALARA Program

ALARA (As Low As Reasonably Achievable) is a regulatory philosophy whereby licensees make every reasonable effort to maintain [exposures](#) to [ionizing radiation](#) as far below regulatory limits as practical. An institutional ALARA program is required by the U.S. Nuclear Regulatory Commission (NRC), and ALARA investigation levels are established by the Radiation Policy Committee (RPC). Investigational levels are intended to:

- Monitor occupational radiation doses received by U-M personnel
- Initiate investigation of radiation doses
- Minimize the potential for regulatory dose limits to be exceeded

The Radiation Policy Committee, RSS, and U-M management are committed to maintaining occupational radiation doses ALARA.

When elevated radiation exposures are detected and verified by our dosimetry processor, RSS is notified immediately. Wearers who exceed ALARA investigational levels are notified as follows:

- **Level I**
Written notification to the wearer, with copies to the wearer's Authorized User (supervisor), the RSS Health Physicist responsible for the work area, and the RSS Dosimetry File. No response is required unless deemed appropriate by the Radiation Safety Officer (RSO).
- **Level II**
Same as ALARA I, with a Health Physicist investigation (if warranted) into the potential causes. If necessary, recommendations for improving radiation safety practices will be issued to reduce the likelihood of recurrence. The Health Physicist will document the investigation and forward copies to the wearer, Authorized User (supervisor), and RSO.

An ALARA notification does **not** mean the wearer was overexposed; it means the dose result exceeded an ALARA investigation level. If an wearer's radiation exposure exceeds a regulatory limit, RSS will initiate a separate investigation, followed by formal notification to LARA (and the wearer).

Declared Pregnant Women

The Declaration of Pregnancy Form provides the formal means for a pregnant employee worker to voluntarily notify RSS of her decision to authorize the application of special occupational dose limits to the embryo/fetus (500 millirem over the gestation period and 50 millirem per month). A Declaration of Pregnancy can only be made with this form.

If a woman chooses not to declare her pregnancy, her occupational dose limit will remain unchanged (i.e., 5,000 millirem per year).

The choice to declare a pregnancy is personal and should be an informed one. A pregnant employee needs to be cognizant of information supplied by the NRC and RSS regarding the potential health effects from radiation exposure to herself and her embryo/fetus. RSS provides written information about potential effects and will assist the pregnant employee in understanding the information to help her make an informed decision.

A fetal dosimeter is issued monthly and should be worn on the abdomen (under the protective apron, if any), in addition to the individual's regular dosimetry issue (if any).

It is **important** that the Dosimetry Contact disseminate information about declaration of pregnancy to **all** female employees in your Department or Unit. This information can be obtained by calling the RSS Dosimetry Coordinator (764-4294).

The information includes the following documents:

- [Declaration of Pregnancy Form](#)
A pregnant employee can voluntarily declare her pregnancy by completing and submitting this form to RSS.
- [Pregnancy Declaration Expiration Form](#)
A declaration of pregnancy automatically expires when the condition of pregnancy ceases or upon termination of employment with U-M. A Declared Pregnant Woman can provide RSS with written notice of the expiration of pregnancy by completing and submitting this form.
- [Pregnancy Declaration Revocation Form](#)
A Declared Pregnant Woman may voluntarily revoke her declaration of pregnancy at any time and for any reason. This can be done whether or not the pregnancy has concluded.
- [NRC Regulatory Guide 8.13](#) – Instruction Concerning Prenatal Radiation Exposure
- [Reproductive Health Awareness Guideline](#)

Revision History

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Original		2	10/20/17				
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