

Chapter 9: [Radiological Safety](#)

Safety Briefing

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

This briefing is to be read in person by the SLAC escort to individuals without training being escorted in a *controlled area* or *radiologically controlled area (RCA)*, before entering the area, as part of the badging/dosimeter issuing process (see [Radiological Safety: Personnel Dosimeter Requirements](#) [SLAC-I-760-0A07S-001]).

1 Entry Restrictions

SLAC has many areas containing potentially hazardous equipment and materials that can pose a health risk. Therefore, access to certain areas at the laboratory is limited to those who have had the appropriate training, or are escorted by someone who has that training.

- Individuals without the required training are allowed to enter the *safety access area*, including the *accelerator area*, *controlled areas*, and *radiologically controlled areas (RCAs)* **only if escorted**.
- Individuals without the required training **are not** allowed to enter *radiological areas* (*radiation areas*, *high radiation areas*, and *contamination areas*). Escorting is not allowed.
- Entry into an RCA requires a dosimeter to monitor for radiation. For visitors entering an RCA on a tour the escort is required to wear a tour/group dosimeter in addition to his/her personnel dosimeter. For untrained individuals conducting non-radiological work in an RCA a personnel dosimeter is required and must be worn by the individual as directed by the escort and returned to the escort at the end of the visit.

Table 1 shows common signs indicating different areas at SLAC. Areas themselves are shown on [Controlled Areas and Radiologically Controlled Areas \(RCAs\)](#).

When individuals are under escort, the following responsibilities apply:

- **Individual being escorted:** understands there are unique hazards in certain areas; follows escort's instructions; and if a badge and/or dosimeter are issued, returns them at the end of the visit
- **Escort:** briefs the individuals being escorted on safety requirements, including reading this document to him or her; provides safety directions; and accepts responsibility for the individual's safety while acting as escort. Training is current and sufficient to provide escort to the listed areas. Maintains visual contact at all times and ensures that the individual being escorted does not engage in non-green work without proper work authorization and release. If entering an RCA, escort must wear dosimeter(s) at all times and ensure that the individual worker wears a dosimeter.

2 Regulatory Limits

The annual dose limit for visitors is 100 millirem per year. The average annual dose received from natural background sources is about 360 millirem per year.


3 Risks Associated with Radiation Exposure

The increased risk of cancer from occupational radiation exposure is small when compared to the overall cancer rate in the United States. Factors that affect the level of risk include the radiation dose level and the area of the body that is exposed. Radiation-induced genetic disorders that are passed on to future generations are called heritable effects. Such effects have been found in plants and animals but not in humans. The risk of heritable effects from ionizing radiation is considered to be very small when compared to the normal rate of genetic disorder.

4 Prenatal Radiation Exposure

The embryo-fetus is known to be more sensitive to radiation than adults due to the rapid division rate of developing cells. Radiation doses can increase the chances that the child will experience slower growth or mental development, or develop childhood cancer. Women who are or may be pregnant, or who are planning a pregnancy, should consult with the Radiation Protection Department before the visit.

Table 1 Common Area Classification Signs to Be Observed at SLAC

Entry Restriction	Common Signs		
Untrained individuals are allowed only if escorted (accelerator areas and controlled areas)			
Untrained individuals are not allowed (radiological areas)			