

Environment, Safety, and Health Division

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SLAC Injury and Illness Prevention Program 2024

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Plan updates are to be communicated and/or distributed to the following, where relevant:

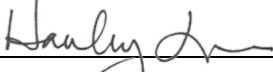

- SLAC Site Office (DOE)
- SLAC Director’s Office
- ESH Director
- Labor organizations that represent SLAC employees

Changes in Revision 16

Rev #	Date	Description
16	9/13/2024	<ul style="list-style-type: none"> • Executive Summary and Section 1.3. Updated the headcount numbers in per SLAC Human Resources • Approval. Updated names of the DOE SLAC Site Office Manager and SLAC Laboratory Director • Section 3.1, “Program Administrator”. Updated name of the SLAC Chief Safety Officer • Section 5.6, “Employee Concerns”. Updated to include link to ESH Help Ticket • Section 7, “Hazard Identification and Assessment”. Clarified the role of line management in ensuring that hazards are identified in order to implement ISM; former text implied that line management only observes safety performance. This is inconsistent with the DOE order and SLAC ESH Manual Chapter 2. • Section 8.1, “Development of Controls from Facility Design and Procedures Development”. Clarified that BIO project reviews are performed exclusively by AHJs and ESH SMEs • Section 9, Table 9.1. Updated ESH Manual Chapters to include newly published Chapter 60, “Non-Laser UV Source Safety”, and minor revision of title of Chapter 50, “Non-Ionizing Radiation Safety”, to “RF and Microwave Safety” • Section 12.3, “Explosives Safety”. Added reference to SLAC’s Safe Use of Explosives (16 May 2024) document • Section 14, “Enforcement”. Updated closure status of NTS reports Action Items • Deleted all references to COVID • Made minor editorial revisions throughout the document

Approval

This IIPP, required under SLAC's [Variance to 10 CFR 851](#), has been reviewed and approved by:

 _____	9/19/24	 _____	9/18/2024
Hanley Lee	Date	John Sarrao	Date
Manager DOE-SC SLAC Site Office		Laboratory Director SLAC National Accelerator Laboratory	

Executive Summary

SLAC has adopted an Injury and Illness Prevention Program (IIPP) compliant with Cal/OSHA ([8 CCR 3203](#)) that describes specific requirements for program responsibility, compliance, communication, hazard assessment, accident/exposure investigations, hazard correction, training, and recordkeeping.

The IIPP incorporates Cal/OSHA regulations and, per the conditions of a [variance granted to SLAC by the Department of Energy \(DOE\)](#), portions of Title 10, *Code of Federal Regulations*, Part 851 (10 CFR 851), Subpart B, Subpart C, and Appendix A that are not adequately addressed by Cal/OSHA requirements. Content driven by 10 CFR 851 is denoted as such [citation in brackets in header section].

This document describes the IIPP that has been developed at the SLAC National Accelerator Laboratory (SLAC) to comply with both 10 CFR 851 and DOE [M&O Contract DE-AC02-76SF00515](#). Throughout this document, the SLAC Injury and Illness Prevention Program is referred to as either “the IIPP” or “the Program”, 10 CFR 851 as “the Rule”, and DOE M&O Contract DE-AC02-76SF00515, as “the Contract”.

SLAC has approximately 2,100 employees. More than 1,000 subcontractors work at the Laboratory, and SLAC hosts approximately 3700 visiting scientists from universities, laboratories, and industrial concerns from the U.S. and foreign countries.

The Rule, sections of the Contract, and the IIPP apply to non-radiological safety and health issues in the design, construction, operation, maintenance, decontamination and decommissioning, research and development, and restoration activities at SLAC’s facilities.

The IIPP does not address radiological hazards associated with DOE activities, as these issues are outside of the scope of the Rule and are covered under DOE directives and standards, external regulatory requirements and specific sections of the Contract. SLAC meets the requirements of the Rule and the Contract through the implementation of this IIPP, which integrates the safety and health regulations and standards required by the Rule, the SLAC Integrated Safety and Environmental Management System (ISEMS), and other components of the SLAC ESH Program. The Program is in turn implemented by SLAC documents that interface with workers, such as applicable sections of SLAC’s *ESH Manual* and other policies, procedures and programs (accessible through SLAC’s [ESH website](#)). The documents that are cited in this document are hereby incorporated by reference. Citations to specific sections of the *ESH Manual* refer to the version of these documents current as of the date of publication of this document.

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1 Introduction

Title 10 *Code of Federal Regulations*, Part 851, “Worker Safety and Health Program” (10 CFR 851), requires Department of Energy (DOE) sites to establish a worker protection program that will reduce or prevent the potential for injuries, illnesses, and accidental losses by providing workers with a safe and healthful workplace. On August 16, 2019 SLAC was granted a [variance](#) by the DOE to use Cal/OSHA and other applicable regulations as alternate means to comply with Subpart B, Subpart C, and Appendix A of 851.

In this document, the SLAC Illness and Injury Preventions Program is referred to as “the IIPP” or “the Program”, 10 CFR 851 as the “the Rule”, and DOE / SU [M&O Contract DE-AC02-76SF00515](#), as “the Contract”. Appendix A contains a glossary of the acronyms and key terms used in this document.

This document describes the IIPP that has been developed at the SLAC National Accelerator Laboratory (SLAC), a DOE site managed and operated (M&O contract) by Stanford University (the prime contractor), to comply with 10 CFR 851. The IIPP includes the regulations and standards specifically required by 10 CFR 851, the Contract, and elements of the SLAC Integrated Safety and Environmental Management System (ISEMS).

The effective date of all elements of this Program (unless otherwise specifically noted below) is May 25, 2007. The effective date of this version is September 30, 2024.

1.1 Laboratory Mission and Vision

As a multi-purpose national laboratory managed by Stanford for the Office of Science, SLAC’s mission is to explore how the universe works at the biggest, smallest and fastest scales and invent powerful tools used by scientists around the globe. Our research helps solve real-world problems and advances the interests of the nation. We open new windows to the natural world and build a brighter future through discovery and innovation.

1.2 Locations

The Laboratory is located approximately 2 miles WSW of the main Stanford University campus, near the city of Menlo Park, in an unincorporated portion of San Mateo County, California.



1-1. SLAC National Accelerator Laboratory site. Courtesy of Google Earth.

1.3 Workforce

SLAC has approximately 2,100 employees. More than 1,000 subcontractors work at the Laboratory, and SLAC hosts approximately 3,700 visiting scientists from universities, laboratories, and industrial concerns from the U.S. and foreign countries.

1.4 Purpose

The purpose of the IIPP is to ensure that SLAC provides a safe and healthful workplace, in which hazards are abated, controlled, or otherwise mitigated, providing assurance that workers are adequately protected from identified hazards that can potentially cause physical harm.

1.5 Scope

The SLAC IIPP applies to DOE contractor activities that are performed at SLAC. The Rule defines a contractor as “any entity, including affiliated entities, such as a parent corporation, under contract with DOE, including a subcontractor at any tier, with responsibility for performing work at a DOE site in furtherance of a DOE mission”. The Rule and thus the Program apply to design, construction, operation, maintenance, decontamination and decommissioning, research and development, and environmental restoration activities performed by SLAC staff and subcontractors at the site.

SLAC is a DOE M&O contractor worksite, and the multi-DOE contractor workplace coordination requirements contained in § 851.11(a)(2)(i)&(ii) of the Rule do not apply.

Contractors and employees hired directly by the DOE to work at SLAC are not covered under this Program, as they are the direct responsibility of the DOE.

1.6 Flowdown of IIPP Requirements to Subcontractors

SLAC utilizes various construction and service subcontractors to perform work on the site, and the SLAC Supply Chain Management Department, within the Business Services Division (BSD), procures and awards these subcontracts. Supply Chain Management ensures that all prime subcontractors¹ will comply with the provisions of 10 CFR 851, DOE’s Worker Safety and Health Program, by including provisions in solicitations and the resulting subcontracts that require the subcontractors to meet the requirements of 10 CFR 851 through SLAC’s IIPP. Alternatively, subcontractors will be given the option to develop and submit their own IIPP SLAC review and approval. Furthermore, SLAC requires prime subcontractors to flow these requirements down to their sub-tier subcontractors. It is an expressly stated expectation of SLAC that all subcontractors, both prime and sub-tier, must understand and conform to SLAC’s IIPP as applicable, and that they comply with 10 CFR 851 to the extent they are responsible for a covered workplace.

SLAC’s ESH Division pre-qualifies all prime subcontractors performing construction or high-risk service work. This is an important aspect of hazard mitigation in that successful implementation of health and safety requirements is challenging for some subcontractors. This “Subcontractor Safety Qualification” process is explained in detail in ESH Manual Chapter 42, “Subcontractor Safety”.

Depending on the work being done, a Construction Manager (CM) or Service Manager (SM) will be assigned. The Project Manager and CM/SM must follow the processes and procedures detailed in ESH Manual Chapter 42, “Subcontractor Safety”, to manage these types of projects. In addition, ESH’s Code Compliance and AHJ Services and Health and Safety Services departments conduct field inspections of construction work to assure compliance with construction safety, building code, and fire code requirements.

¹ Prime subcontractors. A subcontractor directly contracted to SLAC; may have sub-tier subcontractors; may be general subcontractor or specialty subcontractor.

1.6.1 Flowdown of IIPP Requirements to Construction Subcontractors

This section of the SLAC IIPP documents the mechanisms used to flowdown its requirements to construction subcontractors and provides information for these subcontractors. A Construction Manager (CM) is assigned to all construction contracts to support/provide project management including safety management.

- Pre-bid site visit to identify hazards associated with statement of work (SOW).
- Subcontractor submits a Subcontractor Safety Qualification Form (SQF) prior to bid.
- Subcontractor submits that it will meet the requirements of 10 CFR 851 through SLAC's IIPP. Alternatively the subcontractor submits a Cal/OSHA-compliant Injury and Illness Prevention Plan (IIPP) and Code of Safe Work Practices.

Note: it is the SLAC Subcontractor's responsibility to secure similar required documentation from their lower tier subcontractors. The safety performance of lower tier subcontractors is the responsibility of the party who has entered into the contract with SLAC.

After contract award, the subcontractor

1. Works with the PM/CM to identify required elements and approves the Site Specific Safety Plan (SSSP)
2. Submits SQFs* for each sub-tier contractor that will perform on-site work
3. Works with CM to secure any applicable construction related permits (e.g., excavation, hot work, confined space, etc.).
4. Works with CM to develop Area Hazard Analyses (AHAs) and Job Safety Analyses (JSAs) per SLAC's Work Planning and Control process
5. Has workers complete any required training
6. Works with the CM to run daily job-site safety tailgate meetings
7. Representatives from SLAC's Building Inspection Office and Safety Services Group will perform code compliance and construction safety oversight, respectively
8. PERFORM THE WORK SAFELY!
9. Immediately ceases activity if the CM or Safety Services personnel issues a Stop Work Activity Order
10. In the event of an emergency on site, call 911 for emergency assistance, and then immediately notify the CM

* Required if Purchasing does not have one on file that is current and is less than 12 months old.

REFERENCES:

- [ESH Manual Chapter 42, "Subcontractor Safety"](#)
- [ESH Manual Chapter 51, "Control of Hazardous Energy"](#)

1.7 Exclusions

The Program does not address radiological hazards associated with DOE activities. Radiological hazards are addressed in 10 CFR 820, 10 CFR 830, and 10 CFR 835 in a comprehensive manner through methods such as the Quality Assurance Program, Radiation Protection Program, safety bases, and documented safety analyses.

The Program does not apply to DOE activities performed away from DOE sites, such as transportation activities to and from DOE sites, and does not apply to work at the following locations, which are regulated exclusively by the California Department of Industrial Relations (i.e., Cal/OSHA) under Title 8 of the *California Code of Regulations*, Chapter 4, "Division of Industrial Safety", Subchapter 7, "General Industry Safety Orders" ([8 CCR Subchapter 7](#)):

- Any work performed by SLAC workers at the main Stanford University Campus or at the Stanford Research Computer Facility.

As noted in Section 1.5, "Scope", this Program does not cover contractors hired and managed directly by the DOE through either the SLAC Site Office (SSO), or any DOE Headquarters or Field Element.

2 Compliance

SLAC must comply with all the requirements of the Rule. Compliance is achieved by the SLAC IIPP, as described in this document, which incorporates relevant sections of documents such as the SLAC *ESH Manual* and other supporting documents that can be found through the [ESH website](#). As stated previously, compliance with 851 Subparts B, C, and Appendix A are achieved through alternative methods as per the variance granted to SLAC by the DOE. SLAC will establish, implement, and maintain an effective Injury and Illness Prevention Program (IIPP) per Title 8, *California Code of Regulations*, Section 3203 (8 CCR 3203) instead of the provisions in Subpart B, and comply with applicable California Occupational Safety and Health Administration (Cal/OSHA) regulations in lieu of the requirements in 10 CFR 851 Subpart C and Appendix A.

There are portions of Subparts B and C and Appendix A that are not entirely covered by Cal/OSHA regulations. To address those areas, SLAC has established an IIPP per 8 CCR 3203 and incorporated those sections or an as-protective equivalent of 10 CFR 851 into the IIPP, as needed, to provide a substantially equivalent level of protection. As such, SLAC has used the combination of Cal/OSHA regulations and requirements within the IIPP as alternative means to comply with Subparts B, C, and Appendix A. Oversight and enforcement of the IIPP will remain with DOE.

2.1 SLAC ESH Program

Pursuant to [the Contract](#), SLAC has established an ESH Program that is integrated with its science programs. The ESH Program has been used as the foundation for the development of the SLAC IIPP that is described in this document.

2.2 Integrated Safety Management System

SLAC is required by DOE Policy 450.4A and H.5.0.1 Integration of Environment, Safety & Health Into Work Planning and Execution (DEAR 970.5223-1) (Dec 2000) (DEVIATION for RWG) (Aug 2016) to have an Integrated Safety Management System (ISMS). SLAC has gone further by integrating its Environmental Management System into an over-arching Integrated Safety and Environmental Management System (ISEMS). DOE and its contractors such as SLAC are committed to achieving a work environment in which all operations and work activities are supported by safety management systems that ensure the protection of the public, the worker, and the environment. The ISEMS is a systematic approach to integrating safety into management, work planning, and execution at all levels.

Institutional requirements for all work activities at SLAC are contained in the ISEMS Program and implemented by referenced chapters and sections of the *ESH Manual*, and the Stanford University Administrative Guide.

REFERENCES:

- [ESH website](#)
- [Integrated Safety and Environmental Management Systems](#)
- [ESH Manual](#)
- [Stanford University Administrative Guide](#)

2.3 Enforcement Process

DOE may initiate and conduct investigations and inspections relating to the scope, nature, and extent of compliance by SLAC and its subcontractors with 10 CFR 851 and the Contract. Additionally, any worker or worker representative may request that DOE initiate an investigation or inspection. DOE Enforcement Officers have the right to enter work areas without delay, to the extent practicable, to

conduct inspections. SLAC will fully cooperate with DOE during all phases of the enforcement process and provide complete and accurate records and documentation as requested during investigation or inspection activities. DOE must inform SLAC of the general purpose of the investigation or inspection in writing at the initiation of the investigation or inspection.

Should DOE initiate an enforcement action as the result of an investigation or inspection, SLAC will respond to the enforcement action in the following manner as appropriate and as specified in sections 851.4, 851.41, 851.42, 851.43, and 851.44 of the Rule.

3 Implementation

3.1 Program Administrator

The ultimate responsibility for SLAC's IIPP rests with the SLAC Laboratory Director, John Sarrao.

The program administrator is:

Name: Ian Evans

Title: Director, Environment, Safety and Health

Address: SLAC National Accelerator Laboratory, 2575 Sand Hill Road, Menlo Park, CA, 94025

Telephone: (650) 926-2192

Responsibilities include:

- Advising senior management on safety and health issues
- Working with senior management to develop safety and health guidelines and policies
- Preparing and distributing the University's guidelines, policies and procedures on safety and health issues
- Maintaining current information on local, state and federal safety and health regulations
- Serving as liaison with governmental agencies
- Planning, organizing and coordinating safety trainings
- Developing inspection guidelines
- Arranging for safety and health inspections and follow up to ensure necessary corrective action is completed
- Coordinating with the SLAC CACM on conducting and maintaining an injury/illness/accident report and investigation procedure
- Entering illness and injury data into the [DOE Computerized Accident Illness Reporting Database](#)
- Coordinating with Stanford University's Department of Risk Management on maintaining injury and illness records (OSHA 300 Log)
- Reviewing injury and illness trends
- Establishing a system for maintaining the records of inspection, hazard abatement and training

There are two tiers of implementation. In the first tier, 10 CFR 851 is implemented by the SLAC IIPP that incorporates the regulations and standards required by 10 CFR 851, the Contract, components of the SLAC ISEMS, and other components of the ESH Program. To implement the Rule, specific portions of existing programs and additional requirements as necessary are identified in the Program.

In the second tier, the Program is implemented by the documents that interface with workers, such as applicable sections of the SLAC *ESH Manual* and other ESH program documents found on the SLAC [ESH website](#). These documents contain information on how the management practices prescribed by the program are implemented, how hazards that are associated with SLAC work activities are identified, how such hazards are controlled, and who is responsible for implementing the controls.

4 Management Responsibilities

4.1 Safety Policy, ISEMS Principles, ESH Goals, and ESH Objectives

SLAC is committed to performing all work safely and in a manner that ensures protection of employees, participating guests, visitors, subcontractors, the public, and the environment, commensurate with the nature and scale of work. In addition, SLAC seeks continuous improvement and sustained excellence in the quality of all ESH programs.

To achieve these goals, SLAC's ISEMS is based on the seven guiding principles and five core functions of the Integrated Safety Management System (ISMS), as prescribed in the contract H.5.o.1 (Department of Energy DEAR Clause 970.5223-1 (Dec 2000) (Deviation) (DEVIATION for RWG) (Aug 2016), which are reflected in SLAC's detailed policies and procedures. The SLAC Environmental Management System requires that work be done in a four-step process (i.e., plan, do, assess, improve) that is consistent with the seven guiding principles and five core functions of ISMS, as well as the SLAC National Accelerator Laboratory Management Plan.

The DOE order for implementing an oversight policy requires an ESH assurance system. SLAC uses assessments, both self and independent, to measure ISEMS implementation and identify opportunities for continuous improvement. Self-assessments include line management walk-arounds, management system assessments, Director's Assurance Council, Plan of the Week, and project reviews. Independent assessments include the Board of Overseers, Stanford University Internal Audits, and SSO reviews. Each year an Integrated Assessment Schedule is compiled for the following fiscal year to identify and track risk-based assessments. Through these assessments, SLAC assures both the SSO and Stanford University that work is being performed safely, securely and in conformance with requirements.

Annual safety and health performance objectives, measures, and targets for SLAC are established within the [SLAC/DOE M&O Contract](#). These fiscal year contract performance objectives are then subsequently reflected in internal ESH goals and metrics established by SLAC senior staff.

ESH Manual Chapter 2, "Work Planning and Control", and other documents describe in detail how work is planned, authorized, and released at the activity or project level to determine and ensure line management, supervisory, and employee safety responsibilities are identified and implemented. They also address qualifications and training, as well as engineering and procedural requirements associated with performing work at SLAC.

REFERENCES:

- [Environment, Safety, Health, and Security Governing Policy \(internal access only\)](#)
- [SLAC National Accelerator Laboratory Management Plan \(restricted access\)](#)
- [Integrated Safety and Environmental Management Systems](#)
- [ESH Manual Chapter 1, "General Policy and Responsibilities"](#)
- [ESH Manual Chapter 2, "Work Planning and Control"](#)
- [SLAC Quality Assurance Program \(internal access only\)](#)
- [SLAC Management Walk-Around Program \(internal access only\)](#)
- [SLAC Institutional Assessment Program \(internal access only\)](#)

4.2 Qualified Worker Safety and Health Staff [§851.20(a)(2)]

In keeping with SLAC's ISEMS Guiding Principle 3, "Competence Commensurate with Responsibility", and to ensure that worker health and safety staff is appropriately qualified, the ESH Division and other organizations at SLAC employ or contract professional specialists and technical personnel with the following expertise:

- Electrical Safety

- Fire Protection
- Radiation Protection
- Industrial Safety
- Industrial / Chemical Hygiene
- Laser Safety
- Occupational Medicine and Ergonomics
- Biological Safety
- Pressure Safety
- Safety and Health Publishing and Training
- Security Staff

This staff consists of ESH specialists who provide direct support to SLAC programs and subject matter experts (SMEs) who maintain a working knowledge of the requirements contained in the standards associated with their assigned subject areas. Specialists and SMEs are designated individuals who are technically competent in their subject areas (e.g., certified industrial hygienists, certified safety professionals, or those who have demonstrated the years of applicable experience and good professional judgment at relevant facilities to perform the mission expected by SLAC's ISEMS at an SC research accelerator activity). The lead SME for a program is designated a "Program Manager" and serves as the responsible person for the rules, requirements, and standards relevant to his or her area of expertise. The ESH Division maintains a master list of all [Program Managers](#).

In addition, there are several positions that are officially appointed by the Laboratory Director (or the Chief Safety Officer) as "Safety Officers". These include

- Chief Safety Officer (Director ESH Division)
- Fire Marshal
- Radiation Safety Officer
- Building Official
- Electrical Safety Officer
- Laser Safety Officer
- Chemical Hygiene Officer

REFERENCES:

- [Programs and Program Managers List \(internal access only\)](#)

4.3 Accountability

The Laboratory Director has the ultimate responsibility for safety at the Laboratory, and in particular, for the establishment and administration of environment, health, and safety policies that meet the requirements of the Department of Energy.

This accountability is then extended to each SLAC line manager (Laboratory Director down to and including the first-line supervisor) and each individual (employee and non-employee alike) working at SLAC. SLAC utilizes a comprehensive set of employee Roles, Responsibilities, Accountabilities, and Authorities (R2A2s) to reinforce these responsibilities with its employees. This tool is part of their personnel files. These are reviewed and revised at least on an annual basis.

4.4 Worker Involvement

Worker involvement in safety and health is essential to the success of SLAC's ISEMS. It is an individual's responsibility to identify safety and health problems and to contribute to developing and implementing solutions. Involvement and participation must occur throughout the work review, authorization, release, and execution process. Line management ensures that workers participate in the analysis of hazards and the determination of appropriate work controls for work activities. Employees

must actively participate in this process by working with their supervisor to identify the hazards, controls, and training needed for them to safely perform their work. Periodic inspections involve employees noting deficiencies, and either correcting them on the spot or initiating corrective actions.

Worker involvement is promoted through

- Direct participation in the Area Hazard Analysis (AHA), Activity and Training Authorization (ATA), and Job Safety Analysis (JSA) work planning processes
- Participation in incident investigations
- “All hands” safety meetings
- SLAC newsletters and websites
- Participation in divisional self-assessments
- Proactive utilization of Lessons Learned Database
- Safety training

4.5 Access to Information

Safety and health documents that contain the information needed to perform work safely are readily available via the SLAC website or at the worksite to all workers who need access to the information. All work, including work conducted by visiting researchers, students, subcontract labor, construction subcontractors, and service subcontractors, is to be performed in conformance with work instructions, including signs, work authorizations and releases, work permits, posted procedures, and other work-authorizing documents. If the work instructions cannot be followed safely as presented, or if they present a new hazard, the worker is responsible for notifying the appropriate individuals and assisting, as appropriate, with modifying the work instruction prior to beginning or continuing the work activity. The worker’s supervisor is responsible for ensuring that each worker involved in a work activity has been trained in, and has immediate access to, the work activity’s applicable procedures and governing requirements documents.

Workers have access to information that is related to the Program and to the performance measurement of safety and health.

REFERENCES:

- [Employee ESH Concerns and DPO Programs](#)
- [Stanford University. Administrative Guide Memo 1.1.1, "University Code of Conduct"](#)
- [DOE Contractor Employee Protection Program \(10 CFR 708.10\)](#)
[Note: contact is DOE SSO Manager 650.926.3207]

4.6 Responding to Reports

Reports of incidents or recommendations are responded to promptly. Workers are responsible for bringing safety and health concerns promptly to the attention of the appropriate manager or supervisor for resolution. Line management is then responsible for investigating the concern and implementing corrective action. If a satisfactory response is not received, the senior manager for the organization should be contacted, followed by the Director of the ESH Division.

REFERENCES:

- [Employee ESH Concerns Program](#)
- [Incident Reporting and Investigation Process \(internal access only\)](#)
- [Differing Professional Opinion \(DPO\) Process](#)

4.7 Safety and Health Communications

Communication is a key element in ensuring that the SLAC ESH goals and health and safety requirements are met. SLAC has an established, comprehensive ESH Communications Program that

includes training all workers. Communication goals include creating ISEMS awareness and sensitizing workers to safety and health issues, using Laboratory-wide communications and tailored training.

Directorates employ several methodologies to ensure that ESH programs and policies are communicated. These are done through the Senior Management Team Meeting (Laboratory Director's staff), regular meetings between ESH Division and the line ESH Coordinators, direct involvement by ESH SMEs in project designs and reviews, annual Safety & Security Fair, and communications through the ESH website and *SLAC Today* articles.

REFERENCES:

- [SLAC Today](#) (internal access only, see archives)
- [OPEXShare](#) (account registration required)

4.8 Stopping Unsafe Work Activities

Any individual involved in a work activity that he or she believes poses an imminent hazard to him or herself, others, the public, and the environment, or could cause property damage has the responsibility and authority to stop that work. An individual also has the responsibility and authority to refuse to perform an assigned activity if doing so will present an imminent hazard. An imminent hazard is defined as any activity or situation that is likely to result in serious injury, death, or significant environmental or property damage.

An individual observing an activity presenting an imminent hazard has the authority to alert workers (including employees, SSO, and all classes of non-employees) engaged in that activity. The workers who are alerted are expected to stop working to discuss safety concerns. The responsible manager for the work area (e.g., supervisor, area manager, or building manager) must also be immediately notified and involved in safe restart of the work. If there are any questions or disputes about stopping unsafe work, the worker, the supervisor, and/or CM/SM must contact SLAC Security at 650.926.5555, who notifies the on-call Duty Officer. The Duty Officer will coordinate with the appropriate line management to resolve the issue.

When an employee in the local bargaining unit believes an imminent hazard activity has not been adequately resolved within the line organization, he/she may refer it to the shop steward or Local Safety Committee. (Information on this authority as it applies to bargaining unit employees can be found in the latest version of the [Agreement between the Board of Trustees of the Leland Stanford Junior University and United Stanford Workers](#).) Individuals who are not in the local bargaining unit should refer such unresolved activities to the Director of the ESH Division.

REFERENCES:

- [ESH Manual Chapter 2, "Work Planning and Control"](#)
- [Employee ESH Concerns & DPO Programs \(Stop Work Information Included\)](#)

4.9 Informing Workers of Rights

Workers have the right to work in an environment free from recognized hazards likely to cause serious injury or death. SLAC will inform workers of their rights by appropriate means. A 10 CFR 851 information website has been created on the ESH website to provide comprehensive information to SLAC staff. Additionally, the DOE-designated Worker Protection Poster is posted on Human Resources bulletin boards throughout the Laboratory. These are the same bulletin boards where other legally required posters are located, such as Cal/OSHA's "Safety and Health Protection on the Job." In addition, the SEIU Higher Education Worker Local 2007 will be encouraged to place the posters on their bulletin boards as well.

REFERENCES:

- [DOE Worker Safety and Health Poster](#)
- [SLAC IIPP](#)

4.10 Budgeting for Safety

ESH is a primary consideration in planning and executing all SLAC work activities. Management is responsible for prioritizing and adequately allocating resources to ensure that ISEMS requirements for working safely can be fulfilled. Ensuring appropriate resources for ESH are allocated in program and budget plans, and for the implementation of all phases of facility and work-activity processes, is critical to making the ISEMS effective and sustainable. Some safety resources are budgeted and managed directly by mission program directorates. The ESH budget is covered through indirect (i.e., overhead), direct (e.g., DOE Safeguards & Security), service center charges, and direct chargebacks, under the accounting principles dictated by the Office of the Chief Financial Officer. Overall budgeting for the indirect component of the ESH budget for the laboratory is approved by the Laboratory Director with recommendations from senior management then managed by the ESH Division Director.

4.11 Sustaining and Measuring ISEMS

The ESH Division Office supports line management in defining, capturing, and clearly communicating goals and objectives that are then measured and used to continuously improve plans for achieving SLAC's Vision and Mission.

5 Worker Rights [§851.20(b)]

A SLAC 10 CFR 851 [information website](#) is available to provide all the key information associated with worker rights under the IIPP.

5.1 Participating on Official Time [§851.20(b)(1)]

Workers have the right to participate in activities related to the Program on official time, including exercising all worker rights listed in the following Sections 5.2 through 5.8 of this document.

5.2 Access to Information

Workers have the right of access to

- DOE safety and health publications
- Documents describing the SLAC IIPP
- Safety and health standards, controls, and procedures applicable to SLAC, as identified in such documents as the *ESH Manual* and supporting material
- Worker Protection for DOE Contractor Employees poster that informs workers of their rights and responsibilities
- Results of inspections and accident investigations that affect their work area
- Information on any recordkeeping log (e.g., OSHA Form 300) with access subject to Freedom of Information Act requirements and restrictions

REFERENCES:

- [DOE Worker Safety and Health Poster](#)
- [SLAC IIPP](#)

5.3 Notification of Monitoring Results

Workers have the right to be notified when monitoring results indicate they have been overexposed to hazardous materials.

Written notification of monitoring results is provided by the industrial hygienist conducting the exposure monitoring to the employee (and employee's supervisor) in accordance with the specific OSHA requirements for that substance. Where no criterion exists, monitoring results will be provided within 15 days of receiving analytical results from the laboratory performing the analyses.

REFERENCES:

- [SLAC Industrial Hygiene Program \(internal access only\)](#)

5.4 Observation of Monitoring

Workers have the right to observe exposure monitoring or measurement of hazardous agents and to be provided with the results of their own exposure monitoring. When personnel exposure monitoring is conducted on individuals, the monitored employee and their supervisor receive a copy of the exposure assessment.

REFERENCES:

- [SLAC IIPP](#)

5.5 Inspections

Workers have the right to a representative authorized by workers to accompany the DOE Site Manager, or his or her authorized representative (e.g., DOE Enforcement Officer) during the physical inspection of the workplace for the purpose of aiding the inspection. When no authorized worker representative is available, the DOE Site Manager or authorized representative must consult, as appropriate, with workers on matters of worker safety and health.

REFERENCES:

- [SLAC IIPP](#)

5.6 Worker Concerns

Workers have the right to express concerns related to worker safety and health.

SLAC has established procedures for workers to report, without fear of reprisal, job-related injuries, illnesses, fatalities, incidents, and hazards and to make recommendations about appropriate methods to control those hazards.

Federal law prohibits SLAC from making reprisals against workers for raising safety concerns. Employees of DOE contractors have the right to file confidential complaints with the local DOE office within 60 days regarding safety and health issues or reprisals, in accordance with 10 CFR 708. Workers may file a complaint with the DOE Employee ESH Concerns Program by calling, writing a letter, or submitting DOE Form 5480.4.

DOE Employee ESH Concerns Program
 SLAC Site Office
 2575 Sand Hill Road, MS-8A
 650.926.4080
thomas.rizzi@science.doe.gov

If workers see something that is an **immediate** danger to safety or the environment, they should dial 911. After calling 911, they should call SLAC Security at ext. 5555 or 650.926.5555 and then report to their supervisor

For non-life-threatening situations, notifications are as follows:

- Abnormal conditions, accidents (non-life threat), near misses, security concerns, etc.: call ext. 5555 or 650.926.5555 and report the information to SLAC Site Security. They will notify the on-call Duty Officer who will identify immediate actions.
- Safety concerns: call the Safety Service Desk at 650.926.4554 or submit an [ESH Help Ticket](#)
- Radiological concerns: call Radiation Protection Field Operations at 650.926.4299 (also to request a field survey)
- Health/medical concerns: call the SLAC Occupational Health Center at 650.926.2281 or visit the SLAC Occupational Health Center in person at Building 028, Room 12. In the event of a work-related injury or illness, workers are required to notify their supervisor immediately and to report to the SLAC Occupational Health Center. After clinic hours, contact 650.926.5555 for directions.
- Training concerns: submit a help ticket for [SLAC Training](#).
- Employee concern on a technical matter: [Differing Professional Opinion \(DPO\) Process](#).

All workers are also covered under the Stanford University Code of Conduct, which provides mechanisms for reporting violations. Workers represented by SEIU Higher Education Workers Local 2007 are also covered under the provisions of the [Collective Bargaining Agreement \(CBA\)](#).

Workers who believe they are being denied the rights described in Section 5, or who believe they are being subjected to reprisals for attempting to exercise those rights, may contact the [Stanford Office of the Chief Risk Officer](#) for assistance. Workers represented by SEIU Higher Education Workers Local 2007 may also report their concerns to their union representatives, or the local safety committee.

REFERENCES:

- [Employee ESH Concerns Program](#)
- [Differing Professional Opinion \(DPO\) Process](#)
- [Stanford University. Administrative Guide Memo 1.1.1, "University Code of Conduct"](#)
- [Stanford Office of the Chief Risk Officer](#)
- [Collective Bargaining Agreement between: SEIU Higher Education Workers Local 2007 and The Board of Trustees of the Leland Stanford Junior University \(internal access only\)](#)
- [SLAC Training \(includes catalog, schedules, web-based training, SLAC Training Assignment\(STA\), training history and reports, etc.\)](#)

5.7 Refusal to Work

Workers have the right to decline to perform an assigned task because of a reasonable belief that the task poses an imminent risk of serious physical harm or death, coupled with a reasonable belief that there is insufficient time to seek effective redress through normal hazard reporting and abatement procedures.

REFERENCES:

- [DOE Worker Safety and Health Poster](#)

5.8 Stop Unsafe Work [§851.20(b)(9)]

As noted in Section 4.8, “Management Responsibilities – Stopping Unsafe Work”, all workers are empowered and have the responsibility to refuse to perform an assigned activity if doing so will present an imminent hazard² and to stop the work if they become aware of an imminent danger condition. Furthermore, individuals observing such a situation have the responsibility to alert other workers engaged in that work activity. The responsible supervisor/manager for the area/employees (CM/SM, in the case of subcontractors) must also be immediately notified and involved in safe restart of the work. Furthermore, the Duty Officer shall be notified by Security at ext. 5555.

REFERENCES:

- [ESH Manual Chapter 2, “Work Planning and Control”](#)

² Defined as any activity or situation that is likely to result in serious injury, death, or significant environmental or property damage.

6 Worker Responsibilities

6.1 Safety

In addition to management, workers also have critical responsibilities in the overall IIPP. Details regarding high-level worker responsibilities for safety are included in the ESH Manual Chapter 1, “General Policy and Responsibilities”, and ESH commitments made by Associate Laboratory Directors to the Laboratory Director. Specific responsibilities are described in the various ESH program chapters.

Worker involvement in safety and health is essential to the success of SLAC’s ISEMS. Every worker is directly responsible for ensuring his or her own safety and for promoting a safe and healthful workplace and community.

Specifically, each person is to take personal responsibility for safety of people at SLAC and for protection of the environment.

It is each person’s individual responsibility to identify safety and health problems and to contribute to developing and implementing solutions. All workers are required to follow ESH-related work instructions, policies and procedures and other requirements. If work instructions cannot be followed safely as presented, or if they present a new hazard, workers are responsible for stopping and notifying the appropriate individuals and actively assisting, as appropriate, with modifying the work instructions. Involvement and participation must occur throughout the work review, authorization, release, and execution process.

REFERENCES:

- [ESH Manual Chapter 1, “General Policy and Responsibilities”](#)
- [Environment, Safety, Health, and Security Governing Policy \(internal access only\)](#)
- [ESH Course 219, Environment, Safety, and Health Orientation \(ESH Course 219\) \(internal access only\)](#)

6.2 Reporting Hazards

Every worker is responsible for bringing to the attention of his or her immediate supervisor existing or previously unrecognized hazardous conditions and opportunities for safety improvement. The supervisor is responsible for evaluating the reports and for taking the appropriate follow-up action. Alternative means of reporting hazards can also be accomplished under the system described previously in Section 5.6, “Worker Concerns”. Incidents, hazards and “off-normal” situations are to also be reported to the Duty Officer through Security at ext. 5555.

6.3 Reporting Injuries and Illnesses

Workers who are injured or become ill as a result of a work-related activity or accident are required to notify their supervisor immediately and to report to the SLAC Occupational Health Center (see Section 5.6, “Worker Concerns”). A report should also be made to Security at ext. 5555 by the supervisor of the injured or ill employee.

7 Hazard Identification and Assessment

Work conducted at SLAC involves the risk of a variety of safety hazards. SLAC minimizes the risk and manages these hazards using the Integrated Safety and Environmental Management System (ISEMS) and by promoting safe behavior at all work levels.

Line managers implement an integrated safety management process to ensure that safety-related work issues have been addressed comprehensively. Managers follow the requirements in the ESH Manual Chapter 2, “Work Planning and Control”, to identify hazards and implement appropriate controls. SLAC’s ESH Division and Directorate ESH Coordinators provide support and guidance to line managers for identifying and mitigating the hazards in their workplaces.

Line managers ensure that the necessary hazard identification and controls are adequately identified in order to follow the core functions of ISM:

- Define the scope of work
- Analyze the hazards
- Develop and implement controls
- Perform work within controls
- Provide feedback and improvement

7.1 Identifying Workplace Hazards and Assessing Risk

The identification and analysis of workplace hazards is part of the Work Planning and Control Process. The goal of this process is to ensure that the hazards associated with work activities and facility operations are clearly understood and appropriately controlled.

All new work activities or changes to existing work (which introduce new hazards or increase the hazard level) need to be reviewed to analyze hazards, identify safety standards/requirements, and establish appropriate controls. All work is planned, authorized, and released through the Work Planning and Control Process before work is initiated.

Area Hazard Analysis (AHA) is a tool by which line management and its personnel communicate area-specific hazards and entry requirements for use in the planning of work. Additionally, SLAC or DOE Lessons Learned are referenced to further identify potential hazards for mitigation.

REFERENCES:

- [ESH Manual Chapter 2, “Work Planning and Control”](#)
- [OPEXShare \(account registration required\)](#)

7.2 Worker Exposure Assessment

SLAC assesses worker exposure to chemical, physical, biological, or workplace safety hazards through appropriate workplace monitoring, including industrial hygiene exposure assessments and management walk-arounds.

Exposure assessment is an evaluation process performed by ESH industrial hygienists and other experts to determine the risk to workers from personnel exposure to hazardous chemical, biological, or physical agents and the adequacy of hazard controls. Results of exposure assessments may be used to validate or improve hazard controls, extend the same controls to other employees who are similarly exposed, provide employees with appropriate medical tests and examinations (i.e., medical surveillance) to monitor employee health, and demonstrate compliance with regulations.

REFERENCES:

- [SLAC Industrial Hygiene Program \(internal access only\)](#)
- [SLAC Management Walk-Around Program \(internal access only\)](#)

7.3 Documenting and Recording Workplace Assessments

Assessments for chemical, physical, biological, and workplace safety hazards are documented following recognized exposure assessment and testing methodologies and using accredited and certified laboratories where appropriate.

Exposure monitoring results are recorded with documentation that describes the tasks and locations where monitoring occurred, and identifies:

- Workers monitored or represented (such as in-area sampling) by the monitoring
- Sampling methods and durations
- Control measures in place during monitoring (including use of personal protective equipment)
- Job task and location
- Findings/recommendations
- Any other factors that may have affected sampling results

Additionally, all levels of SLAC managers conduct management walk-arounds as identified in Management Walk-Around Program document. The purpose of these management walk-arounds is to improve organizational performance and safety. During these walk-arounds, managers interact with their employees and have meaningful discussions about workplace safety. Managers observe work, reinforce safe work behaviors, and identify ways to help their staff improve work effectiveness and safety. These walk-arounds are documented using the SLAC Issues and Improvements Management System (SIIMS).

REFERENCES:

- [SLAC Industrial Hygiene Program \(internal access only\)](#)
- [SLAC Management Walk-Around Program \(internal access only\)](#)
- [SLAC Issues and Improvements Management System \(SIIMS\) \(internal access only\)](#)
- [Industrial Hygiene Document Database \(internal access only\)](#)

7.4 New Construction and Facilities Modifications Design Review

New construction projects and facilities modifications are reviewed for hazards and risks and to ensure that appropriate ESH requirements are integrated into the planned project or facility. ESH requirements are identified through the Project ESH Review Process and are incorporated into the project's design. This process originates from ESH Manual Chapter 1, "General Policy and Responsibilities". ESH Division professionals are assigned review and concurrence authority in all four phases of project design: conceptual design, preliminary design, final design, and construction inspection. Refer to Section 8, "Hazard Control and Abatement", of this Plan.

REFERENCES:

- [ESH Manual Chapter 1, "General Policy and Responsibilities"](#)
- [ESH Manual Chapter 12, "Fire and Life Safety"](#)

7.5 Evaluating Operations, Procedures, and Facilities

The *ESH Manual* emphasizes how to conduct work at the work-activity level. In a research and development organization such as SLAC the focus is on the identification of hazards associated with

individual work activities, because these activities can change frequently and introduce different hazards that have not been evaluated.

At SLAC, hazard identification is accomplished

- On a routine/ongoing basis
- During regularly scheduled assessment activities
- As an integral component of the Work Planning and Control Process

Examples of routine/ongoing hazard identification include daily or pre-use inspections of the following:

- Ladders
- Condition of electrical equipment
- Hoist, crane and accessory equipment
- Extendable boom work platforms
- Active construction projects
- Hand and power tools
- Manually handling load pre-lifts
- Elevating work platforms
- Forklifts

As described above in Section 7.2, “Worker Exposure Assessment”, self-assessment programs are regularly scheduled hazard identification activities that establish a formal, internal process used to evaluate ESH programs, policies, and processes.

Other regularly scheduled hazard identification activities include but are not limited to the following:

- Fire safety inspections
- Annual review of hazardous energy control procedures
- Idle crane pre-use inspection
- Annual running rope inspection
- Biennial forklift extension proof load testing
- Lifting device and fixture inspection and testing
- Quarterly hoist, crane and accessory equipment inspection
- Nondestructive crack detection of crane/hoist hooks and of all lifting fixtures with welds
- Annual laser safety inspections of Class 3B and Class 4 laser labs

Certain work activities pose elevated hazards that require formal, documented approvals, often in the form of a permit. Examples include excavations, hot work, and confined space. Depending on the requirements, the principal investigator, supervisor, or manager needs to document the work and associated hazards, describe administrative and engineering controls to mitigate those hazards, and document training or certification for the participants in a written document or plan. Experts with appropriate certifications or background from within ESH and other divisions are brought into the process for consultation, review, and/or approval. An online Hazard Evaluation and Planning eTool is available to identify required permits and plans based on the work activity.

REFERENCES:

- [SLAC Management Walk-Around Program \(internal access only\)](#)
- [Hazard Evaluation and Planning eTool \(internal access only\)](#)

7.6 Activity-level Hazard Analysis [§851.21(a)(6)]

Operations and procedures are analyzed at the activity level to identify potential worker protection hazards and deficiencies. How work is planned, authorized, and released depends on the type (green, yellow, or red) and the location (office/non-office and resident/non-resident area).

- “Green” work is work limited to those technical or administrative activities commonly performed by the public, posing well known hazards, with controls that may be implemented without permits or special ESH training, excluding training required to simply access an area. Green work is authorized by completion of new employee/worker safety training, and for work in office areas is released by the same new employee/worker safety training. Green work in non-office areas (industrial areas) requires release by the area or building manager if required on the Area Hazard Analysis (AHA) or other postings. Otherwise, if the worker is familiar with the area, has read the AHA, has no ESH concerns, and adheres to all postings, the worker is released to perform the work.
- “Yellow” work is non-green work performed in one’s resident area, or non-green work performed outside one’s resident area requiring two or fewer work groups working simultaneously or requiring two or fewer permits or plans. Yellow work in a worker’s resident area is authorized and released with an up-to-date SLAC Training Assignment (STA) and supervisor acknowledgment of worker’s ability to carry out assigned work. Documenting routine hazards and controls is not required, but supervisors may use a JSA, SOP, or ATA for this purpose. When a worker is dispatched outside their resident area, a JSA or SOP is typically required for authorization, and the work is released by the area manager. Some simple activities performed outside a worker’s resident area (e.g., climbing a ladder to perform green work) may be authorized without a JSA or SOP, as determined by the supervisor.
- “Red” work is work that requires detailed planning and coordination because the number of interdependent controls and/or different work groups required to complete the scope of work and includes any work that requires three or more permits or plans, or three or more work groups working simultaneously. Red work is authorized at the activity level like non-resident yellow work. In addition, the planning efforts are documented by the work planner on a Work Integration Plan (WIP); a coordination meeting is held to discuss the activities, timing, permits, and so on until the area manager is satisfied that a release may be granted; a tailgate briefing is required to release work for each worker before beginning any activity. *Note: All construction work by subcontractors at SLAC is defined as Red work.*

REFERENCES:

- [ESH Manual Chapter 2, “Work Planning and Control”](#)

7.7 Reviewing Safety and Health Experience [§851.21(a)(7)]

At SLAC, data and information regarding workplace accidents, injuries, and illnesses is collected by the Contractor Assurance and Contract Management (CACM) Department and analyzed to identify worker protection problem areas. Analysis techniques may include:

- Establishing correlation between deficiencies and circumstances that cause them
- Predicting outcomes based on observation, experience, or reason
- Looking at indicative signs and/or symptoms
- Estimating future possibilities of recurrence
- Systems and methods to collect, record, compile, and manage accident, injury, and illness data and information, including but not limited to, the OSHA 300 log of occupational injuries and illnesses, workers’ compensation data, accident reports, incident reports, industrial hygiene exposure monitoring results, inspection reports and SLAC Issues and Improvements Management System (SIIMS).
- Methodologies to analyze data and information to identify and trend accidents, injuries, and illnesses by type and source
- Lessons Learned are managed through OPEXShare, a web resource used by numerous DOE sites to share operating experience and institutional knowledge. Lessons learned are disseminated to appropriate personnel (e.g., managers, ESH Coordinators).

Identified issues and their associated corrective actions are tracked in accordance with the Issues and Improvements Program.

REFERENCES:

- [Incident Reporting and Investigation Process](#) (internal access only)
- [OPEXShare](#) (account registration required)
- [SLAC Issues and Improvements Management System \(SIIMS\)](#) (internal access only)
- [Issues and Improvements Program](#) (internal access only)
- [Injury/Illness Metrics](#) (internal access only)

7.8 Interactions between Workplace and Other Hazards

For the purpose of this document, workplace hazards are defined as physical, chemical, biological, and safety hazards with any potential to cause illness, injury, or death to a person. In instances where the requirements for other hazards (such as radiological hazards) overlap or appear to conflict, the personnel responsible for authorizing work shall take into account such requirements prior to authorizing work. Conflict shall be resolved prior to authorization to minimize confusion and to provide clear guidance to the worker(s). If conflicts arise during release, they shall be resolved prior to work commencing. SMEs or safety officers shall be consulted, if necessary, to resolve technical conflicts.

REFERENCES:

- [ESH Manual Chapter 2, "Work Planning and Control"](#)

7.9 Closure Facilities Hazards and Controls [§851.21(b)]

Prior to closure of an existing facility at SLAC, stakeholders, including the DOE and Stanford University, are consulted to ensure that appropriate processes and expectations are met. Guidance documents such as "Radiological Clearance of Real Property at SLAC" (Radiation Protection Department Document, RPD-012) are consulted in development of a decommission and disassembly (D&D) plan. Additionally, an [Excess Facility Program](#) has been implemented to establish SLAC Excess Facility Program-Transition, Deactivation, Surveillance & Maintenance, Decommissioning guidelines, processes, and procedures.

REFERENCES:

- [Excess Facility Program](#) (internal access only)
- [Radiological Clearance of Real Property at SLAC \(RPD-012\)](#) (internal access only)

8 Hazard Control and Abatement

SLAC has implemented a hazard prevention and abatement process to ensure that identified and potential hazards are prevented or abated in a timely manner. Abatement actions are prioritized and implemented according to the risk to workers. Interim protective measures are implemented as appropriate, pending final abatement.

The classic hazard control hierarchy is used to minimize worker safety and health risk:

- Elimination or substitution of the hazards where feasible and appropriate
- Use of engineering controls where feasible and appropriate
- Application of work practices and administrative controls that limit worker exposures
- Provision and use of personal protective equipment

This hierarchy is included in the ESH Manual Chapter 1, “General Policies and Responsibilities”, and Chapter 40, “Chemical Lifecycle Management”.

REFERENCES:

- [ESH Manual Chapter 1, “General Policies and Responsibilities”](#)
- [ESH Manual Chapter 40, “Chemical Lifecycle Management”](#)

8.1 Development of Controls from Facility Design and Procedures Development

Facility designs developed by engineering professionals are reviewed by other members of the project team, and by subject matter experts from the SLAC Accelerator Engineering Division, SLAC Facilities & Operations Division, the ESH Division, and other elements of SLAC. Safety and health professionals review designs for compliance with safety and health requirements. The number and rigor of design reviews vary depending on project size and complexity. The process for large construction projects includes a design review at the conceptual design stage, preliminary design stage, and final design stage.

Hazards that are identified in the design phase of new facilities and facility modifications or during the development or modification of procedures are eliminated or controlled through design or procedure changes. The controls implemented are commensurate with the risk level identified in the review process. Where hazards cannot be controlled through design changes, procedural or administrative controls, the use of personal protective equipment is considered. References are covered in Section 8, “Hazard Control and Abatement”.

Under the project review process, the [SLAC Building Inspection Office \(BIO\)](#) serves as the primary coordinator for all ESH compliance reviews of construction projects and identifies the appropriate authority having jurisdiction (AHJ)/SME reviews for the design and oversight of the construction. This process is described in depth in ESH Manual Chapter 1, “General Policy and Responsibilities”.

REFERENCES:

- [ESH Manual Chapter 1, “General Policy and Responsibilities”](#)

8.2 Managing Identified Safety and Health Noncompliances

Identified safety and health noncompliant conditions, including *de minimis* violations, are managed through the SLAC Issues and Improvements Management System (SIIMS). The SIIMS provides a centralized method of managing issues through closure with management involvement based on the significance level of the identified issue.

REFERENCES:

- [SLAC Issues and Improvements Management System \(SIIMS\) \(internal access only\)](#)

8.3 Purchasing Equipment, Products, and Services

SLAC's Purchase Requisition System specifically identifies high hazard items for special ESH review (The two radiation-related items listed below are covered under 10 CFR 835 but are listed here for the sake of completeness). These items include:

Chemicals, Gases, and Fuels

- All purchases of hazardous materials (solids, liquids, gases, cryogenics) go through the Chemical Management System. SLAC's Chemical Lifecycle Management Program Manager oversees this program. Note: [SLAC ships and receives non-commercial chemical samples according to DOT regulations](#).

Pressure Systems

- All purchases of pressure vessels, cryogenic systems, vacuum systems, and related devices require the review of the Pressure Systems Safety Program Manager or designee.

Radiation Generating Devices

- All purchases of radiation generating devices require the review and approval of the SLAC Radiation Safety Officer.

Radioactive Material

- All purchases of radioactive material require the review and approval of the SLAC Radiation Safety Officer.

Class 3B and 4 Lasers

- All purchases of laser light generating devices and laser PPE require the notification of the SLAC Laser Safety Officer.

Hoisting and Rigging Equipment

- All purchases of hoisting and rigging equipment require the review and approval of the SLAC Hoisting and Rigging Program Manager.

This is done through an electronic system that directs the requisition to the appropriate safety Program Manager for review and approval prior to going to the Buyer for assignment. The electronic review is triggered in one of two ways: (1) by the requestor completing the required hazardous item identification page in the eProcurement system; or (2) the item's UNSPSC code.

In addition, safety and health issues regarding services (e.g., construction and service subcontractors) are addressed under Section 1.6, "Flowdown of 851 Requirements to Subcontractors".

REFERENCES:

- [Supply Chain Management \(internal access only\)](#)
- [Hazardous Materials and Waste Transportation: Non-commercial Hazardous Materials Transport Procedure](#)

9 Safety and Health Standards [§851.23 & 851.27]

The Rule requires SLAC to comply with a defined set of safety and health standards that SLAC has evaluated to be applicable to SLAC workplaces. The following table lists the applicable standards specifically called out in 10 CFR 851.23 and 10 CFR 851.27 incorporated into the IIPP and/or the standards chosen to be implemented based on review by SLAC SMEs in accordance with the Contract and the corresponding SLAC ESH programs. The Cal/OSHA analogs to the Federal OSHA regulations called out by 10 CFR 851.23 have been adopted in this IIPP. Unless noted otherwise, Cal/OSHA regulations are the governing standards for compliance in this IIPP.

Table 9.1 Applicable Safety and Health Standards and SLAC Programs

Safety and Health Standard *	Corresponding SLAC Programs
<p>10 CFR 850, “Chronic Beryllium Disease Prevention Program”</p>	<ul style="list-style-type: none"> • Chronic Beryllium Disease Prevention Program • SLAC Occupational Health Center
<p>8 CCR 14000-14400 (Chapter 7, Subchapter 1, “Occupational Injury or Illness Reports and Records”)</p>	<ul style="list-style-type: none"> • Incident Reporting and Investigation Process (internal access only) • SLAC Human Resources: Employee/Labor Relations - Disabilities, Leaves and Time off (internal access only) • SLAC Occupational Health Center
<p>8 CCR 3200-6184 (General Industry Safety Orders, except Group 14, “Non-Ionizing Radiation”, Sections 5075-5085)</p>	<ul style="list-style-type: none"> • <i>ESH Manual:</i> • Chapter 6, “Confined Space” • Chapter 8, “Electrical Safety” • Chapter 10, “Laser Safety” • Chapter 11, “Excavation Safety” • Chapter 12, “Fire and Life Safety” • Chapter 15, “Ladder and Scaffold Safety” • Chapter 16, “Spills” • Chapter 18, “Hearing Conservation” • Chapter 19, “Personal Protective Equipment” • Chapter 20, “Lead Safety” • Chapter 25, “Machine and Portable Tools” • Chapter 27, “Asbestos” • Chapter 29, “Respiratory Protection” • Chapter 32, “Polychlorinated Biphenyls” • Chapter 36, “Cryogenic and Oxygen Deficiency Hazard Safety” • Chapter 37, “Emergency Management” • Chapter 40, “Chemical Lifecycle Management” • Chapter 41, “Hoisting and Rigging” • Chapter 44, “Penetration Safety” • Chapter 45, “Fall Protection” • Chapter 46, “Bloodborne Pathogens”

Safety and Health Standard *	Corresponding SLAC Programs
	<ul style="list-style-type: none"> • Chapter 47, “Mobile Elevating Work Platforms” • Chapter 48, “Industrial Trucks” • Chapter 51, “Control of Hazardous Energy” • Chapter 53, “Chemical Safety” • Chapter 55, “Site Access Control” • Chapter 57, “Heat Illness Prevention” • Chapter 58, “Laboratory Safety”
<p>8 CCR 1500-1962 (Construction Safety Orders, except Article 34, “Non-Ionizing Radiation Section” Sections 1800-1813)</p>	<ul style="list-style-type: none"> • <i>ESH Manual:</i> • Chapter 6, “Confined Space” • Chapter 8, “Electrical Safety” • Chapter 10, “Laser Safety” • Chapter 11, “Excavation Safety” • Chapter 12, “Fire and Life Safety” • Chapter 15, “Ladder and Scaffold Safety” • Chapter 18, “Hearing Conservation” • Chapter 19, “Personal Protective Equipment” • Chapter 20, “Lead Safety” • Chapter 25, “Machine and Portable Tools” • Chapter 27, “Asbestos” • Chapter 29, “Respiratory Protection” • Chapter 37, “Emergency Management” • Chapter 40, “Chemical Lifecycle Management” • Chapter 41, “Hoisting and Rigging” • Chapter 42, “Subcontractor Safety” • Chapter 44, “Penetration Safety” • Chapter 45, “Fall Protection” • Chapter 47, “Mobile Elevating Work Platforms” • Chapter 51, “Control of Hazardous Energy” • Chapter 53, “Chemical Safety” • Chapter 55, “Site Access Control” • Chapter 56, “Respirable Crystalline Silica” • Chapter 57, “Heat Illness Prevention” • Chapter 59, “Biological Resources Protection”
<p>American Conference of Governmental Industrial Hygienists (ACGIH), “Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEI)</p> <p><i>Based on SME review; the following alternative standards will be used in lieu of ACGIH TLVs:</i></p>	<ul style="list-style-type: none"> • SLAC Industrial Hygiene Program (internal access only) • <i>ESH Manual:</i> • Chapter 10, “Laser Safety” • Chapter 18, “Hearing Conservation” • Chapter 50, “RF and Microwave Safety”

Safety and Health Standard *	Corresponding SLAC Programs
<p><i>Silica: 8 CCR 5204, “Occupational Exposures to Respirable Crystalline Silica”</i></p> <p><i>Optical Radiation: Laser: ANSI Z136.1 Safe Use of Lasers</i></p> <p><i>Non-ionizing Radiation: IEEE C95.1 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz & C95.1a</i></p> <p><i>Ergonomics: Combination of 8 CCR 5110, “Ergonomics”; DHHS (NIOSH) Publication No. 2007-131)-Ergonomic Guidelines for Manual Material Handling; ACGIH-TLVs-Lifting TLVs</i></p>	<ul style="list-style-type: none"> • Chapter 54, “Ergonomics” • Chapter 56, “Respirable Crystalline Silica” • Chapter 60, “Non-laser UV Source Safety”
<p>8 CCR 3409, “Respiratory Protection”</p> <p><i>Above regulation in lieu of ANSI Z88.2, “American National Standard for Respiratory Protection”</i></p>	<ul style="list-style-type: none"> • ESH Manual Chapter 29, “Respiratory Protection”
<p>ANSI Z136.1, “Safe Use of Lasers”</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 10, “Laser Safety”
<p>ANSI Z49.1, “Safety in Welding, Cutting and Allied Processes”, sections 4.3 and E4.3</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 12, “Fire and Life Safety”
<p>National Fire Protection Association (NFPA) 70, “National Electrical Code”</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 8, “Electrical Safety” • ESH Manual Chapter 12, “Fire and Life Safety”
<p>NFPA 70E, “Standard for Electrical Safety in the Workplace”</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 8, “Electrical Safety” • ESH Manual Chapter 44, “Penetration Safety” • ESH Manual Chapter 51, “Control of Hazardous Energy”
<p>American Society of Mechanical Engineers (ASME) Boilers and Pressure Vessel Code, section I through XII, including applicable code cases</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 14, “Pressure Systems”
<p>ASME B31, “ASME Code for Pressure Piping”, sections as required by 851.27(b)(8)(i) through (x):</p> <p>ASME B31.1: Power Piping</p> <p>ASME B31.2: Fuel Gas Piping (= NFPA 54-2014 National Fuel Gas Code)</p> <p>ASME B31.3: Process Piping</p> <p>ASME B31.5: Refrigeration Piping</p> <p>ASME B31.9: Building Services Piping</p> <p>ASME B31.12: Hydrogen Piping</p>	<ul style="list-style-type: none"> • ESH Manual Chapter 14, “Pressure Systems”

Safety and Health Standard *	Corresponding SLAC Programs
ASME A13.1: Scheme for the Identification of Piping Systems ASME B31E: Standard for the Seismic Design and Retrofit of Above Ground Piping Systems	
SCP for DOE O 232.2, "Occurrence Reporting and Processing of Operations Information"	<ul style="list-style-type: none"> • Incident Reporting and Investigation Process (internal access only) • SLAC Human Resources: Employee/Labor Relations - Disabilities, Leaves and Time off • SLAC Occupational Health Center
Applicable state and local codes (<i>Note: on 1/1/2023 changed to the California Building, Mechanical, Plumbing Code 2022 & NEC 2023 editions</i>)	<ul style="list-style-type: none"> • 2022 California Building Code • 2022 California Fire Code • 2022 California Mechanical Code • 2022 California Plumbing Code

Notes:

* For referenced consensus standards with specific dates, SLAC will evaluate the adoption of more recent revisions, after performing an analysis of the changes, and receiving concurrence from the DOE SLAC Site Office, as appropriate. In some cases, SLAC Program Managers may choose to implement selected elements of updated consensus standards that enhance worker safety without formal adoption of the entire revised standard.

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10 Training [§851.25]

The SLAC ESH Training Program is a collaborative endeavor between ESH and line management. Line management provides on-the-job training (OJT); training specific to the work conducted in its actual environment and ensures that training requirements are met. SLAC Training provides scheduling and data tracking systems to support ESH training initiatives; trainers, classrooms, practical and web-based courses, and training program support and oversight. SLAC Training draws upon the resources of subject matter experts (SMEs) from a variety of organizations (e.g., Environmental Protection, Radiation Protection, Health and Safety Services, etc.) for content and delivery of instruction.

SLAC policy, and the federal law, requires that all staff, contractors, subcontractors and sub-tier contractors, participating guests, visitors, and others who perform work at, or for, SLAC receive appropriate training necessary to protect their health and perform work in a safe and environmentally sound manner. Training is provided to new workers before or at the time of initial assignment, periodic training as often as required or necessary and retraining or additional training when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists. This training includes information regarding job hazards, possible health effects, and required work practices and procedures. There are site access restrictions that correspond to increasing levels of training requirements (e.g., Environmental Safety and Health Orientation; Construction Safety Orientation; General Employee Radiological Training (GERT); and Radiological Worker Training I and II).

REFERENCES:

- [SLAC Training](#) (includes catalog, schedules, web-based training, SLAC Training Assignment (STA), training history and reports, etc.)
- [ESH Manual Chapter 55, "Site Access Control"](#)

11 Recordkeeping and Reporting [§851.26]

SLAC is responsible for establishing and maintaining recordkeeping and reporting processes for data related to health and safety including

- Hazard inventories, assessments, and abatement
- Exposure measurements and controls
- Injuries and illnesses
- Safety and health deficiencies
- Maintain health and safety records per DOE record retention policy

It is specifically prohibited from concealing or destroying information concerning noncompliance or potential noncompliance with the requirements of this IIPP or the Rule.

SLAC uses a variety of methods to track safety and health data. For example, the chemical inventory is tracked using an electronic database. This database is also used to maintain copies of and provide access to safety data sheets (SDSs) for all chemicals used at SLAC. The [Industrial Hygiene Document Database](#) contains all SLAC IH sampling reports. The SLAC Industrial Hygiene Group is responsible for maintaining inventories/data associated with exposure control systems (e.g., emergency eyewash/showers, ventilation systems, fixed chemical detection systems, etc.).

The ESH Division tracks injuries and illnesses at SLAC. This information is reported to DOE in accordance with the SSO approved Site Compliance Plan (SCP) for DOE Order 231.1B, Admin Chg 1, “Environment, Safety and Health Reporting”. Furthermore, SLAC’s employees are Stanford University employees and are therefore included under Stanford University for purposes of OSHA 300 compliance and U.S. Bureau of Labor Statistics reporting. This information is maintained by Stanford University’s Risk Management Department.

Top tier subcontractors are required to provide SLAC with copies of reports for all OSHA-recordable injuries and illnesses occurring on site. SLAC employees are required, and contract workers are encouraged, to visit SLAC Occupational Health Center whenever work-related injuries and occupational illnesses occur. SLAC reporting requirements are in addition to, and do not replace, subcontractor employer reporting, recordkeeping, and other obligations under OSHA regulations.

The CACM Department is responsible for managing the process for occurrence reporting and incident analysis. This reporting is used to categorize, report, and process information about events or conditions related to Laboratory-controlled or managed buildings, experiments, or other activities in support of Laboratory operations that meet the site-specific reportable occurrence criteria in the DOE Occurrence Reporting and Processing Systems (ORPS).

REFERENCES:

- [Chemical Management Services](#)
- [Industrial Hygiene Document Database \(internal access only\)](#)
- [OPEXShare \(account registration required\)](#)
- [Incident Reporting and Investigation Process \(internal access only\)](#)
- [Table 11.1: NTS Reporting Thresholds for 10 CFR 851 \(see below\)](#)

**Table 11.1 DOE Noncompliance Tracking System (NTS)
Reporting Thresholds for 10 CFR 851³**

Worker Safety and Health Noncompliance Reporting Criteria¹

Reporting Criteria Group	Subgroup	Occurrence Category and Summary Description ²
1. Operational Emergencies ³	N/A	(1) Operational Emergency, Alert, Site Area Emergency, or General Emergency per DOE O 151.1D
2. Personnel Safety and Health	A. Occupational Injuries and Exposures	(1) Fatality/terminal injury (2) Inpatient hospitalization of ≥ 3 personnel (3) Inpatient hospitalization ≥ 5 days (4) ≥ 3 personnel having DART cases (5) Serious occupational injury or exposure (6) Personnel exposure > 10X limits or > IDLH (7) Personnel exposure > limits but < IDLH
	B. Fires	(1) Fire within primary confinement/containment (2) Fire that activates fixed fire suppression system or takes >10 minutes to extinguish or disrupts normal ops >4 hours (3) Fire in a nuclear facility (4) Any wild land fire or other fire outside of the site that has the potential to threaten the facility
	C. Explosions	(1) Unplanned explosion that disrupts normal operations
	D. Hazardous Energy	(1) Unexpected/unintended personal contact (2) Unexpected discovery of uncontrolled energy source
4. Facility Status	B. Operations	(1) Stop Work Order from DOE
10. Management Concerns and Issues	N/A	(1) An event, condition, or series of events that does not meet any of the other reporting criteria but is determined by the Facility Manager or line management to be of safety significance or of concern for that facility or other facilities or activities in the DOE complex. (2) Near miss (3) Event that could impact the credibility of the DOE or result in inquiries to DOE HQ by the state, or press, etc.

³ Based upon DOE’s published 10 CFR 851 NTS Reporting Thresholds ([revised October 2019](#)).

Reporting Threshold	Notes ⁴
Severity Level I noncompliance(s) with Parts 851 or 850 (Refer to Part 851, Appendix B, Section VI(b)(1)) ⁵	Conditions of noncompliance identified by any method or means (e.g., assessments, inspections, observations, employee concerns, event evaluation) that represent a condition or hazard that has the potential to cause death or serious physical harm (injury or illness). These conditions include imminent danger situations.
Programmatic deficiencies involving noncompliances	A programmatic problem generally involves some weakness in administrative or management controls, or their implementation, to such a degree that a broader management or process control problem exists and requires broad corrective actions.
Repetitive noncompliances	Two or more different events/conditions that involve substantially similar work activities, locations, equipment, or individuals.
Intentional violation or misrepresentation	Also known as willful noncompliance; may involve record falsification.
Substantiated management reprisal(s) against worker(s) for raising safety issues associated with 851.20(a)(6) or (9)	Customarily referred to as worker retaliation.

Notes to tables

1. Consult [DOE Order 232.2A, Admin Ch. 1](#) for the full text and reporting threshold for each occurrence criterion.

The simple occurrence of an event or discovery of a condition in any of the listed categories is not by itself sufficient to warrant NTS reporting. NTS reporting requires the identification of a 10 CFR 850 or 851 noncompliance in conjunction with the event or discovery. Contractors identifying a significant worker safety and health noncompliance in association with an event/discovery type or category not listed on the table should evaluate the event for NTS reportability, particularly under the “Severity Level I Noncompliances” category.

2. These summary descriptions are a brief characterization of the related criteria. Use the full statement of the criteria contained in DOE Order 232.2, Admin Ch. 1 to determine NTS reportability of event-related worker safety and health noncompliances.

3. Report worker safety and health noncompliances associated with any of the DOE Order 232.2, Admin Ch. 1 Operational Emergency categories (Operational Emergency, Alert, Site Area Emergency, or General Emergency) per the SCP.

4. Refer to Chapter IV of the Enforcement Process Overview for more information about these types of noncompliances.

5. Conditions of noncompliance identified by any method or means (e.g., assessments, inspections, observations, employee concerns, event evaluation) that would not otherwise be reported into NTS as either a Management Issue or Occurrence, but that represent a condition or hazard that has the potential to cause death or serious physical harm (injury or illness). These conditions include imminent danger situations.

12 Functional Areas

The documents that are cited in this section are incorporated by reference. Citations of specific sections of the SLAC *ESH Manual* or other reference sources refer to the most current version of these documents as of the date of publication of this document. This section is based on the requirements of Appendix A of 10 CFR 851. 851 references are not cited except when there is not an analogue in Cal/OSHA.

12.1 Construction Safety

The SLAC Construction Safety Program is governed by ISEMS principles. Construction work performed at SLAC complies with 8 CCR and applicable sections of SLAC's ESH Manual. Construction subcontractors, labor-only subcontractors, and SLAC workers may perform construction work at SLAC.

Construction Safety hazard assessment is performed through documented tools such as reviewing the subcontractor's injury history and written safety and health manual (including IIPP), Job Safety Analyses (JSAs), Elevated Surface Work Plans (ESWPs), Excavation Permits, Hot Work Permits, etc.

An essential element of the Construction Safety Program is that subcontractors awarded work at SLAC are required to submit JSA's, Daily Tailgate forms, and plans and permits that demonstrate how they will perform their work safely. Additionally, prime subcontractors are required to submit a Subcontractor Safety Qualification Form, which documents their recordable case rate, worker's compensation experience modifier, past OSHA violations, and relevant experience to demonstrate their qualifications to perform work at SLAC. Construction subcontracts will include detailed safety and health requirements in Division 1 of the project specifications. The subcontractor is not given a notice to proceed until the appropriate work planning documents have been reviewed by ESH, Procurement, the Project Manager, and by the designated Construction Manager and are determined to be acceptable. Prime subcontractors must ensure their sub-tier subcontractors perform their work in accordance with SLAC's ESH and Work Planning Control requirements.

REFERENCES:

- [ESH Manual Chapter 2, "Work Planning and Control"](#)
- [SLAC Industrial Hygiene Program \(internal access only\)](#)
- [ESH Manual Chapter 6, "Confined Space"](#)
- [ESH Manual Chapter 8, "Electrical Safety"](#)
- [ESH Manual Chapter 11, "Excavations"](#)
- [ESH Manual Chapter 41, "Hoisting and Rigging"](#)
- [ESH Manual Chapter 42, "Subcontractor Safety"](#)
- [ESH Manual Chapter 44, "Penetration Safety"](#)
- [ESH Manual Chapter 45, "Fall Protection"](#)
- [ESH Manual Chapter 51, "Control of Hazardous Energy"](#)
- [ESH Manual Chapter 56, "Respirable Crystalline Silica"](#)
- [ESH Manual Chapter 57, "Heat Illness Prevention"](#)
- [ESH Manual Chapter 59, "Biological Resources Protection"](#)

12.2 Fire Protection

SLAC has a comprehensive Fire Protection Program that implements fire safety and emergency response elements designed to protect workers. The program includes appropriate facility and site-wide fire protection, fire alarm notification and egress features, and a fully staffed, trained, and equipped

emergency response organization that is capable of responding in a timely and effective manner to site emergencies.

The SLAC Fire Protection Program implements DOE Order 420.1C through an approved Site Compliance Plan and all other DOE-prescribed fire protection codes and standards that are applicable to SLAC (e.g., all applicable National Fire Protection Association [NFPA] standards). SLAC uses the California Building Code and California Fire Code, along with the California Mechanical Code (CMC), to maintain consistency with surrounding communities. The SLAC Fire Marshal is the authority having jurisdiction (AHJ) for routine interpretation and application of NFPA standards and codes. The SLAC Site Office Manager assigns this operational responsibility to the Fire Marshal through the SLAC Lab Director in compliance with DOE 420.1C allowances.

The SLAC Fire Safety and Emergency Response Programs are primarily defined in the ESH Manual Chapter 12, “Fire and Life Safety”, and Chapter 37, “Emergency Management”.

REFERENCES:

- [ESH Manual Chapter 12, “Fire and Life Safety”](#)
- [ESH Manual Chapter 37, “Emergency Management”](#)

12.3 Explosives Safety [851-App. A §3]

Explosives safety per 10 CFR 851 requirements have not been applicable at SLAC because there were only small quantities of chemicals on site that may have exhibited the characteristics of explosive as defined in the DOE Explosives Standard ([DOE-STD-1212-2019](#)). Periodically, researchers have proposed the use of very small quantities, however, these chemicals are not used to detonate or deflagrate, but rather are being studied for their chemical properties. These chemicals are handled and controlled in the same safe manner as other reactive chemicals used at SLAC.

Under the newly approved [Safe Use of Explosives at SLAC](#) plan, SLAC’s explosives safety posture has changed. The plan applies to the Linac Coherent Light Source (LCLS) and the Stanford Synchrotron Radiation Lightsource (SSRL) facilities at the SLAC National Accelerator Laboratory to perform secondary high explosives (HE) detonations in conjunction with x-ray imaging experiments.

This plan fully complies with the Department of Energy (DOE) Standard (STD) 1212-2019 (CN1), “Explosives Safety”, dated December 2021, content and format requirements. This plan also complies with the DESR 6055.09, Edition 1. Note that other regulatory documents related to DOE explosives operations (DOE-STD-1212-2019, CN1) and regulations filtered down through SLAC documents such as experiment-specific Explosives Site Safety Plan, SLAC’s Injury and Illness Prevention Program (IIPP), work control documents (WCD) from the user’s institution, and SLAC WPC Documents will be followed, and those documents in combination with adherence to the plan create the overarching regulatory framework for explosive operations in a few approved spaces at SLAC. This regulatory framework creates a layered series of documents that covers all aspects of safety for these operations.

REFERENCES:

- [Safe Use of Explosives at SLAC](#)
- [Department of Energy Standard 1212-2019, Change Notice 1, “Explosive Safety” \(DOE-STD-1212-2019, Chg Notice 1\)](#)
- [Defense Explosive Safety Regulation 6055.09 \(DESR 6055.09\)](#)

12.4 Pressure Safety

All pressure, cryogenic, and vacuum systems, design and construction specifications are required to call for compliance with the applicable ASME boiler, pressure vessel, and piping codes and standards, as well as applicable California Mechanical Code and California Building Code requirements. The Pressure Systems Safety Program Manager participates in design reviews to ensure compliance with the requirements stated above. In-service inspection, repair, maintenance, and pressure tests of the pressure systems are performed in accordance with ESH Manual Chapter 14, “Pressure Systems”.

A SLAC Pressure Systems Working Group has been convened, comprised of Mechanical Engineers and scientists designated by the ALDs to represent the various directorates at the site. The working group is chaired by one of the members for a minimum one-year term. This working group meets regularly to advise the Program Manager and to assist as subject matter experts in the design review of pressure systems.

SLAC has adopted the latest editions of the following codes and standards for the pressure systems safety program: ASME Boiler and Pressure Vessel Code, ASME Piping Code, Cal/OSHA regulations, and other national standards as listed in ESH Manual Chapter 14, “Pressure Systems”.

When conformance to the requirements of these national consensus codes is neither possible nor feasible, SLAC will implement measures to provide equivalent protection at a level of safety comparable to that achieved by complying with the requirements of these national consensus codes. An Alternate Pressure Systems Qualification Program, documented in the SLAC Environment, Safety and Health Manual, will be used to provide a method of qualifying pressure systems that includes engineering evaluation, peer review, and management concurrence tailored to the complexity of the system, risks, and consequence of a failure.

REFERENCES:

- [ESH Manual Chapter 14, “Pressure Systems”](#)

12.5 Firearms Safety (Not Applicable at SLAC) [851-App. A §5]

There are no activities involving the use of firearms. Firearms are expressly forbidden on any SLAC work location. SLAC’s *Site Security Plan* specifies that the Security force only “observe and report”. SLAC relies on the San Mateo County Sheriff Department as the lead law enforcement agency. Mutual Aid support, if required, is provided through the Menlo Park Police Department, Stanford University Department of Public Safety, and the California Highway Patrol.

12.6 Industrial Hygiene

The SLAC Industrial Hygiene Program is managed and implemented by the Health and Safety Services Department Head. The program is designed to protect workers from harmful exposures to hazardous materials, carcinogens, noise, heat and cold stress, and non-ionizing radiation (such as ultraviolet, visible, infrared, radiofrequency, microwave, and static magnetic fields). Note: ionizing radiation is not covered under the scope of this Plan but is managed by the Radiation Protection Department in accordance with 10 CFR 835 and other applicable DOE Directives. Lasers are covered under this Plan but not by the Industrial Hygiene Program.

The Industrial Hygiene Department is responsible for policy and procedure development and implementation, and the performance of workplace hazard evaluations from exposure to chemical and physical agents (except ionizing radiation and lasers, which are managed by the Radiation Protection Department). This includes coordination with planning, design, and occupational health personnel to anticipate and control health hazards proposed facilities and operations would introduce.

REFERENCES:

- [SLAC Industrial Hygiene Program \(internal access only\)](#)

12.7 Biological Safety [851-App. A §7]

There is minimal work with biohazardous materials at SLAC, and all such work is limited to Biological Safety Level (BSL) 2 and below. All planned work with biohazardous materials is reviewed by ESH Coordinators or the SLAC Biosafety Program Manager and the more hazardous work is reviewed and approved by Stanford University’s Administrative Panel on Biosafety (APB) to determine if SLAC’s safety programs, facilities, and systems can safely manage the planned work.

SLAC does not currently conduct any work with “select agents” listed in 7 CFR Part 331, 9 CFR Part 121, and 42 CFR Part 73 , or the Health and Human Services and United States Department of Agriculture Select Agents and Toxins List. Should the potential use of select agents come up in the future, it will go through a thorough review.

Work with biohazardous material is conducted in a safe, environmentally sound, and compliant manner using the principles and functions of ISEMS and work planning and control.

REFERENCES:

- [ESH Manual Chapter 34, “Biosafety”](#)
- [Stanford University Biosafety Manual](#)
- [Centers for Disease Control and Prevention and National Institutes of Health \(CDC-NIH\), Biosafety in Microbiological and Biomedical Laboratories \(BMBL\) \(Sixth Edition, 2020\)](#)

12.8 Occupational Medicine [851-App. A §8]

The SLAC Occupational Health Center (OHC) provides comprehensive occupational medical services to SLAC employees and is administered under contract with Stanford University Environmental Health and Safety. OHC manages work-related injury and illness care for Stanford University (SU) employees on payroll at SLAC and provides first-aid assessments for subcontractors and visitors. OHC performs medical examinations required as part of mandated surveillance programs, conducts fitness for duty and return-to-work evaluations, offers post-offer, periodic, and exit health evaluations, provides first-aid consultations regarding non-occupational health conditions, and contributes to health promotion through its Wellness Program. Additionally, the SLAC OHC responds to emergencies for SLAC visitors, subcontractors, and DOE employees on site.

SLAC OHC is managed by a physician board-certified in occupational medicine and is staffed by clinicians, medical assistants, and an ergonomics specialist who specialize in Occupational medicine care.

Staff members work collaboratively with SLAC ESH and HR, Stanford University health and safety leadership, disability, and risk management, and SLAC and SU campus wellness representatives to meet the needs of applicable federal and state laws and standards governing occupational health and safety of employees.

SLAC implements the requirements of 10 CFR 851 App. A §8 for all SLAC employees working for any duration of time for SLAC or enrolled in a medical or exposure monitoring program required by an applicable regulation. 10 CFR 851 App. A §8 is not applicable to subcontractors per SLAC’s [Variance to 10 CFR 851](#). Subcontractors to SLAC will make comprehensive occupational medicine services available to their workers as required by CA regulations or by any contractual obligations with SLAC. Although SLAC’s OHC is available to provide emergency medical care to subcontractors in the event of an on-site injury, the subcontractor will be responsible for addressing appropriate medical care and surveillance under the other elements of this requirement.

REFERENCES:

- [SLAC Occupational Health Center](#)

12.8.1 Role of Occupational Health Center

The OHC provides support to employees, managers, and safety and health specialists to help ensure that SLAC is a safe and healthy workplace. The on-site clinicians regularly participate in worker safety and health team meetings and committees when appropriate, visit work areas to perform health hazard evaluations, and work with incident investigations teams to address the medical aspects of injury prevention while evaluating job conditions and issues relating to workers’ health. The OHC participates in periodic SLAC safety fairs, collaborates with Stanford University’s Department of Environmental Health and Safety in support of the ergonomics program, including performance of workstation ergonomic evaluations, and assists in medical and programmatic oversight for the Arrillaga Recreation Center at SLAC, and coordinating wellness initiatives with Stanford campus.

12.8.2 Injury and Illness

The OHC provides diagnostic examinations to evaluate injuries and illnesses to determine work-relatedness, apply appropriate medical restrictions, and refer for definitive care, as appropriate. The OHC monitors ill and injured workers to facilitate rehabilitation and safe return-to-work, interfacing regularly with HR and ESH to address modified work availability thereby minimizing lost productivity and promoting a better worker outcome.

SLAC requires employees who incur any work-related injury or illness to report the injury to their supervisor and seek medical evaluation with the OHC (or their pre-designated provider) within 24 hours. Those employees who return to work after one full day or more of lost time due to a work-related illness or injury are required to report to the OHC for an evaluation of their condition and ability to resume customary work. Employees who are absent due to an injury or illness that is not work-related and that lasts for more than 5 consecutive workdays are also required to obtain clearance with OHC prior to return to work. The Stanford/SLAC policy on sick leave requires an employee to apply for disability for any absence greater than 5 days (Administrative Guide Memo 2.1.7). In such cases, the employee or their supervisor is expected to notify SLAC's disability vendor of any absence greater than 5 days. As a backup measure, Stanford University Disability and Leave Services also notifies the vendor if an employee reports being off work due to injury or illness for more than 40 hours, with the subsequent acknowledgement email distribution copied to the OHC for monitoring.

REFERENCES:

- [*Stanford University. Administrative Guide Memo 2.1.7, "Sick Time: Regular Staff Employees, Regular Academic Staff-Research and Regular Academic Staff-Professional Librarians"*](#)

12.8.3 Medical Evaluations

In order to ensure that an employee meets specific physical, medical, and psychological requirements for a given work assignment, the OHC provides hazard-based medical monitoring and qualifications-based medical certification examinations at frequencies required by standards and regulations, and when recommended by SLAC's Medical Director. Determination of the need for inclusion in regulatory-based medical surveillance programs is performed in conjunction with appropriate industrial hygiene experts. Currently, the following hazard-based medical surveillance programs are provided as required for employees with exposures to the following:

- Lead operations
- Beryllium operations
- Plating operations
- Laser operations
- Welding operations
- Noise/Hearing Conservation areas
- EMT required surveillances
- Hazardous Waste Operations
- Crane Operator
- Respiratory Protection
- DMV Commercial Driver Exams
- Bloodborne Pathogens
- Nanoparticles

12.8.4 Health Information Management

Complete medical records are maintained for employees from the time of their first physical examination. These records are confidential to the extent provided by law and remain in the custody and control of the OHC. Information from an employee's health records may be disclosed only as required by law or if an employee provides written consent for release of information. Records are retained indefinitely. The OHC has implemented an Electronic Medical Records (EMR) management system.

Employee Assistance Programs are provided through the Stanford Faculty Staff Help Center and the Stanford Be Well Program – independent organizations run and controlled by Stanford University. The

Be Well Program also offers classes at SLAC. The Help Center offers counseling, classes and groups on substance abuse. Entry into any actual programs is treated as an employee relations issue and is managed by the Employee Relations staff.

12.9 Motor Vehicle Safety [851-App. A §9]

The Traffic and Vehicular Safety Program at SLAC complies fully with the requirements in 10 CFR 851 and, notwithstanding the fact that SLAC roads are private rather than public roads, voluntarily conforms to California Department of Motor Vehicles (DMV) laws and regulations. This includes uniform traffic and pedestrian control devices and signage, speed limits, seat belt use, and other safety devices as required. All SLAC employees undergo basic vehicle safety training that has been incorporated into the Environmental Safety and Health Orientation and Construction Safety Orientation. Violations of traffic and vehicular safety requirements can result in further training, loss of driving privileges, or other disciplinary action, up to and including termination of employment.

REFERENCES:

- [ESH Manual Chapter 13, “Traffic and Vehicular Safety”](#)

12.10 Electrical Safety [851-App. A §10]

SLAC has an established, comprehensive Electrical Safety Program that complies with Cal/OSHA regulations, NFPA 70, and NFPA 70E. Only trained and qualified workers are authorized to operate and work on SLAC electrical equipment and circuits.

ESH Manual Chapter 8, “Electrical Safety”, primarily implements the program. General requirements for all SLAC work involving the use of electrical equipment and systems include

- Application of engineering controls, administrative controls, safe work practices, and PPE
- Electrical safety considerations
- Energized electrical work requirements
- Qualifying and authorizing personnel

In addition to ESH Manual Chapter 8, “Electrical Safety”, supporting programs include Penetration Safety (ESH Manual Chapter 44) and Control of Hazardous Energy (Lockout/Tagout) (ESH Manual Chapter 51).

To ensure compliance with Cal/OSHA and National Electrical Code requirements for equipment safety, electrical equipment must be listed or labeled by a nationally recognized testing laboratory (NRTL) or be subjected to inspection and approval under SLAC’s Electrical Equipment Inspection Program (EEIP) prior to use. For legacy equipment that was in service prior to implementation of the EEIP program, SLAC has developed legacy equipment inspection plans. Implementation of the inspection plans is in progress. This program is managed by a qualified and experienced electrical safety professional.

REFERENCES:

- [ESH Manual Chapter 8, “Electrical Safety”](#)
- [ESH Manual Chapter 44, “Penetration Safety”](#)
- [ESH Manual Chapter 51, “Control of Hazardous Energy”](#)
- [Electrical Equipment Inspection Program \(EEIP\)](#)

12.11 Nanotechnology Safety [851-App. A §11]

The SLAC Nanomaterial Safety Plan complies with the SSO approved SCP for the Department of Energy Order 456.1A, “The Safe Handling of Unbound Engineered Nanoparticles”.

The plan, which applies wherever nanomaterials are used at SLAC, follows a graded approach based on the inherent hazard of the material form. The hazard level assignment is as follows:

- Low-hazard level – Bound or fixed nanostructures
 - Solid materials with imbedded nanostructures
 - Solid nanomaterials with nanostructures fixed to the material’s surface
- Medium-hazard level – Nanoparticles suspended in liquids
- High-hazard level – Dry, dispersible nanoparticles, and nanoparticle agglomerates/aggregates

The assigned hazard level determines the extent of required controls, review, and approval. Proposals for work with low-hazard level and medium-hazard level nanomaterials will be reviewed and approved by the division safety coordinator. Such work will follow approved standard operating procedures. Work plans for high-hazard level nanomaterials are approved by the Nanomaterials Program Manager or a directorate approved business process that has been vetted by the Nanomaterials Program Manager.

REFERENCES:

- [SLAC Nanomaterial Safety Plan](#)

12.12 Workplace Violence Prevention (Reserved) [851-App. A §12]

13 Variances, Code of Record, and Equivalencies

Only the Under Secretary may grant a variance from a 10 CFR 851 requirement, after receiving the recommendation of the DOE Associate Under Secretary for the Office of Environment, Health, Safety and Security. The procedure for obtaining such a variance is described in Subpart D of the Rule. The DOE SLAC Site Office (SSO) will be consulted prior to filing a formal variance request to gain a preliminary opinion of the likelihood the request will be granted and what supporting material would be needed.

- On August 16, 2019, SLAC was granted a permanent variance to Subpart B, Subpart C and Appendix A of 10 CFR 851. SLAC will establish, implement, and maintain an effective Injury and Illness Prevention Program (IIPP) per Title 8, *California Code of Regulations*, Section 3203 (8 CCR 3203) instead of the provisions in subpart B, and to comply with applicable California Occupational Safety and Health Administration (Cal/OSHA) regulations in lieu of the requirements in 10 CFR 851 subpart C and appendix A. This IIPP was developed in response to the variance and describes SLAC's alternate compliance with Subpart B, Subpart C and Appendix A of 10 CFR 851.
- Authorities Having Jurisdiction (AHJ). For Building Code and National Fire Protection Association (NFPA) codes and standards, DOE may assign to SLAC AHJ *operational responsibilities*. The assigned operational responsibilities are to interpret required codes and standards, and to judge conditions as compliant or non-compliant with respect to required codes and standards.

The authority for approving alternatives (equivalencies) to and variances (exemptions) from required codes and standards is retained by DOE. These authorities are not delegated to SLAC.

The DOE Site Office head assigns the following AHJ operational responsibilities to the SLAC Director. The SLAC Director further assigns these responsibilities to SLAC personnel:

- SLAC Building Code Official/Building Official (BCO/BO)
- SLAC Fire Protection AHJ (FP-AHJ)
- SLAC Electrical Installations AHJ (E-AHJ for NFPA 70 National Electrical Code)
- SLAC Electrical Safe Work Practices AHJ (E-AHJ for NFPA 70E Electrical Safety in the Workplace)

Prior to May 2007 (i.e., implementation of 10 CFR 851) several fire/building code equivalencies were approved through the SSO. All construction and operation has been in accordance with the Building and Fire Code, including the use of approved alternative materials and methods. Construction of facilities is done under the code of record established at the outset of facility design. Code of record information for a specific building construction project is most easily accessible from the ESH Building Inspection Office project review system (PRS) for buildings built or renovated since 2007. For buildings built or renovated prior to 2007, code of record information is typically found in the project record drawings or specifications kept in the [SLAC Engineering Document Archive \(SEDA\)](#) system maintained by SLAC Engineering Documentation Services.

Additionally, subsequent to the promulgation of 10 CFR 851, an equivalency was granted by the SSO to SLAC:

- An equivalency to address the use of a rolling horizontal fire shutter across a multi-story opening. The 2010 Building Code of Record required use of an NFPA standard that addressed only manual swinging hatchways and did not include rolling shutters in its scope. SSO AHJ concurrence was dated 4/27/2015.

REFERENCES:

- [SLAC CDMS Published Code Alternatives \(internal access only\)](#)

14 Enforcement

The Rule authorizes the Secretary of Energy to issue citations and civil monetary penalties to contractors indemnified by the Price-Anderson Amendments Act (PAAA), such as SLAC and its subcontractors, for violations of DOE worker safety and health requirements. The Secretary's enforcement authority is implemented through the DOE Office of Enterprise Assessments Office of Enforcement.

The DOE Worker Safety and Health Enforcement Program relies on contractors to voluntarily identify and report 10 CFR 851 noncompliances. Procedures for implementing the enforcement process are found in Subpart E of the Rule.

To administer the Program, the SLAC Laboratory Director appoints the following individuals:

- NTS Coordinator, who is in charge of the overall NTS Program
- Alternate NTS Coordinator for 10 CFR 835, who handles matters comprising possible violations of 10 CFR 835
- Alternate NTS Coordinator for 10 CFR 851, who handles matters comprising possible violations of 10 CFR 851

Since the FY23 revision of this document, SLAC has submitted or completed corrective action items on the following worker safety and health noncompliance reports in the DOE NTS:

- NTS-SC-SLSO-SU-SLAC-2022-0010415: Inspection Noncompliance Issue Discovered with Cranes Greater than 1 Ton in Capacity; status: corrective actions complete.
- NTS-SC-SLSO-SU-SLAC-2023-0010607: Electric Injury During Zero Voltage Verification (ZVV) of 12.47 kV Switchgear; status: corrective actions complete.
- NTS-SC-SLSO-SU-SLAC-2024-0010956: LCLS CXI Hutch Transitioned to Class 4 Laser Mode while a Worker was Present without Protective Eyewear; status: Four of seven corrective actions completed. Remaining two corrective actions due FY25Q1 and one due FY25Q2.

REFERENCES:

- [SLAC NTS Procedure \(internal access only\)](#)

Appendix A: Glossary

ACGIH American Conference of Governmental Industrial Hygienists

Affected worker A worker who would be affected by the granting or denial of a variance, or any authorized representative of the worker, such as a collective bargaining agent.

AHJ authority having jurisdiction

ANSI American National Standards Institute

ASME American Society of Mechanical Engineers

Cal/OSHA The California Department of Industrial Relations, Division of Occupational Safety and Health

CCR California Code of Regulations

CFR Code of Federal Regulations

Closure facility* A facility that is non-operational and is, or is expected to be, permanently closed and/or demolished, or title to which is expected to be transferred to another entity for reuse.

Closure facility hazard* Refers only to facility-related conditions within a closure facility involving deviations from the technical requirements of 851.23 of the Rule that would require costly and extensive structural and engineering modifications to be in compliance. Closure facilities may have other hazards as well.

CM Construction Manager. Designated SLAC representative responsible for overseeing the execution of construction work to ensure the work is completed safely, according to SLAC requirements and contractual expectations.

Contractor* Any entity, including affiliated entities, such as a parent corporation, under contract with DOE, including a subcontractor at any tier, with responsibility for performing work at a DOE site in furtherance of a DOE mission. As stated in the Rule,

all contractors and subcontractors at any tier are covered under this definition. The definition does not, however, apply to contractors or subcontractors that provide only “commercial items” as defined under the Federal Acquisition Regulations (FAR). Such contractors would not be performing work in furtherance of a DOE mission. [See definitions for employee and worker.]

Covered workplace* A place at a DOE site where a contractor is responsible for performing work in furtherance of a DOE mission.

CVC California Vehicle Code

DOE* The United States Department of Energy, including the National Nuclear Security Administration

DOE Director* means a DOE Official to whom the Secretary assigns the authority to investigate the nature and extent of compliance with the requirements of this part.

DOE Enforcement Officer* means a DOE official to whom the Director assigns the authority to investigate the nature and extent of compliance with the requirements of this part.

DOE site* A DOE-owned or leased area or location or other area or location controlled by DOE where activities and operations are performed at one or more facilities or places by a contractor in furtherance of a DOE mission. This definition includes all sites where DOE exercises regulatory control under the Atomic Energy Act (AEA), even if DOE does not own or lease the site.

EAP Employee Assistance Program

Employee A person hired by the Stanford University to work at SLAC; includes career and indeterminate-time employees but not subcontract workers,

students, or participating guests. See definitions for contractor.

ESH Environment, Safety, and Health. References to ESH in this document are limited to the protection of workers from workplace safety and health hazards. Environmental management and Radiation Protection are outside of the scope of the Program.

Facility management Includes individuals who have responsibility for maintaining the safety envelope for facilities.

Incorporate by reference Only the referenced document is incorporated by reference; references cited in the incorporated document are not included.

ISEMS Integrated Safety and Environmental Management System

LOTO lockout/tagout

NFPA National Fire Protection Association

NRTL nationally recognized testing laboratory

NTS DOE Noncompliance Tracking System

ORPS Occurrence Reporting and Processing System

PAAA Price-Anderson Amendments Act

POC Point of Contact. (see SLAC Point of Contact (POC))

Safety and health standard A standard that addresses a workplace hazard by establishing limits, requiring conditions, or prescribing the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe and healthful workplaces.

SCP Site Compliance Plan based on [DOE Contract DE-AC02-76SF00515](#), 10/1/2017–9/30/2022

SIIMS SLAC Issues and Improvement Management System

SLAC SLAC National Accelerator Laboratory

SLAC POC SLAC Point of Contact. A term for the person assigned by the Purchasing Department, or the line organization sponsoring the service subcontractor who acts as the SLAC primary representative to the subcontractor. The POC ensures the work is completed safely, according to SLAC requirements and contractual expectations, and may be a project manager, a facilities technical services representative, a buyer/contract administrator, or an individual assigned by a project manager to oversee low and very low hazard subcontracting activities not requiring a CM or SM.

SM Service Manager. Designated SLAC representative responsible for overseeing the execution of non-construction, high-hazard subcontractor work to ensure the work is completed safely, according to SLAC requirements and contractual expectations.

SME subject matter expert

SSO DOE SLAC Site Office

Subcontractor An individual or firm that provides skilled or unskilled labor, repair and maintenance services, technical professional support, job shop personnel, and so on. For purposes of this Program, this includes service and construction subcontractors. This also includes any lower tiers of contractors hired by a subcontractor to assist with the execution of a specific contract.

User Users and similar non-employees are individual users, collaborators, students, visiting scholars, scientists, or researchers. These are not SLAC employees or subcontractors (see definition of Contractor).

**Appendix B:
List of Equivalencies and Other Agreements Pre-dating
Promulgation of the Rule**

There are no formal equivalencies that have been submitted to DOE.