

## SSRL ACCESS GUIDELINES & AGREEMENT

Welcome to SSRL. We hope that your stay here will be enjoyable as well as safe. We take very seriously the challenges of safety and security here. These guidelines are intended to call your attention to concerns which you may encounter at SSRL/SLAC and to encourage you to be alert for and avoid potential problems.

Consistent with the Stanford University and U.S. Department of Energy policies, users need to be aware of certain responsibilities regarding the use of information resources and the serious consequences to us as individuals if we do not adhere to these. SLAC information resources are government property and, as such, are subject to "appropriate use" requirements found in federal law and the provisions of the SLAC contract pertaining to the proper use, protection, accountability and disposition of government property. These laws and policies apply to all data-communication and telecommunication facilities and services (including, but not limited to, e-mail, instant messaging, telephones, voice mail, faxes, SLAC data, networking services, storage media, computers and associated peripherals and software), whether for administration, research, teaching or other purposes. Connecting equipment not owned by SLAC to SLAC networks is a use of SLAC information resources. The section on Use of SLAC Information Resources outlines the responsibilities of those who use SLAC information resources. This, together with more detailed policy and security information available at <http://www.slac.stanford.edu/comp/policy/policy.html>, will contain relevant new information as it develops.

Everyone who uses SSRL facilities is expected to be familiar with access requirements and to participate fully in training and safety programs relevant to the performance of their tasks. In addition to the guidelines related to safety and security outlined here, SSRL maintains a significant amount of safety-related information on the SSRL safety webpage: <http://www-ssrl.slac.stanford.edu/safety/>

To aid in maintaining a safe environment, SSRL has established a Safety Office to address laboratory and experimental safety matters and recommend specific policies. In addition, SLAC has several safety committees which oversee specific safety areas, including: ALARA, Earthquake, Electrical, Environmental, ES&H Coordinating Council, Fire Protection, HEEC, Hoisting and Rigging, Laser Safety, Local Safety Committee, Non-Ionizing Radiation, Operating Safety, Radiation Safety, Safety Overview, SEDAC, and ESHAC.

For the purpose of these guidelines, **Employee** or **User** or **Experimenter** and **Supervisor** or **Spokesperson** are generally interchangeable.

The experimental conditions at SSRL are varied and demand that each employee and user pay considerable attention to safety. A large number of different experiments are performed by users who are, for the most part, associated with the Laboratory for only a short time during the year and use a relatively small area. In addition, experiments utilize extremely intense radiation and frequently, hazardous samples.

SSRL employees are expected, therefore, to carry out their responsibilities in a safe manner, to be mindful of any potentially unsafe conditions or practices and to report these to their supervisor, the SSRL Safety Office or to the appropriate SLAC Safety Committee through the SSRL representative.

The requirements described here apply to everyone who visits and utilizes this facility. If you have questions related to any safety procedures at SSRL, please contact Matt Padilla at 650-926-3861 or Behzad Bozorg-Chami at 650-926-3872. If you have any other questions, please let us know. We look forward to working with you at SSRL.

*-Jo Stöhr, SSRL Director*

## OVERVIEW – INTEGRATED SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEM

DOE Office of Basic Energy Sciences' Safety Policy: The Office of Basic Energy Sciences (BES) is committed to conducting research in a manner that ensures protection of the workers, the public and the environment, and it is a direct and individual responsibility of all BES managers and BES supported researchers and their staff. Funds provided by BES for research will be applied as necessary to ensure that all BES research activities are conducted safely and in an environmentally conscientious manner. Only research conducted in this way will be supported.

The message is valid for all our activities and is consistent with SLAC and SSRL policy to protect the safety and health of its employees, its users, the public, and the environment and to protect its property from loss or damage. We all have a responsibility towards maintaining and promoting safety in our day-to-day lives and assuring that we minimize our impact on the environment. So whether you're at home, at the office or on the experimental floor, take the time to consider your safety and health, and that of your colleagues, co-workers, friends and family, and how best you can protect it.

Consistent with SLAC's Integrated Safety and Environmental Management System (ISEMS), job/task specific hazards and controls are covered by a Job Hazard Analysis and Mitigation (JHAM) process which plans for safe work by identifying tasks and their hazards, establishing controls to mitigate risks, documenting results and monitoring effectiveness. For SSRL users, this safety review is conducted each time a proposal or beam time request is submitted, so it is important that spokespersons fully disclose any potential hazards at that time. This process prompts the specific controls, procedures, and personal protective equipment necessary to safely complete experiments or activities by seeking the participation of those who will perform the work. Area Hazard Analyses (AHAs) have also been prepared for each work area at SSRL to: 1) determine the hazards that may be present in each area; 2) determine appropriate controls for these hazards; and 3) provide a mechanism to communicate these hazards. [http://www-ssrl.slac.stanford.edu/safety/aha/aha-experimental\\_floor.doc](http://www-ssrl.slac.stanford.edu/safety/aha/aha-experimental_floor.doc).



The SSRL safety organization consists of the SLAC Associate Director of the SSRL Division, Dr. Jo Stöhr, who is responsible for safety policies and practices and is assisted by the SSRL Safety Office, group leaders and supervisors, and ultimately you. All of the SLAC safety organization is available to help as well. We adhere to all SLAC safety regulations.

During normal work hours, and during all times of operation, there is an operator on duty. The Duty Operator should be contacted in the case of any emergency.

The following pages will provide you with safety guidance in a number of general areas. They are not, however, a substitute for comprehensive training which may be necessary for operation of certain equipment, nor do they supplant applicable DOE, SLAC, SSRL or other regulations which are in force at SSRL. Detailed information about regulations is available from your supervisor, SSRL Safety Officer, SLAC Safety Committee members, or through the SLAC ES&H Division.

As part of your initial orientation concerning your work here, your supervisor/spokesperson will identify the potential hazards, if any, to which your work might expose you or others. He/she will also instruct you in the proper methods for safely going about your work.

You are the person best able to assure your safety and health. Please work defensively by looking for potential hazards, such as back and eye injury risks, electrical hazards and hand traps before you start a job. **PLAN YOUR WORK FOR SAFETY.**

It is the special responsibility of the Spokesperson for each experiment to:

- Identify all safety concerns associated with the experiment and communicate these to the SSRL staff on documents related to beam time (e.g., beam time requests, hazard forms, safety review summaries);
- Notify SSRL in advance of all users expected to be on-site for scheduled experiments;
- Establish procedures for the safe handling; storage and disposal of hazardous materials;
- Ensure that all participants in the conduct of the experiment are familiar with all safety aspects and procedures for safe operation of the experiment; and
- If not planning to be on-site for scheduled experiments, spokespersons must appoint a lead contact who will be available.

Should you notice some hazard, please inform your supervisor. If he/she is not available or unable to correct the hazard, contact the SSRL Safety Office, Matt Padilla ext.3861, Beam Line or Accelerator Operator or any SSRL representative on the SLAC Safety Committees. Their names are listed on the previous page. (Accelerator Operator - X2751, Beam Line Duty Operator X4040).

Do not bring pets to SSRL. Children may enter the SSRL experimental floor areas only for brief **guided** tours. No person may participate in any experimental activity at SSRL unless he/she is a bonafide member of an experimental group and has completed the appropriate training as well as read and signed the SSRL ACCESS AGREEMENT.

Temporary one-day badges are issued at Gate 17 or 30. A person with a visitor badge must be accompanied at all times by and is the responsibility of his/her escort.

FIREARMS may not be brought to the SLAC site.

If you have a question or complaint regarding security, safety or health matters, please discuss it with your supervisor or SSRL point of contact. If this does not result in a satisfactory resolution of the problem, contact an SSRL Deputy Director and then the SSRL Director. Finally, you may file a written complaint directly with DOE at:

U.S. Department of Energy  
Director SLAC/DOE Site Office  
Stanford Linear Accelerator Center  
2575 Sand Hill Road, MS 8A  
Stanford CA 94025

The following topics are covered in this SSRL Access Guidelines:

Chemical Safety	Mechanical Equipment Safety
Construction Safety	Radiation Protection Information and
Cryogenic Safety	Procedures for SSRL Users
Earthquake Safety	Radiation Safety and Interlocks
Electrical Safety	Use of SSRL/SLAC Information Resources
Emergencies, Fire, Medical & First Aid	
Ergonomic Safety	
Guidelines for Working Alone	
Hutch Authorization and Operation	
Injury and Illness Reporting	

**The last page is the SSRL User Access Agreement which all users must review and sign annually.**

<p style="text-align: center;"><b>CHEMICAL SAFETY</b></p>
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**YOUR RIGHT TO KNOW:** You have a right to know what hazards you may be exposed to in your workplace and to know what precautions are in force to protect your health and safety.

**YOUR RESPONSIBILITY:** You are responsible to help maintain a safe and healthful work environment by learning and complying with all regulations applicable to your activities.

**HAZARDOUS SUBSTANCE:** is any substance that is **IGNITABLE, CORROSIVE, REACTIVE** or **TOXIC**, including **CARCINOGENIC** or **RADIOACTIVE** materials and biohazards. A Material Safety Data Sheet (MSDS) must accompany all hazardous substances which come to SSRL.

**EXPERIMENTAL SAFETY:** You must obtain approval prior to bringing any hazardous substance to SSRL. Safety reviews and instructions are provided when submitting proposals and requesting beam time.

**STORAGE:** Hazardous substances must be kept in properly designed containers with clear labels, stating chemical name, date, responsible persons name and telephone number.

**CHEMICAL SPILLS:** If you spill a chemical that you know can be safely cleaned up, do so, or have it done. If you discover a situation that is hazardous to the general SSRL population, vacate the area and pull a fire alarm box. Then, from a safe location dial Ext. 9-911 and provide additional information to emergency personnel.

**CHEMICAL DISPOSAL:** You can get help and advice about chemical handling or disposal from the SSRL Safety Office on ext. 3861.

**SAMPLE PREPARATION LABORATORY:** For work in the Sample Preparation Laboratory, normal lab practices apply. Approval and orientation is required to use the Sample Preparation Laboratory.

**FOOD:** Food must not be stored, handled or consumed near chemical use areas.

<p style="text-align: center;"><b>CONSTRUCTION SAFETY</b></p>
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Construction sites often present unfamiliar hazards at SSRL. In general, you should detour around construction sites. If your work requires you to enter a construction area, observe warning signs (**HARD HAT AREA**, etc.) and watch for hazards overhead and underfoot.

<p style="text-align: center;"><b>CRYOGENIC SAFETY</b></p>
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The hazards from cryogenic substances are:

**EXTREME COLD**—Cryogenic liquid and their boil-off vapors can rapidly freeze skin and eye tissue. When transferring liquid, **WEAR INSULATED GLOVES, SAFETY GLASSES AND APPROPRIATE CLOTHING** (aprons or long pants without cuffs). Follow rules posted at fill stations.

**EXPANSION RATIO**—Use properly designed dewars, transfer lines with properly designed safety devices in working order. **NEVER TRAP COLD LIQUID IN A CLOSED VOLUME** without a relief valve. As the liquid warms, the pressure can increase 1000 fold.

**ASPHYXIATION**—In small spaces (such as experimental hutches) ensure adequate ventilation. Boil-off vapors can displace air.

**PROPER PROCEDURES.** Know proper filling practices. **DO NOT LEAVE DEWARS UNATTENDED WHILE FILLING.** Secure dewars for earthquake.

**FIRST AID.** In the event of a cold contact burn, remove clothing which would restrict air circulation to the affected area. Do not rub frozen parts, as tissue damage may result. **OBTAIN MEDICAL HELP AS SOON AS POSSIBLE.** An unconscious person should be removed to a safe location to resuscitate and seek help, except as noted below for oxygen deficiency hazards.

Liquid hydrogen is flammable. Its use at SSRL constitutes a special hazard and requires safety review and approval.

**Oxygen Deficiency Hazards Associated with the LN Distribution System:**

1. Air normally contains about 21% diatomic oxygen (O<sub>2</sub>) with the remainder consisting mostly of nitrogen.
2. Individuals exposed to reduced-oxygen atmospheres may suffer a variety of harmful effects including accelerated heartbeat (17%), dizziness and increased reaction time (16%), loss of muscle control (15%), lost of consciousness and permanent brain damage (12%), inability to move (10%) and death in 5-8 minutes (6%).
3. At SSRL, oxygen deficiency can occur as a result of a cryogenic spill, for example liquid nitrogen (LN). As a result, areas which use LN from a continuous feed are protected with oxygen deficiency hazard (ODH) monitors. At SSRL, this includes some hutches and the entire experimental floor (the ground floors of B120, B130, and B131).
4. In order to insure personnel safety, the exposure limit has been set to 19.5% at which point the ODH monitors will alarm and personnel must evacuate the affected area. For the SSRL experimental floor, the fire alarm will be activated if the oxygen concentration stays below 19.5% for more than 30 seconds forcing personnel to evacuate the building. **DO NOT** reenter the building until it has been cleared by the fire department. For the case of a local alarm in an experimental hutch or the LN fill station, personnel must exit the hutch or fill station only. **DO NOT** enter an area in which an ODH

alarm is activated even to rescue someone who is down. Rescues may only be done by trained and equipped professionals.

5. The level of risk for oxygen deficiency is calculated for each affected area and posted using an ODH classification scheme in which ODH Hazard Class 0 (ODH 0) is the least hazardous and 4 the most. At SSRL, the experimental floor is ODH 0 and the experimental hutches that use LN on a continuous feed are ODH 1. Untrained visitors may enter an ODH 0 area without an escort after a hazard awareness briefing. Untrained visitors to ODH 1 areas must be escorted by trained personnel.
6. Personnel protective equipment (PPE) must be used for transferring cryogenics from fill stations to portable dewars. The requirements include safety glasses/face shields and gloves and are posted at the LN dispensing locations.

### **Procedure for Preparing Shipping Dewars with Free Liquid Nitrogen (Hazardous):**

1. Only properly trained users and staff can prepare dewars for shipping. Contact the SSRL Safety Officer for training.
2. The appropriate PPE must be used when filling a liquid nitrogen shipping dewar.
  - a. Cryogenic gloves
  - b. Protective glasses
  - c. Long pants (no cuffs) or Apron
  - d. Closed-toe shoes
3. Use the designated beamline 4-liter dewar shown in Fig. 1 to fill the shipping dewar with liquid nitrogen.
4. Pour enough liquid nitrogen into the shipping dewar until liquid is observed in the top of the dewar (Fig. 2). This step is **required** for hazardous shipping.
5. Cap and insert the dewar into the shipping container.
6. Fill out the ‘SSRL Free Liquid Nitrogen Dewar Shipping Form’, one form for each dewar.
7. If any other hazard other than liquid nitrogen is present in the dewar, a ‘Hazardous Materials Shipping Form’ must also be filled out and attached to the dewar.
8. Insert the form(s) into a clear sticky envelope (available at the PX beamlines or SSRL Shipping and Receiving in Bldg. 120 adjacent to BL1-4) and attach it to the dewar (Fig. 3).
9. Deliver the dewar to SSRL Shipping and Receiving in Bldg. 120 adjacent to BL1-4 and place it in the ‘Sample Dewar Shipping’ area for ‘Outgoing Dewars’ (Fig 4).



Fig. 1. Designated beamline dewar (4 liters) for filling shipping dewars.



Fig. 2. For shipping dewars containing free liquid nitrogen (hazardous), fill the shipping dewar until liquid nitrogen is observed.



Fig. 3. Attach a plastic envelope containing the proper shipping form to each dewar.



Fig. 4. Deliver dewars to SSRL Shipping and Receiving under the 'Outgoing Dewars' sign (Bldg. 120, near BL1-4).

## EARTHQUAKE SAFETY

**DON'T PANIC!** Act immediately when you feel the ground or building shaking. Keep in mind that the greatest danger is from falling objects.

**IF YOU ARE INDOORS:** Move immediately to a safe place; under a desk, table or workbench; in an interior doorway; or in the corner of a room. Watch out for falling debris or tall furniture. Stay away from windows and heavy objects. Don't use elevators.

**IF YOU ARE OUTSIDE:** Try to get to an open area away from buildings, tall trees, and power lines.

**IF YOU ARE IN AN AUTOMOBILE:** Calmly stop the car away from tall buildings, overpasses or bridges. **Stay in the car.**

Electricity may go out, fire alarms or sprinkler systems may activate. Expect to hear noise from breaking glass, cracks in walls and falling objects.

There may be aftershocks. Sometimes aftershocks will cause damaged structures to collapse.

**WHEN YOU FEEL IT IS SAFE, LEAVE YOUR IMMEDIATE AREA:**

All SSRL Staff and Experimenters should gather in the main parking lot above Bldg. 120 (next to Building 274) no matter where they are working.

If an Operator is present, he/she will take charge of safety activities. Cooperate with him/her and assist him/her if requested. Look for your co-workers and report any missing persons.

Someone will be appointed to account for personnel. Check in with that person and **DO NOT LEAVE**, either for personal business or in response to a request from the person in charge, unless you **CHECK OUT** with that person.

Do not re-enter the building until it is declared safe by the SLAC Structural Evaluation Team.

Do not use the telephone except for emergency response activities.

During an earthquake, heavy objects can travel long distances. Any equipment that is brought to SSRL must be designed to withstand 0.75G acceleration, both vertical and horizontal, acting together. Wheeled equipment must have locking casters or be chained to a solid building support or wall. All equipment must be prevented from tipping, spilling and rolling.

<p><b>ELECTRICAL SAFETY</b></p>
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Normal safe laboratory electrical practice is expected of all staff and users at SSRL. The SSRL staff are available to assist with design and construction of equipment, particularly with regard to interlocks and other safety aspects. When working on equipment that could under unexpected energization or start up release energy that may cause injury to personnel, then application of the SLAC lock and tag program must take effect. This program is where the source of energy i.e. electrical, pneumatic, hydraulic is locked out in a safe position by the person working on that device. This assures that control of the energy source remains in the hands of the person working on the equipment and that the hazard has been disabled.

**NO PERSON MAY WORK ALONE** on an open electrical chassis with power on. (Observation, manipulation and monitoring of energized equipment requires SSRL safety office approval and a designated safety watch.)

**EMERGENCY PROCEDURES:** If you encounter someone hung up on a live circuit, **DO NOT TOUCH THE PERSON!** Either turn off the electrical source or use a non-conducting pole to break the connection. If the person is unconscious, perform CPR if necessary, and call for help. After an electrical shock, keep the victim warm and quiet. Get medical help.

**CIRCUIT BREAKERS:** No circuit breaker shall be operated that has not been analyzed and appropriately labeled. Among other things, the category specifies the PPE that must be worn to operate a

particular breaker. Unless specifically authorized in writing by an assistant director, employees and users are prohibited from operating any circuit breaker, even if it is labeled. If you believe a breaker must be operated, contact a SPEAR operator at SPEAR Control (X2751), a duty operator (X4040) or Matt Padilla (X3861).

<p><b>EMERGENCIES, FIRE, MEDICAL &amp; FIRST AID</b></p>
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**EMERGENCY TELEPHONE NUMBER: 9-911**

Fire alarm pull boxes are usually located near exterior doors at SSRL. The fire alarm is a loud continuous sounding horn.

Emergency response is provided by the Palo Alto Fire Department Paramedics -- dial 9-911 on any phone at SSRL or pull the fire alarm.

**WHEN THE FIRE ALARM SOUNDS, LEAVE THE BUILDING BY THE NEAREST CLEAR EXIT.** Move away from the building, and do not impede the access of the Fire Department. If you initiated the alarm, be available to explain the circumstances.

**HALLWAYS AND AISLE WAYS MUST BE KEPT CLEAR FOR EMERGENCY EGRESS.** Do not park in fire lanes.

The SLAC Medical Department (A&E Bldg. 41, Rm. 137) provides non-emergency medical services for SSRL and visitors during normal working hours. See your supervisor or SSRL point of contact for details. After hours treatment is provided at Palo Alto Medical Clinic Urgent Care Center, Stanford Hospital Emergency Unit or your own health care provider.

**RESPIRATOR USE:** A respirator is defined as anything that covers your mouth and nose. Before using any respirator, you must complete a "CORRECT USE OF PERSONAL RESPIRATORY EQUIPMENT" form. This form is available from SLAC and SSRL Stores and Medical Dept. The SLAC physician must review and approve the completed form before a respirator can be issued to you. Training may be required before use of some respirators.

**SMOKING POLICY:** Smoking is not permitted inside buildings.

**ALCOHOL POLICY:** Alcohol is not permitted to be stored or used on site except at functions which occur after working hours and which have been approved in advance by the SLAC Director.

**ERGONOMIC SAFETY**

Repetitive motion injuries are appearing in office workers and others who spend a large amount of their working day typing on computers. These types of injuries also appear in other professions where the same type of tasks are performed repeatedly.

Repetitive motion injuries or cumulative trauma disorders are musculoskeletal problems involving muscles, tendons and nerves, usually manifesting themselves as tendonitis or carpal tunnel syndrome.

Education, simple changes in individual behavior, work habits, and work stations can help prevent such disorders from occurring.

**WORK STATIONS:** Adjust your seat so that you are comfortable, with back supported and feet flat on the floor. Organize your work area so that all material and tools are within easy reach and at a comfortable level. Adjust your display to a comfortable viewing height, with the top of the screen at or just below eye level and avoid glare by positioning your screen away from light sources.

**PERSONAL BEHAVIOR:** Take frequent breaks - Every hour, stand up, move around and get the circulation going.

Stretch - Whole body overhead stretch and hand/finger stretches will help relieve muscle tension.

Vision breaks - take frequent vision breaks, and do "hard blinks" (tightly close and then opening wide) to help restore lubrication.

Posture - remind yourself to sit in a neutral position, not hunched over your desk.

**GUIDELINES FOR WORKING ALONE**

As SSRL becomes larger and more spread out, staff members and users may find themselves working alone or out of the sight of other persons. Because of potential safety concerns, the following guidelines are to be followed by staff, supervisors, users, and visitors:

Employees and their supervisors must review work assignments and schedules to ensure that an employee is not assigned to work with potentially dangerous equipment or materials without adequate back-up.

Examples of activities which **must not be carried out without safety office approval and a designated safety watch:**

- work on a live electrical circuit(s)
- work in a confined space

Examples of activities which **must not be carried out unless a second person is standing by** specifically to render aid:

- handling a highly toxic or explosive material
- handling a large quantity of a flammable material

Examples of activities which should not be carried out unless someone is near enough to respond to a call for help or in a position to notice if you were to become unconscious:

- work with machine tools
- heavy lifting or moving heavy objects
- rigging, climbing or working up high should not be done by users and requires Duty Operator help.

It is difficult to define exact guidelines which cover every situation that might occur. It is important that you plan your work for safety, and seek help and guidance whenever a question exists.

If you find yourself unexpectedly in a situation such as those above, stop the activity. Do not proceed until you have sought the necessary assistance.

## HUTCH AUTHORIZATION AND OPERATION

In most x-ray hutches, hutch operation means that you, the experimenter, are assigned the responsibility to search the hutch after each access to assure that no person is ever locked inside. Hutch operation training is part of the Safety Talk, which is given to new beam line users (and returning users who want a refresher) Monday-Friday at 2 pm (meet in the User Administration Lobby to participate). **In order to act as a Responsible Safety Search Person, you must participate in hutch operation training on your first visit, and you must annually sign the User Access Agreement at the end of these guidelines which includes the following specific items related to hutch authorization:**

- I understand that hazardous radiation levels exist in experimental hutches when the x-ray beam is on.
- I agree that while I am designated as Responsible Person for the purpose of Hutch Operation, I will not permit any person to be locked inside a hutch for any reason. After each access to the experimental hutch, I will conduct a search to assure that no one is inside before I engage the “Search Reset Switch”.
- I will not designate any person to act in my stead as Responsible Person. I will enter my name in the Beam Line Log Book as Responsible Person whenever I take possession of the Search Reset Key.
- I will not tamper with any hutch interlock or component. I will operate the hutch interlock controls in the manner prescribed by SSRL.
- I understand that evidence of failure to scrupulously follow these rules may result in loss of Responsible Person status. The penalty for locking a person in a hutch is to be declared *persona non grata* at SSRL for three years. This penalty shall apply to all persons involved or aware of the action.

To determine if your safety and hutch authorization are current, check the SSRL Access List via the web at [http://www-ssrl.slac.stanford.edu/~proposals/nobars\\_list.html](http://www-ssrl.slac.stanford.edu/~proposals/nobars_list.html). VUV beam line users who do not use hutches are not required to participate in the hutch demonstration; however, this additional training is recommended.

- **Hutch search reset keys are to remain on the premises at all times.** Search Reset (SR) keys must be dropped into the drop box at the beam line BEFORE you leave SSRL. When depositing the key, make a

log entry in the experimental station logbook. To retrieve the key upon your return, call the Duty Operator at X4040 or use the building page (dial 161 and clearly speak your message which will broadcast over the loud speakers).

**For the latest information on the status of the beam lines, call 650-926-BEAM (2326).**

**Definition of Terms:**

1. Hutch Operation means searching and securing an experimental hutch prior to bringing x-rays into it.
2. Responsible Person means the person, from the group of persons authorized to act in this capacity, who is actually in possession and control of the Search Reset Key. Only one person shall act in this capacity at one time. This person's name shall be entered in the Beam Line Log Book either by the SSRL Duty Operator or by the person receiving the key. Logbook entries shall be made in a timely manner.
3. Search Reset Key is the key that engages the Search Reset Switch located inside the hutch. The Search Reset Key shall remain in the possession of the Responsible Person at all times. After each access search the hutch, engage the Search Reset Switch, remove the Search Reset Key and close the hutch door.

**INJURY AND ILLNESS REPORTING**

Any work related injury or illness whether or not it results in lost time must be reported immediately to your direct supervisor, the SSRL safety officer, and the SLAC Medical Department (ext 2881), A&E Building 41, Room 132, during normal working hours. In the event of an injury or illnesses occurring outside normal working hours, the supervisor or SSRL point of contact should leave a message on the SLAC Medical answering machine (ext 2281) noting name of injured worker, nature of injury and time and date.

**MECHANICAL EQUIPMENT SAFETY**

Normal safe laboratory practice is required of every employee and visiting experimenter at SSRL. Special procedures and authorizations are established regarding use of certain tools and equipment. Some general safety practices are:

- **PLAN YOUR WORK** with safety in mind.
- **DO NOT WORK ALONE** when using power tools except small hand tools such as a hand electric drill.
- **KEEP YOUR WORK AREA NEAT.** Packing material, tools and supplies should be put away or disposed of in a timely manner; especially flammable materials.

**DO NOT OBSTRUCT AISLE WAYS.**

**POWER TOOLS:** Wear SAFETY GLASSES, and other proper protective clothing when using any power tool.

**MACHINE TOOLS, SHEARS, BRAKES, SAW AND GRINDERS:** Before using any tool in the SSRL shop you must be checked out by the shop custodian for proper training.

**WELDING:** Wear proper protective clothing; protect others from the weld flash and fumes. DO NOT weld metals which contain or are coated with CADMIUM or NICKEL at SSRL. They produce highly toxic fumes.

**SMALL SPACES:** Make sure that you have adequate ventilation before entering small spaces such as hutches, etc. Be alert for odors; work with a partner.

**FORK LIFT TRUCKS:** You must be checked out and licensed to use a fork lift vehicle. Staff should see their supervisor for assistance, while users should talk to the Beam Line Duty Operator.

**RIGGING AND CRANE USE:** Rigging objects to be safely lifted on a crane is highly technical and requires special knowledge. At least one trained person must be in attendance when loads are being lifted. The DUTY OPERATOR can help, as can the machine shop staff.

**VEHICLE USE:** The SSRL vehicles must be driven in a safe, legal manner. You must have a VALID CALIFORNIAN DRIVERS LICENSE to drive government vehicles. Report any safety deficiencies to the vehicle custodian.

<p style="text-align: center;"><b>RADIATION SAFETY AND INTERLOCKS</b></p>
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Every person who enters the fenced-in parts of SLAC (Accelerator Area) must have in their possession a valid SLAC ID badge. Personnel dosimeter badges that measure radiation dose may also be required, depending on the area to be visited. They must be worn on the upper torso between the neck and waist on the outside of clothing.

Dosimeters are required when working in a Radiological Controlled Area (RCA) such as the SSRL experimental area/beam lines and when working with radioactive samples. SSRL users can get a dosimeter from Jackie Robleto or other User Administration staff. Dosimeters must be turned in before you leave SSRL to ensure that monitoring and accurate documentation can be completed.

Synchrotron radiation beams are the most intense sources of x-rays in the world. A monochromatic beam at SSRL can deliver dose rates of hundreds of RADS PER SECOND. For this reason the protective devices, such as interlocks, shielding enclosures, etc. designed to prevent personnel exposure must not be circumvented or tampered with in any way; even if this means an experiment cannot continue. Problems should be brought to the attention of the Duty Operator. He will contact the appropriate person to correct it.

**LABORATORY X-RAY GENERATORS:** Every x-ray generator at SSRL shall have a designated custodian. That custodian shall control the use of the machine and assure that anyone who uses it has received proper training.

**UV-VISIBLE LIGHT HAZARDS:** In addition to the generally known hazard of biological damage from penetrating x-rays, synchrotron radiation in the visible and ultraviolet (UV) spectral region can cause damage to the eyes or skin.

Particular care should be taken when viewing objects struck by synchrotron radiation since reflected radiation could cause eye damage.

All glass viewports that look into systems containing visible and UV radiation must be covered with an opaque shield and carry a warning sign.

Any window capable of transmitting UV synchrotron radiation (lithium fluoride, sapphire, etc.) shall have an opaque cover and shall carry a caution sign. Such a window constitutes a special hazard and requires a safety review and approval.

<p style="text-align: center;"><b>RADIOLOGICAL PROTECTION INFORMATION AND PROCEDURES FOR SSRL USERS</b></p>
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Please read the follow excerpt from the Radiological Control Manual-Article 622 (SLAC-I-720-0A05Z-001) and become familiar with its contents prior to working on the SSRL Experimental Floor.

After reviewing this material thoroughly, please sign the attached access agreement to verify that you have understood the contents of this briefing. If you have any questions, please contact the SSRL Safety Officer at ext. 3861 or the Operational Health Physics Department at ext. 4041.

As a user at SLAC, you may encounter some areas and operations which are known to produce radiation as a normal part of the working process and environment.

SLAC is dedicated to keeping radiation exposures **As Low As Reasonably Achievable (ALARA)**. Please follow our ALARA philosophy.

**A. BASIC RADIATION PROTECTION CONCEPTS:**

You should minimize exposure to radiation by staying out of posted radiation areas. The three best methods to minimize radiation exposure is to:

- 1) Limit **Time** spent in radiation areas. Radiation dose is directly related to how long you spend in a radiation area.
- 2) Remain at a **Distance** from radiation sources since the further away from a radiation source the less radiation exposure you will receive.
- 3) **Shield** radiation sources to reduce exposure from that source.

While working at SLAC, we do not expect that you will enter any radiation areas.

**B. RISKS OF LOW LEVEL RADIATION:**

People are constantly exposed to ionizing radiation from natural background sources such as cosmic rays and radioactive elements found in the earth's crust. The average annual radiation dose received from background radiation is about 300 mrem.

In addition to natural background radiation, you may be exposed to occupational radiation while pursuing your occupation and studies. Radiation exposure received while at SLAC is considered occupational. The annual radiation dose limit set by the DOE and SLAC for occupational exposure for any non-radiological worker is <100 mrem.

The risks associated with low-level radiation exposure are small and considered acceptable when compared to that of other occupational health risks. There is a slight risk of cancer which may be caused by chronic exposure to low-level radiation doses.

Prenatal radiation exposure should be reduced to a minimum since the developing embryo is especially sensitive to ionizing radiation. Questions regarding prenatal exposure should be directed to the Medical Department at ext. 2281.

#### C. RADIATION PROTECTION POLICIES:

- 1) The Safety Orientation for Non-Employees (SON) or Employee Orientation for Environmental Safety and Health (EOESH) are required to enter the SLAC Accelerator Area. Either of these courses satisfy the pre-requisite for General Employee Radiation Training (GERT) which is required to enter the SSRL experimental area which has been designated as a “Radiologically Controlled Area” (RCA).
- 2) Radiation areas are identified with signs as discussed in Section G (below). Only RWT trained users (RWT I, RWT II) are allowed to enter Radiation Areas.
- 3) Questions regarding radiation protection policies may be directed to the Operational Health Physics Department at ext. 4041.

#### D. DOSIMETRY:

Proper training and dosimeters are required in order to enter an RCA or radiation area. You **must** wear a dosimeter between your waist and chest outside of your clothing and in front of your body at all times while in these areas. The dosimeter monitors your radiation exposure; it does not protect you from nor warn you of radiation areas. The following are some rules regarding the treatment of the dosimeter badge:

- 1) Do not leave your dosimeter in a vehicle.
- 2) Return your dosimeter to the User Administration Office before leaving SSRL. Do not wear your dosimeter off-site where you may encounter radiation exposure, such as other job sites, during air travel or during medical/dental X-rays.
- 3) Pick up your new dosimeter when you return to SSRL during the run. The dosimeter is the radiological record of your work at SLAC. After returning your dosimeter, your radiation dose will be reported to you upon written request.

#### E. RESPONSIBILITIES:

It is everyone’s responsibility to be aware of radiological areas while working and visiting SLAC and to obey all radiological postings and instructions (both written and verbal). **SLAC DOSIMETERS MUST REMAIN AT THIS FACILITY. DROP OFF YOUR DOSIMETER BEFORE YOU RETURN TO YOUR HOME INSTITUTION. IT IS YOUR RESPONSIBILITY TO COMPLY WITH THIS REQUIREMENT.**

**F. RADIOLOGICAL POSTING:**

Radiological postings you may encounter while at SLAC are shown below. Become familiar with these postings. As an unescorted SSRL user, you are only allowed access to SSRL experimental areas. You are **not allowed** to enter "**Radiation Areas**", nor are you allowed to handle radioactive materials generated at SLAC. Radioactive materials are always identified with radioactive identifying labels. Common to all radiological postings and labels is the standard tri-foil symbol; the colors being Yellow and Black or Yellow and Magenta.



**USE OF SSRL/SLAC INFORMATION RESOURCES**

Consistent with the Stanford University and U.S. Department of Energy policies, everyone needs to be aware of certain responsibilities regarding the use of information resources and the serious consequences to us as individuals if we do not adhere to these. SLAC information resources are government property and, as such, are subject to "appropriate use" requirements found in federal law and the provisions of the SLAC contract pertaining to the proper use, protection, accountability and disposition of government property. These laws and policies apply to all data-communication and telecommunication facilities and services (including, but not limited to, e-mail, instant messaging, telephones, voice mail, faxes, SLAC data, networking services, storage media, computers and associated peripherals and software), whether for administration, research, teaching or other purposes. Connecting equipment not owned by SLAC to SLAC networks is a use of SLAC information resources.

**Any member of the SLAC community who, without authorization, threatens the access and sharing of information is engaging in unethical and unacceptable conduct. Such unethical conduct includes destroying, altering, dismantling or damaging SLAC information resources, or interfering with access to or use of these SLAC resources.**

This section outlines some of the responsibilities for use of SLAC information resources. This, together with more detailed policy and security information available at <http://www.slac.stanford.edu/comp/policy/policy.html>, will contain relevant new information as it develops.

### General

- Suspected misuse of SLAC information resources must be reported at once. This is an affirmative duty. The SCS Help Desk (Ext. HELP [4357] ) can ensure that you are put in contact with the proper authority for receiving such a report.
- SLAC information resources -- including browsing the World Wide Web (WWW) -- may only be used for work related to SLAC business. Minor incidental personal use is allowed if it satisfies the following criteria:
  - It does not impact or interfere with the legitimate job performance;
  - It does not impact or interfere with the work of any other employee/user or the correct functioning of any SLAC information resource;
  - It does not support running a business or paid consulting;
  - It does not involve illegal activities or violate SLAC policy;
  - It does not involve any activity that will potentially embarrass SLAC, DoE or Stanford University or result in a loss of public trust.
- Legally protected information subject to privacy laws or confidentiality requirements such as data that might give unfair advantage to a vendor, e-mail, and personnel records is stored on SLAC computers:
  - Users should take appropriate steps to safeguard legally protected information for which they are responsible. For information concerning the protection of data from unauthorized use, contact the SCS Help Desk.
  - Users should not attempt to gain unauthorized access to legally protected information. Users suspecting that they have accidentally gained access to such information should not use or disseminate the information and should report the incident to [security@slac.stanford.edu](mailto:security@slac.stanford.edu).

## **Computer Hardware and Software**

- SLAC computer accounts are normally intended for use only by the individual assigned to that account. Each account holder is responsible for the resources used by that account and for taking necessary precautions to prevent others from using the account. Shared accounts require adequate justification and explicit authorization. Users shall not seek to gain or enable unauthorized access to information resources.
- Passwords must be chosen with care and not divulged to anyone. Different classes of systems, for example business systems, scientific computing systems and accelerator control systems have different requirements on user passwords. Users are responsible for following the password policies for the systems on which they have accounts.
- Users shall not interfere with the intended use of SLAC information resources or without authorization destroy, alter, dismantle, disfigure, prevent rightful access to, or otherwise interfere with the integrity of computer-based information and/or information resources.
- Unauthorized copying of copyrighted software is strictly prohibited.

## **Electronic Communications**

- Because electronic communications (e-mail, instant messaging, news groups, contributions, etc.) pertain to SLAC business, their content reflects on SLAC. Therefore, it is important that such items be professional and not personal in nature. Use of SLAC's electronic communication facilities to send fraudulent, harassing, obscene, threatening, racial, sexual or other unlawful messages is prohibited and illegal, as is use of SLAC information resources for lobbying of any kind.
- Electronic communication files such as e-mail are not intended for general dissemination. Unauthorized perusal of such files is not permitted. Conversely, sensitive data should not be sent as e-mail because no means of storage or transmission available at SLAC is completely secure.
- SLAC's contract with the government makes virtually all information on SLAC computer systems, including e-mail, available to the government. It is not SLAC policy to routinely monitor e-mail. However, SLAC cannot and does not guarantee the privacy of e-mail communications.
- E-mail may be discoverable in a legal proceeding and in some circumstances, e-mail may be retrievable even after it has been "deleted".

SLAC requires that users act in accordance with these responsibilities, SLAC policy, University policy, and relevant laws and contractual obligations. In order to assure all relevant parties that no misuse of resources occurs, SLAC reserves the right to sample stored or in-transit data at any time. Improper use of computing facilities may lead to disciplinary actions up to and including termination and/or legal action.

After reviewing this material thoroughly, please sign the attached access agreement to verify that you have understood and agreed to abide the contents of this briefing.

**SSRL USER ACCESS AGREEMENT**

I have read and understand the SSRL Access Guidelines, dated May 2007, and I agree to abide by the regulations cited therein, including but not limited to:

1. Using SLAC information resources only in accordance with applicable policies.
2. Complying with SLAC Environmental, Safety & Health policies.
3. Complying with hutch authorization and operation, including:
  - I understand that hazardous radiation levels exist in experimental hutches when the x-ray beam is on.
  - I agree that while I am designated as Responsible Person for the purpose of Hutch Operation, I will not permit any person to be locked inside a hutch for any reason. After each access to the experimental hutch I will conduct a search to assure that no one is inside before I engage the “Search Reset Switch”. I will not designate any person to act in my stead as Responsible Person. I will enter my name in the Beam Line Log Book as Responsible Person whenever I take possession of the Search Reset Key.
  - I will operate the hutch interlock controls in the manner prescribed by SSRL.
  - I understand that evidence of failure to scrupulously follow these rules may result in loss of Responsible Person status.
4. Not tampering with, adjusting, or repairing any hutch interlock or component, Personnel Protection System (PPS) or Hutch Protection System (HPS) devices.
5. The proper storage, handling and disposal of hazardous materials.
6. Complying with electrical safety policies.
7. Ensuring that a second person is in attendance when working with potentially hazardous equipment or materials.
8. Not smoking inside buildings, and not parking in fire lanes.
9. Returning my dosimeter at the conclusion of my experiment or visit to SSRL/SLAC.
10. If I am officially notified of new or additional policies related to safety, security, or site access, I agree to abide by these policies or immediately cease using SSRL/SLAC resources.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Institute Affiliation (for non-Staff Users)

\_\_\_\_\_  
Proposal Spokesperson/Supervisor (for Staff)

\_\_\_\_\_  
Date