

Chapter 9: [Radiological Safety](#)

Personnel Dosimeter Requirements

Product ID: [238](#) | Revision ID: 2657 | Date published: 6 December 2023 | Date effective: 6 December 2023

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/radReqDosimeterPersonnel.pdf>

1 Purpose

The purpose of these requirements is to ensure that occupational exposure to radiation is accurately measured, recorded, and provided to dosimeter wearers. These requirements cover dosimeter issuance and return and dose reporting for entry into areas with radiological postings, for special tasks, and for pregnant workers. They apply to workers, who enter a posted radiological area or perform radiological work, their supervisors, points of contact, and line management, and Radiation Protection and SLAC Site Security.

2 Requirements

2.1 Entry into Posted Areas

ESH training and dosimetry requirements for entry into areas with a radiological posting are specified on the posting as described and illustrated in [Radiological Safety: Radiological Work and Area Entry Requirements](#). (See [Controlled Areas and Radiologically Controlled Areas \(RCAs\)](#) for a map.)

Note Areas posted as a controlled area are the only type of radiological posting that does not require a dosimeter for entry.

2.2 Personnel Dosimeters

Dosimeter requirements are summarized in Table 1 and detailed in the following sections.

Table 1 Dosimeter Requirements by Type of Access

Type of Access	Dosimeter Required?	Dosimeter Type	Form
Unescorted access	Yes	Personnel dosimeter	Form A
Escorted access	Yes	Personnel dosimeter	Form B
Tour	Yes	Tour/group dosimeter	Form C

2.2.1 Unescorted Access – SLAC Employees and Long-term Non-employees

A whole-body personnel dosimeter is required for

- Workers who enter *radiologically controlled areas (RCAs)* or *radiological areas* as part of their routine work
- Any worker who will handle radioactive materials if a potential of 100 mrem *total effective dose (TED)* in a year is likely

Such workers must have the required training and are allowed unescorted access to such areas. To obtain a dosimeter, submit [SLAC Dosimeter / ID Request Form A](#) to the SLAC Site Security Office or designated point of contact representatives (POC) authorized by the Radiation Protection (RP) Department. (See [Site Access Control: Badging Procedures](#).)

Note Work area and work type requirements determine the assigned dosimeter type.

2.2.2 Escorted Access – Work Purposes

Individuals without the required training entering an RCA for work purposes will be issued a personnel dosimeter. Such individuals must be accompanied by a qualified escort; the escort submits [SLAC Dosimeter / ID Request Form B](#). (See [Site Access Control: Escorted Access Authorization Procedures](#).)

Important Such individuals may only perform *non-radiological work*; to conduct any *radiological work* in these areas, the individual must have GERT training.

2.2.3 Escorted Access – Tours

Tours will be issued a tour/group dosimeter if entering a radiologically controlled area (RCA). Tours must be accompanied by a qualified escort; the escort submits [SLAC Dosimeter / ID Request Form C](#) to obtain a group ID badge and tour/group dosimeter. The escort wears the tour/group dosimeter in addition to his or her own personnel dosimeter. A separate form and escort are required for every 20 tour members. (See [Site Access Control: Escorted Access Authorization Procedures](#) for escort requirements.)

2.3 Additional Dosimeters for Special Circumstances

2.3.1 Pregnant Workers

Additional dosimeters may be assigned to a pregnant worker if the employee formally declares a current or potential pregnancy using the [Declaration of Pregnancy Form](#). The declaration is voluntary and does not affect benefits, seniority, or potential for promotion.

Making the declaration is solely the pregnant worker's responsibility. If she chooses to continue her current assignment and it includes working in an RCA or radiological area, additional dosimetry requirements will apply as specified by the dosimetry program manager. These additional requirements can be revoked by completing the [Withdrawal of Pregnancy Declaration Form](#). (For more information on pregnancy and radiation exposure, see [Health Physics Society Fact Sheet: Radiation Exposure and Pregnancy](#).)

2.3.2 Workers Who Perform Special Tasks

Supplemental dosimeters – that is, dosimeters that are to be worn in addition to a personnel dosimeter - may be required for particular tasks. Radiation Protection Department staff and supervisors make this determination and provide support as needed. Supplemental dosimeter requirements are documented on a [radiological work permit \(RWP\)](#). (Dose results from supplemental dosimeters are used for trending and real-time monitoring purposes and will not be entered into the [Occupational Dose Tracking System](#) as official dose records.)

2.4 Ensuring Accurate Dose Readings

The purpose of a dosimeter is to measure a worker's occupational exposure to radiation. Therefore, the dosimeter must be handled and worn correctly, must only be used by the person to whom it was issued, and must not be exposed to non-occupational sources of radiation.

2.4.1 Personnel Dosimeter Placement on the Body

To ensure the dosimeter accurately records the whole-body radiation dose, the dosimeter must be placed on the front of upper torso, between neck and waist (never clipped onto a pants pocket, belt, or shirtsleeve). It must be facing outward, with no covering of any kind (wear it on the topmost layer of clothing; if wearing personal protective clothing, wear it on that layer, facing outward).

Note Personnel dosimeters are issued with a holder. The newest holders are fitted with an alligator clip that can be clipped to a pocket or lanyard. Additional installation tips include removing the dosimeter from the plastic bag and not removing the plastic shell that covers the dosimeter (the shell must remain intact, including the thin label on the front window).

2.4.2 Supplemental Dosimeter Placement

Supplemental or additional dosimeters must be worn as directed by Radiation Protection Department staff or in the [radiological work permit \(RWP\)](#).

2.4.3 Storage When Not in Use

The best place to store a dosimeter is on the dosimeter storage rack if one is provided in the local work area. Alternatively, storing it in the wearer's on-site office prevents non-occupational radiation exposure such as that commonly encountered in medical facilities, airports, or off-site work places or laboratories with radiological equipment.

Important Do not store a dosimeter in a purse, wallet, or vehicle. Do not pass a dosimeter through any x-ray device such as those found at airports, and do not take it on an airplane.

2.4.4 Medical Treatment

Medical and dental treatment may cause radiation exposure. Because personnel dosimeters issued by SLAC are intended to measure only occupational exposure (that is, exposure at work), dosimeters must not be taken to medical or dental offices or worn immediately after any medical radiopharmaceutical procedure

(diagnostic or therapeutic) that involves radiation, such as heart stress tests, positron emission tomography (PET) scans, and treatments for hyperthyroidism.

An individual undergoing such procedures must do the following:

1. Before the procedure, he or she must leave his personnel dosimeter at SLAC. The dosimeter should be placed on the work area storage rack or turned in at the Dosimetry Office (Building 28, Room 134, ext. 4894).
2. After the procedure, when returning to work, he must go the Radiation Protection Field Operations Office (Building 28, Room 131, ext. 4299) and request an external radiation survey. (There is no need to describe the medical procedure, other than it involved nuclear medicine.)
3. If the survey indicates the individual's radiation level is at or near background, the individual may retrieve his dosimeter and resume wearing it.
4. If the survey indicates a radiation level above background, the individual must not retrieve or wear his dosimeter and must avoid others wearing dosimeters. (This means the individual may not enter areas that require dosimeters.) The individual must wait a day or two and then be surveyed again, until his radiation level is normal.

If a dosimeter may have been exposed to additional radiation due to a medical procedure, the individual must complete a [SLAC Lost / Damaged Dosimeter Form](#), indicating a potential medical procedure exposure. (For more information on medical treatment and radiation exposure, see [Health Physics Society Fact Sheet: Radiation Exposure from Medical Exams and Procedures](#).)

2.5 Dosimeter Return

Every dosimeter must be returned for processing within 15 days after the dosimeter's wear period ends. E-mail reminders will be sent to the wearer and their supervisor after the 15-day grace period.

Note *If the wearer will not be at SLAC when the wear period ends, they should return it before leaving SLAC.*

Dosimeters can be returned

- In person to SLAC Site Security or the assigned Dosimetry point of contact representative
- Through inter-departmental mail, RP Dosimeter Return, Mailstop 48
- If the dosimeter is off site, through a mailing procedure specified by the SLAC Dosimetry and Radiological Environmental Protection Group. (Do not send by regular mail.)

2.5.1 Wear Period

Wear periods depend on the type of dosimeter issued for specific worker categories. The beginning of the wear period is printed on the back of the dosimeter. The wear period for each dosimeter type follows:

- Temporary: one calendar month (exchanged at the end of the month; must be obtained from and returned to SLAC Site Security)
- GERT / RWT: three months (exchanged quarterly at the end of March, June, September, and December)

2.5.2 Return without Exchange

A dosimeter is returned with no provision for exchange when

- A temporary worker's assignment ends
- Anyone leaves SLAC permanently
- If the dosimeter will no longer be needed (notify POC)

2.5.3 Routine Dosimeter Exchange

Personnel whose work requires long-term dosimetry must return their dosimeter at the end of each wear period and pick up a new dosimeter for the new wear period.

Routine exchange occurs systematically as arranged by the [Dosimetry Points of Contact Representatives \(POCs\)](#). Some POCs handle the exchange seamlessly using the storage racks – everyone places the current dosimeter in the rack at the agreed on time and the POC exchanges it by the next work day. If no POC is assigned, the exchange can be handled through SLAC Site Security.

Note *GERT-qualified personnel are issued a dosimeter only if their work assignment includes entering an RCA or upon request.*

2.5.4 Changing Dosimeter Type

If additional training is completed or a work assignment changes and a different type of dosimeter is needed, submit a new [SLAC Dosimeter / ID Request Form A](#) to the SLAC Site Security Office.

2.6 Replacing a Lost, Damaged, or Compromised Dosimeter

Dosimeters that are lost, damaged, or exposed to non-occupational or non-SLAC radiation must be declared as such by submitting a completed [SLAC Lost / Damaged Dosimeter Form](#) to SLAC Site Security or to the Radiation Protection (RP) Dosimetry Group (Mailstop 48 or esh-drep@slac.stanford.edu). A new dosimeter will be issued.

A compromised dosimeter is one that was exposed to a non-occupational or non-SLAC radiation source such as medical diagnostic procedure or treatment such as x-rays, dental x-rays, nuclear medicine. It also includes situations where the dosimeter is exposed but the wearer is not, such as when a dosimeter passes through a security device such as x-ray machine at an airport, or it is inadvertently left in the accelerator housing while the beam is on or next to activated beam line components.

2.7 Dose Records

The Dosimetry and Radiological Environmental Protection Group provides radiation dose monitoring services and dose information to the dosimeter user to whom the dosimeter is assigned.

Anyone with a SLAC computer account can access dose information any time by logging in to the [Occupational Dose Tracking System](#).

Dose reporting frequency is based on dosimeter type:

- GERT / RWT (quarterly exchange) dosimeter users are provided an annual report of their doses
- Visitors, users, and subcontractors holding visitor/temporary dosimeters receive reports of non-zero radiation doses no later than 90 days after the end of the visit. Dose reports are provided upon request to individual wearers.

2.7.1 Dose History Reporting

Dose history reports contain all radiation dose information from the dosimeter during the user's stay at SLAC. Dosimetry program staff will issue dose history reports to departing SLAC employees upon written request.

2.7.2 Dosimeter User Request to Release Records

Current and former dosimeter users may authorize the release of radiation dose information by submitting a completed [Authorization to Release Occupational Exposure Information](#) form.

2.7.3 Exposure Reports from Other Radiological Facilities

To ensure accurate and complete dose reporting, dose reports of all occupational exposures incurred at other institutions, including exposures from past employment if available and while visiting other institutions while employed by SLAC, must be forwarded to the Radiation Protection Department.

SLAC employees and *special individuals*, as defined in Department of Energy Order 231.1B, Change 1, "Environment, Safety, and Health Reporting" ([DOE O 231.1B, Chg 1 \[Admin Chg\]](#)), acting in a SLAC official capacity at a non-DOE facility and monitored for occupational radiation exposure must provide the monitoring results to SLAC within 30 days of receipt. To facilitate tracking, the employee or special individual must submit a [Non-DOE Assignment Notification Form](#) and obtain concurrence from Radiation Protection Department staff before going on assignment. (For details see the [SLAC External Personnel Dosimetry Program Manual](#).)

3 Forms

The following forms and systems are required by these requirements:

- [SLAC Dosimeter / ID Request Form A](#) (SLAC-I-760-0A07J-006). Form for requesting a SLAC ID badge and personnel dosimeter for individuals with required training
- [SLAC Dosimeter / ID Request Form B](#) (SLAC-I-760-0A07J-007). Form for authorizing escorted access to the safety access area and requesting a temporary escort-required badge (and personnel dosimeter if required) for individuals without required training to conduct non-radiological work
- [SLAC Dosimeter / ID Request Form C](#) (SLAC-I-760-0A07J-008). Form for authorizing escorted access and requesting temporary escort-required badges (and a tour/group dosimeter if required) for tours entering the safety access area. A separate form and escort are required for every 20 tour members.
- [SLAC Lost / Damaged Dosimeter Form](#) (SLAC-I-760-0A07J-003). Form for requesting a replacement dosimeter

- [Radiological Safety: Declaration of Pregnancy Form](#) (SLAC-I-760-0A02J-001). Form for documenting declaration of pregnancy and decision to remain in current assignment
- [Radiological Safety: Withdrawal of Pregnancy Declaration Form](#) (SLAC-I-760-0A02J-002). Form for withdrawing declaration of pregnancy
- [Radiological Safety: Authorization to Release Occupational Exposure Information](#) (SLAC-I-760-0A07J-005). Form for authorizing release of occupational exposure information
- [Radiological Safety: Non-DOE Assignment Notification Form](#) (SLAC-I-760-0A07J-009). Form for notifying the Radiation Protection Department of proposed assignment to a non-DOE facility
- [Occupational Dose Tracking System](#)
- [Radiological Work Permit](#)

4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- The Dosimetry and Radiological Environmental Protection Group must follow their established recordkeeping practices to ensure that dosimeters are issued and processed and that results are recorded and reported as required by applicable regulations.

5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 9, “Radiological Safety”](#)
 - [Radiological Safety: Radiological Work and Area Entry Requirements](#) (SLAC-I-760-0A05S-002)
 - [Radiological Safety: Safety Briefing](#) (SLAC-I-760-0A05S-004)
 - [Radiation Protection Program Site](#) (SharePoint)
 - [Dosimetry and Radiological Environmental Protection \(DREP\)](#)
 - [SLAC External Personnel Dosimetry Program Manual](#) (SLAC-I-760-2A07F-001, DG-101)
 - [Dosimetry Points of Contact Representatives \(POCs\)](#)
- [Chapter 55, “Site Access Control”](#)
 - [Site Access Control: Badging Procedures](#) (SLAC-I-720-0A00C-001)
 - [Site Access Control: Escorted Access Authorization Procedures](#) (SLAC-I-720-0A00C-002)

Other SLAC Documents

- [Controlled Areas and Radiologically Controlled Areas \(RCAs\)](#)
- [Radiation Protection Department](#)

Other Documents

- Site Compliance Plan for Department of Energy Order 231.1B, Change 1, “Environment, Safety, and Health Reporting” ([DOE O 231.1B, Chg 1 \[Admin Chg\] SCP](#))
- [Health Physics Society Fact Sheet: Radiation Exposure and Pregnancy](#)
- [Health Physics Society Fact Sheet: Radiation Exposure from Medical Exams and Procedures](#)