

FESHM 1010: LABORATORY ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT SYSTEM AND ITS IMPLEMENTATION

Author	Revision History	Revision Date
Kathy Vuletich	Updated scope in section 2.12 regarding workers under age 18 and expanded the scope to include any worker at Fermilab under age 18 including collaborators and minors hired for as sub-contractors. Updated section 2.15 to remove reference to the PFX and instead reference FESHM 1080: ES&H Requirements for Experimenters. Updated section 4.0 to reference QAM 12020 Suspect/Counterfeit Items (S/CI).	December 2019
Amber Kenney	Added Section 2.12 regarding employees under age 18 and their supervisors. The section details specific tasks prohibited for minors. Clarified working alone section, 7.0, with an explanation of when a 2-person rule may be appropriate.	September 2018
Martha Michels	Added 11.0 about Reevaluating tasks under a Stop Work Order	May 2018
Martha Michels	Added Section 10.2 on restarting work	May 2018
Angela Aparicio	<ul style="list-style-type: none"> • Revised Section 2.9 – Supervisor Responsibilities. • Revised Section 2.11 – Retired Guests/Scientist Emeritus. • Removed references to Procedures for Experimenters (PFX) • Updated hyperlinks. 	March 2018
Jim Niehoff	Section 2.4, added Working Groups to reflect centralize new ESH&Q Organization. Added ESH&Q is responsible to maintain the FESHM Manual. Modified Section 8.1 to reflect Working Groups and Subcommittees.	January 2017
T.J. Sarlina	Updated references to Chief Safety Officer, changed SSO to DSO, and updated chapter to reflect the reassignment of ES&H personnel from field organizations to the ESH&Q Section.	December 2015
Rafael Coll	Added 7.0 - Personnel Accountability When Working Alone.	July 2013
Martha Michels	<ul style="list-style-type: none"> • Added/updated responsibilities for RSO, Environmental Officer, Project Manager, ALD and Deputy Director. • Added responsibilities for creating/supporting a just culture. • Combined FESHM Chapters 1010, 1030 and 1040. • This chapter now outlines our ES&H Management System. • Made 1040.1 1040.2 and 1040.3 into 1010.1, 1010.2, 1010.3. • Added information about variances and exceptions in the roles and responsibilities for the Director, ES&H. • This revision cancels Director’s Policy DP-3. 	June 2012



ES&H Manual

FESHM 1010
December 2019

Nancy Grossman	Definitions and terms standardized between FESHM and CAPA procedure. Referenced OQBP procedures 1004.1001, 1004.1002 and 3903 Contractor Assurance Lessons Learned Program.	April 2011
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1.0 INTRODUCTION

The Environment, Safety and Health (ES&H) Management System is designed to work hand in hand with the Emergency Management System to protect the public, the worker and the environment; ensure compliance with the Contract; and to improve Fermilab's ability to meet or exceed customer expectations, thereby executing the scientific mission. Fermilab uses a set of elements to plan, direct, control, coordinate, assure and improve how ES&H policies, objectives, processes and procedures are established, implemented, monitored and achieved. In situations where the responsibilities of individuals or organizations are unclear or ambiguous, the Director or their designee will clarify the responsibilities.

At Fermilab, nothing shall have a higher priority than protecting the environment and keeping all employees and visitors safe while they are on site. Fermilab's ES&H program has been developed to identify and address program and performance deficiencies and opportunities for improvement. It provides the means and requirements to report deficiencies to responsible line management. It establishes a process to effectively implement corrective and preventive actions and to share lessons learned across the Laboratory. This chapter describes the set of elements that are used to ensure that the ES&H systems established at Fermilab are operating efficiently and effectively.

It is the objective of Fermilab management to systematically integrate excellence in ES&H into the business and work practices of activities at all levels to achieve our mission while protecting the public, the worker, and the environment. The policies in this manual represent the mandatory Fermilab ES&H policies consistent with laws, regulations and the Work Smart Standards attached to the Department of Energy (DOE) Contract.

Responsibilities of individual employees, management personnel, experimenters, sub-contractors, retired guest and scientist emeritus appointees and certain other employees and organizations are specifically described in this manual. This manual references specific details of certain requirements for clarity. This is not to be interpreted to mean that the absence of such specific details implies they are not applicable to Fermilab activities.

1.1 General Responsibilities

Individuals at the Laboratory are responsible for the ES&H aspects of activities they perform or that are carried out under their supervision. Every person performing work shall be responsible for following all ES&H requirements pertinent to their work. Unsafe conditions or actions shall be reported by individuals to their supervisor or, if supervising personnel are unavailable, to their Division Safety Officer (DSO). Individuals are to stop activities that pose an imminent danger to workers, the public, or the environment, in accordance with Technical Appendix 2 to this chapter.

The responsibility of individuals includes understanding those activities for which they are not qualified because of lack of training or other factors. Any person who perceives an activity as a potential hazard to the environment or to their personal safety or health may request a review by their supervisor or DSO prior to performing the work. Such a request shall not constitute grounds for disciplinary actions. Persons violating Fermilab ES&H requirements may be removed from the premises, denied entry to the Laboratory grounds, and/or be subject to other disciplinary action.

Complaints about unsafe working conditions or environmental protection issues which are not resolved at the Division/Section Head or Project Manager (D/S/P) level may be brought to the attention of Environment, Safety, and Health (ES&H) Section personnel, the Chief Safety Officer, or the Director's Office, either formally or informally.

1.2 Variances and Exceptions

At times, circumstances may be such that the specific requirements of this manual cannot ever be realized without a severe financial or operational impact to the laboratory program. If the situation involves a long-term deviation from a Work Smart Standard or external regulation, then a Variance must be sought. Variance requests shall be submitted to the Chief Safety Officer and the Director for transmittal to the DOE for approval.

If the situation calls for a short-term deviation from a Work Smart Standard, an Exception must be approved by the Fermilab Director. Requests for Exceptions are to be submitted to and reviewed by the Chief Safety Officer. Upon his/her recommendation, Exception requests will be presented to the Director for approval.

2.0 RESPONSIBILITIES

2.1 Laboratory Director

The Laboratory Director will establish a workplace that reflects an integrated approach to ES&H activities in compliance with applicable federal/state laws, regulations and the Work Smart Standards contained in the Fermilab Research Alliance, LLC contract with DOE by:

- Supporting an open reporting culture and principles of Human Performance Improvement.
- Reviewing and approving Exceptions to Laboratory ES&H requirements.
- Reviewing and approving Variance requests before submitting them to DOE.
- Acting as the final arbiter for interpreting policies set forth in this manual.
- Chairing the Fermilab ES&H Committee (FESHCom).
- Appointing members of the Directorate who shall:
 - Assign responsibilities for activities to Divisions/Sections/Projects.
 - Define landlords and tenants for all spaces and assign landlord responsibilities to D/S's.
 - Provide sufficient resources to assure the maintenance of appropriate ES&H programs.
 - Support self-assessment activities.

2.2 Laboratory Chief Officers and Management System Owners

- Support an open reporting culture and principles of Human Performance Improvement.
- Ensure that sufficient resources are provided to their areas of responsibility in order to adequately support both process and personal safety.
- Assign personnel to ES&H assurance activities that possess the experience, knowledge, abilities, and training to perform effectively.
- Work with the Chief Safety Officer to:
 - Implement the requirements of this manual.
 - Establish committees that study ES&H problems.

- Assign appropriate resources to support ES&H programs and prepare required documentation (i.e. Safety Assessment Documents, Shielding Assessments, etc.)
- Coordinate ES&H documentation to ensure it is done in a timely manner for those projects that cross Division/Section boundaries or reside in the Directorate.
- Work with the National Environmental Policy Act (NEPA) Program Manager to:
 - Coordinate NEPA and ensure it is done in a timely manner for those projects that cross Division/Section boundaries or reside in the Directorate.

2.3 Chief Safety Officer

The Chief Safety Officer owns the Emergency Management System, owns the ES&H Management System, establishes and maintains ES&H policies, assesses line organizations for compliance, seeks program improvements and implements those improvements where possible by:

- Supporting an open reporting culture and principles of Human Performance Improvement.
- Assigning personnel to ES&H assurance activities that possess the experience, skills, training, and program specific expertise to conduct oversight activities ([FESHM 2070](#) “Environment, Safety, Health & Quality Training”).
- Maintaining liaison with the Fermi Site Office (FSO) on Fermilab ES&H activities and forward any identified deficiencies in DOE requirements for resolution.
- Representing the Director in all matters of environment, safety and health for the Laboratory.
- Reporting directly to the Director regarding imminent environment, safety, or health danger, as well as any serious violation of the Laboratory ES&H programs.
- Advising the Directorate, D/S Heads, DSO’s, Management System Owners and Project Managers on ES&H matters.
- Serving as the primary advisor for recruiting, interviewing, and appointing DSO’s.
- Developing ES&H programs together with line organizations that comply with Fermilab’s Work Smart Standards and to otherwise promote responsible ES&H practices.
- Reviewing and concurring with Variance and Exception requests from D/S Heads and Project managers before submitting them to the Laboratory Director for approval.
- Serving as Emergency Coordinator upon activation of the Emergency Operations Center.
- Heading the ES&H Section and requesting sufficient resources from the Director to allow the Section to provide ES&H assistance to all Fermilab personnel and users.
- Editing and distributing the Fermilab ES&H Manual ([FESHM 1050](#) “Environment, Safety, and Health Manual Procedures”).
- Performing audits in support of the Contractor Assurance Program to determine the degree of compliance by D/S’s with their own, and Laboratory, ES&H programs.
- Maintaining appropriate ES&H records as required by DOE records management directives.
- Keeping abreast of changes in ES&H regulations that may affect Laboratory operations.
- Reviewing ES&H aspects of all Fermilab activities and making proposals to improve performance.

2.4 The Environment, Safety, & Health (ES&H) Section

- Procure, distribute, maintain and calibrate radiation monitoring equipment, personal oxygen monitors, and industrial hygiene monitoring equipment stored within the ES&H Section.
- Maintain the laboratory dosimetry program.

- Procure and maintain radioactive sources for loan to Fermilab personnel or experimenters and visiting scientists.
- Supervise shipments of radioactive material coming to or from the Fermilab site.
- Manage the special, hazardous and radioactive waste programs.
- Maintain active programs for the development and refinement of radiation detectors, dosimetry equipment and systems, measurements of shielding characteristics, etc., and to develop methods of calculating shielding, radio activation, and radiation doses.
- Coordinate and interact with governmental agencies regarding ES&H compliance.
- Perform environmental monitoring; manage environmental permits and associated programs; and prepare/submit the annual Environmental Report to the Director.
- Manage/coordinate Industrial Hygiene sampling programs.
- Manage all asbestos removal projects at the Laboratory.
- Manage personal protective equipment (PPE) and the respiratory protection programs.
- Maintain an inventory of safety signs.
- Provide ES&H assistance to D/S/P's as requested/appropriate.
- Provide/update Lab-wide ES&H training and maintain the TRAIN database.
- Oversee Fermilab's Occupational Medicine and Workers' Compensation programs.
- Assign working groups comprising of ES&H subject matter experts reporting to the Fermilab Environment, Safety, and Health Committee.
- Maintain the Fermilab's Environment, Safety, & Health Manual (FESHM).

2.5 Division/Section (D/S) Heads

- Be accountable to the Director for implementing the requirements of this manual.
- Support an open reporting culture and principles of Human Performance Improvement.
- Assign personnel to ES&H assurance activities that possess the experience, knowledge and skills to perform effectively.
- Establish and maintain ES&H programs and procedures, consistent with Fermilab ES&H policies, to deal with applicable aspects of environmental protection, industrial safety, industrial hygiene, radiation safety, emergency preparedness, fire protection, waste management and transportation of hazardous materials.
- Advise the Directorate on implementation of Laboratory ES&H policies.
- Establish a self-assessment program in line with Quality Assurance Manual (QAM) 12080.
- Ensure full compliance with Fermilab ES&H policies and procedures and the Laboratory's Work Smart standards unless a variance or exception is obtained (Section 1.2 of this Chapter).
- Maintain, repair, and calibrate D/S owned instrumentation and equipment.
- Provide sufficient resources to carry out landlord/tenant responsibilities.

2.6 Division Safety Officers (DSO)

- On items of imminent danger, take immediate corrective action and then report directly to the Division Head and the Chief Safety Officer.
- Advise the Chief Safety Officer on restarting an activity that has been stopped.
- Direct the division ES&H program in accordance with guidance from the Chief Safety Officer.
- Support an open reporting culture and principles of Human Performance Improvement.

- Work with projects in their division and the NEPA Program Manager in the ES&H Section to complete required NEPA documentation.
- Serve as a conduit for communication (concerns/issues/improvements) between the Chief Safety Officer and their Division Head.
- Serve as adviser to Chief Safety Officer on specific issues/concerns as required.
- Advise/inform their division management on ES&H matters.
 - Inform division line management of employee concerns regarding safety or corrective actions to safety related incidents.
 - Address responses to safety concerns and incidents.
 - Provide division management and first line supervisors with information regarding injuries within the division and any trends/issues with injuries lab wide.
 - Review and signoff on Injury and Evaluation Form (Form-5) for division employees.
- Proactively support and advocate for a safe work climate within the division, including reporting of unsafe activities on the division premises to the Division Head.
- Determine reporting requirements for incidents or near misses and communicate accordingly.
- Manage, update and communicate division policies to ensure that workers are aware of applicable FESHM and FRCM requirements.
- Work with line managers to complete comprehensive investigative and causal analysis reports.
- Review all requests from D/S Heads and Project Managers to operate in a manner outside of established Fermilab safety policies and make recommendations to the Chief Safety Officer.
- Maintain and provide information necessary to improve environmental performance and meet environmental reporting requirements for the laboratory.
- Serve as the Emergency Coordinator for the division and report opportunities for improvement to the Emergency Coordinator.
- Review procurements for adherence to EH&S requirements.

2.7 Division Radiation Safety Officers (RSO)

- Carry out the responsibilities specified in Fermilab Radiological Control Manual (FRCM) Article 131, Responsibilities.
- Lead implementation of the requirements of the FRCM.

2.8 Project Managers

- Carry out the requirements listed in the FESHM and FRCM.
- Designate an ES&H Coordinator and radiation subject matter expert (SME) for the project and inform both the Chief Safety Officer and the Directorate. The ES&H Coordinator and radiation SME will assist in developing the necessary ES&H documentation for the project.
- Allocate sufficient resources to complete NEPA, Shielding Assessments, Hazard Analysis Reports, Safety Assessment Documents, Accelerator Readiness Reviews and/or Operational Readiness Clearances as required.

2.9 Supervisors

- Complete an Individual Training Needs Assessment (ITNA) for each employee, experimenter, sub-contractor, Retired Guest, and Scientist Emeritus appointee when they are first assigned to a supervisor, when job assignments change, or on an annual basis. See FESHM 2070 for

more information. Ensure the individuals under their supervision are trained to recognize hazards they are reasonably expected to encounter in the performance of their duties.

- Describe the job activities of individuals under their supervision to the Occupational Medical Office by completing a [Work Activity Analysis Form \(WAAF\)](#) and assure that the employee follows all job restrictions assigned by the Occupational Medical Office.
- Review activities for hazards, proper PPE and proper procedures prior to the commencement of work. See [FESHM 2060](#) – Work Planning and Hazard Analysis and [FESHM 4130](#) – Personal Protective Equipment (PPE) for additional details.
- Monitor activities for safe operation and enforce safety rules.
- Investigate, and report to the DSO, accidents and/or near misses and take actions to prevent recurrence. Preserve the scene of an incident until the initial investigation is completed and the scene is released by the DSO or designee. Ensure that individuals report occupational injuries and illnesses to the Occupational Medicine Office at the earliest opportunity.
- Encourage reporting of ES&H concerns and take prompt action to address those concerns.

2.10 Laboratory Employees, Experimenters and Subcontractors

- Conduct activities safely and in an environmentally sound manner.
- Immediately stop any activities that pose an imminent danger to personnel or the environment and report them to their direct supervisor. Raise concerns, suggestions, and other ES&H issues to management, DSO, ES&H Section, or DOE without fear of reprisal.
- Report safety violations or persistent unsafe activities/conditions that may develop into unsafe situations to line management.
- Be trained to safely perform potentially hazardous tasks and to recognize the associated hazards. Develop an awareness of these hazards and protect others in the area.
- Notify the supervisor if he/she feels unqualified or insufficiently trained to do the task at hand.
- Be aware that telephone extension 3131 is to be used for on-site emergency assistance.
- Inspect ES&H instrumentation for proper calibration and refrain from using instruments for which the calibration has expired.
- Be held accountable to supervision for willful disregard of ES&H procedures.
- Report all near misses to their supervisor or Fermilab point of contact. In the event of an incident, preserve the scene until an initial investigation is completed and the scene is released by the DSO or designee.
- Report occupationally incurred injuries and illnesses to the Occupational Medicine Office at the first opportunity.
- Participate in incident investigations conducted by D/S/P personnel or the ES&H Section.

2.11 Retired Guest and Scientist Emeritus Appointees

Individuals are granted special appointments at Fermilab in recognition of their contributions during the course of their career. The following requirements apply to Retired Guest and Scientist Emeritus Appointees (RG/SEs):

- An updated ITNA must be filled out by the supervisor and available in the TRAIN database.
- Work performed by RG/SEs is limited to activities appropriate for, and conducted in, office and control room areas.
- RG/SEs may access lab areas, beamline enclosures, experimental areas, and shops for the purposes of observing and/or advising only, unless excluded from those areas by the

supervisor or DSO. Access is subject to the normal training and personal protective equipment requirements for these areas. No access is permitted to ODH 1 or 2 areas, high radiation areas, or permit-required confined spaces. No Controlled Access to interlocked enclosures is permitted.

- Should RG/SEs want to conduct activities beyond those allowed above, they must change their contractual relationship with the laboratory and should consult with their supervisor. For example, they could return as a faculty member or employee of a university, an employee of a company doing business with the laboratory, or a contractor with their own business liability insurance.
- An appointment may be revoked for failure to comply with these limitations or for willful disregard of ES&H procedures.

2.12 Employees Under the Age of 18 and their Supervisors

Minors are employed by Fermilab through specific programs like those provided by the Education and Outreach Office, through collaborations, and minors that are hired as sub-contractors for specific jobs. Workers under the age of 18 are legally prohibited from certain types of hazardous work, and Fermilab has unique hazards that shall be avoided by minor workers.

Supervisors of employees, experimenters, and sub-contractors under age 18 must be trained and complete FN000309/CR *Supervisor of Summer/Co-Op Students* prior to supervising any worker under 18. Inexperienced workers must be supervised closely and given clear instructions for each task. Supervisors are responsible for educating students about the ES&H requirements for each task and showing them how to perform a task safely.

Workers under the age of 18 are prohibited from the following activities:

- Driving a motor vehicle and/or being an outside helper on a motor vehicle
- Operating power-driven machines:
 - Woodworking machines
 - Hoisting apparatus (including cranes, hoists, forklifts, scissor lifts, articulating boom lifts)
 - Metal-forming, punching or shearing machines
 - Saws – circular, band, chain, reciprocating
 - Guillotine shears
 - Wood chippers
 - Abrasive cutting discs
- Roofing operations or any work on or about a roof
- Excavation operations
- Exposure to radioactive substances and to ionizing radiation. This includes:
 - Work on or with radioactive material and/or sources
 - Work that requires individuals to read and sign an RWP
 - Work that requires individuals to wear dosimetry
 - NOTE: At the discretion of the SRSO, minors may be required to wear dosimetry for confirmation monitoring. Those individuals will also require an RSO safety briefing to inform the proper use of dosimetry and adherence to the restrictions noted here. The Fermilab Test Beam Facility is one example of an area where minors are required to wear dosimetry.

- Entering Radiation Areas or other radiological areas
- Entering Controlled Areas and Radioactive Material Areas without GERT or without the continuous escort of a GERT or Radiological Worker trained employee
- Taking Radiological Worker – Classroom (Virtual) and Radiological Worker – Practical Factors.
- Using chemicals or materials that may pose a significant safety or health hazard (including spray painting) according to the Safety Data Sheet
- Entering into confined spaces
- Working with cryogenics or in ODH Areas (except Class 0)
 - It is prohibited to escort minors into ODH Areas (except Class 0)
- Working with, near or on exposed electrical conductors, circuits or equipment at are or may be energized and where there is potential for electrical shock, arcing, flash burns, electrical burns or arc blast
- Working at heights greater than 4 feet (including ladders and scaffolding)
- Using hydraulic or pneumatic systems where a sudden uncontrolled release (failure) of pressure or fluids could result in injury (i.e. caught between)
- Working with Class 3B or 4 lasers
- Working in noise areas for more than two hours per day
- Any work that requires the use of a respirator to protect against potential overexposure
- Welding, flame cutting and brazing
- Exposure to other hazards not listed here will be at the discretion of the Chief Safety Officer.

2.13 Event Sponsors

The responsibility assumed by individuals/groups sponsoring special events such as cultural shows and employee morale parties are given on the Facilities Request Form, a copy of which is available from the Directorate or the Accommodations Office.

2.14 Building Managers

Building Managers have specific responsibilities, a number of which are related to the Environment, Safety and Health program. The specific building manager responsibilities are found in [FESHM 2050](#) Building Manager Program.

2.15 Spokespersons

The spokesperson for each operating experiment is accountable to the host Division Head for the safe operation of the experiment. Details of this accountability are spelled out in [FESHM 1080](#): ES&H Requirements for Experimenters, and include:

- Ensure individuals associated with the experiment receive required ES&H training.
- Monitor experimental activities for performance in accordance with ES&H requirements.
- Request resources from the host Division Head to maintain a safe work environment.
- Report any ES&H concerns to the host DSO immediately.

3.0 LANDLORD/TENANT RELATIONSHIP

The Director shall designate a D/S to act as landlord for each structure at Fermilab. All landlord/tenant assignments should be reviewed at least annually. If personnel from a D/S are assigned to a building

or area where another D/S is designated as landlord, the Director may formally designate the second D/S as tenant. The Housing Office is designated as the landlord for on-site housing. Users and visiting scientists living on-site are tenants and are subject to all applicable Laboratory regulations and policies.

Fermilab employees working off-site are required to comply with the ES&H policies of the organization responsible for managing the work site.

3.1 Landlord responsibility:

- Ensure the maintenance and safe operation of the space.
- Appoint a building manager or managers for each assigned space.
- Arrange and/or participate in periodic ES&H inspections of the space, as appropriate, document the inspection, and correct any identified deficiencies. Deficiencies that cannot be immediately corrected shall have interim abatement action taken. Corrective actions shall be tracked through iTrack.
- Assure access to assigned areas by emergency personnel.

3.2 Tenant responsibility:

- Comply with ES&H policies of the landlord or have a signed Memorandum of Understanding with the landlord reassigning ES&H responsibilities for the space to the tenant.
- Appoint a building or area liaison, preferably a resident in the building, to act as building contact person with the landlord's building manager.
- Cooperate with the building ES&H inspections and correct any problems found which are caused by the tenant's personnel or equipment.
- Identify unique equipment to the landlord so that potential ES&H issues can be addressed.

4.0 ES&H RESPONSIBILITY FOR PRODUCTS

In this context, the term "product" is to be taken in a very broad sense and is meant to include equipment, services and software. The D/S/P accepting the product into its area for installation or use is responsible for:

- Determining that the product conforms to the Laboratory ES&H policies and standards.
- Report Suspect/Counterfeit items (S/CI) to the appropriate S/CI Coordinator per [QAM 12020](#).
- Purchasing products that meet the requirements of Executive Order 13693, Planning for Federal Sustainability in the Next Decade.” Refer to [FESHM 1100](#) “Sustainable Acquisition” for specific details of Fermilab requirements.
- Reviewing compliance with manufacturer's standards and product use information.
- Assuring that the product is operated within the safe operating limits.
- Providing a decommissioning plan for the product, where appropriate. This plan shall comply with ES&H standards.

The organization (division, section, project, experiment, user, subcontractor or vendor) or individual producing the product is responsible for:

- Assuring that the product is designed and built to meet the stated applicable ES&H standards and providing appropriate documentation of that compliance.
- Assisting with start-up activities, initial performance testing and operational training.

Vendor and subcontractor responsibilities are delineated in Fermilab's standard terms and conditions.

The D/S/P shipping, receiving or storing equipment is responsible for specifying the appropriate ES&H requirements necessary to ship, receive, and store the equipment in compliance with Fermilab policies. It is the responsibility of the D/S/P that requests the equipment to provide the resources to meet the requirements.

5.0 SCIENTIFIC DEMONSTRATIONS/SHOWS BY EMPLOYEES

Scientific demonstrations/shows under the auspices of any Division or Section require an evaluation by a safety professional from the ES&H Section. This evaluation is only necessary in those cases where Fermilab equipment is used, a Fermilab employee participates in the show in his/her official capacity, or the show or demonstration is within the confines of Fermilab property. In these cases, the demonstration or show can proceed only after the activities are reviewed by the ES&H Section and a hazard analysis (HA) for the event has been approved by the Chief Safety Officer. The approved HA will remain in effect as long as there are no changes in the specifications, methodology, equipment and manner in which the demonstration is conducted.

This requirement does not apply to demonstrations or shows where an employee uses equipment other than Fermilab owned and the employee acts in his/her capacity as a private citizen and outside the confines of Fermilab property.

6.0 NON-ENGLISH SPEAKING INDIVIDUALS

Supervisors and experiment spokespersons are responsible for assuring that all of the people for whom they are responsible comprehend the ES&H hazards to which they are exposed and the protective measures available. Familiarization with ES&H hazards may assume a wide variety of forms. These include, but are not limited to, standardized training or informal explanations through a translator, oral or written instructions, or demonstrations of procedures. Since each case involving a foreign-speaking employee, experimenter, or sub-contractor is in some way unique, a highly prescriptive method for approaching this responsibility would not be useful and no attempt is made to develop one here.

7.0 WORKER ACCOUNTABILITY WHEN WORKING ALONE

Avoid working alone whenever possible. If you must work alone, be sure your supervisor is aware of where you are and what you are doing. If possible, have someone check on you periodically. Be familiar with, and follow, all emergency warning signals and instructions. Signal notifications are posted around the Laboratory. If there is an evacuation signal, evacuate immediately and go to your designated assembly area. Remain in that area until the Fire Department arrives **and** you are released.

Areas that are remote, unfrequented or have unique hazards may require 2 persons to be in contact with each other, also known as the 2-person rule. This rule may also be in effect for certain high hazard work such as work requiring fall protection, work with electrical equipment, enclosure work or work in ODH 1 or 2 areas. The 2-person rule is designed that, in case of emergency, there is someone available to call emergency services. The 2-person rule requires the workers to be in communication

with each other. If a person needs to leave the group, leaving one person, they need to make contact with another group and become a part of their group or exit the space or cease the activity. Divisions may designate certain spaces or activities that require the 2-person rule.

8.0 ASSURANCE PROGRAM DESCRIPTION

8.1 Fermilab ES&H Committee (FESHCom) and its Subcommittees and Working Groups

Successful operation of the ES&H Management System relies on an over-arching Fermilab ES&H Committee (FESHCom) and a variety of subcommittees and working groups. FESHCom, chaired by the Laboratory Director, is responsible to ensure the maintenance of and continual improvement to the ES&H Management System at the laboratory. FESHCom Subcommittees and Working Groups Chairs formally report to FESHCom on a monthly basis. Frequent interaction between line management personnel, committee, subcommittee, working group members and ES&H Section personnel is key to safe operations at Fermilab.

Information on FESHCom, its subcommittees (including Charters) and working groups can be found at [Fermilab ES&H Subcommittees](#). The subcommittees and working groups are responsible for writing and reviewing their respective FESHM Chapters, training course development and implementation, understanding issues and lessons learned, program improvements (lab wide consistency, best practices discussions), and communicating to the Laboratory Director and Chief Safety Officer at FESHCom meetings or through e-mails/phone calls.

8.2 Assessments

Self-assessments and other structured operational awareness activities are all part of Fermilab's Contractor Assurance Program. The assessment program is described in [QAM 12080](#). Special assessment activities are described in other chapters, such as:

- [FESHM 2010](#), "Planning and Review of Accelerator Facilities and Their Operations"
- [FESHM 6015](#), "Highly Protected Risk Inspection Program"
- [FESHM 8010](#), "Environmental Protection Program"
- [FRCM Article 122](#), "Radiological Performance - Assessments"
- [FRCM Article 814](#), "Shielding Assessment Preparation, Review, and Approval Process"

Monitoring and evaluation of subcontractor performance is discussed in:

- [FESHM 7010](#), "ES&H Program for Construction"
- [FESHM 7020](#), "Subcontractor Safety – Other Than Construction"

8.3 Incident/Event Reporting and Investigation

Fermilab's processes for incident/event reporting and investigation consist of two elements: significant and reportable events, and incident investigation. The process for identifying, reporting, and investigating significant and reportable events is found in:

- [FESHM 3010](#), "Significant and Reportable Occurrences"
- [FESHM 3020](#), "Incident Investigation and Analysis"
- [FESHM 8010](#), "Environmental Protection Program"

8.4 Worker Feedback Mechanisms

There are a variety of worker feedback mechanisms in place at Fermilab. The hazard analysis process in place requires input by workers, including employees, experimenters, and subcontractors. These mechanisms are described in:

- [FESHM 2060](#), “Work Planning and Hazard Analysis”
- [FESHM 1080](#), “ES&H Requirements for Experimenters”
- [FESHM 7010](#), “ES&H Program for Construction”
- [FESHM 7020](#), “Subcontractor Safety – Other Than Construction”

The Fermilab ES&H Manual, which includes the Fermilab Radiological Control Manual and the Quality Assurance Manual, is the document that defines Fermilab’s ES&H and Quality programs and management systems. As each manual chapter is developed or revised, opportunity for feedback is incorporated into the review process, as described in [FESHM 1050](#), “ES&H Manual Procedures”.

Additional worker feedback mechanisms are described in [FESHM 1060](#), “Fermilab ES&H Concerns Program”. This describes the process for documenting safety concerns or suggestions that would not ordinarily be raised verbally through line management. If the author wishes to remain anonymous, there is a process to accommodate that desire. The DOE resources for reporting concerns are described as well (i.e. Office of Inspector General Hotline, fax, e-mail, and postal address).

8.5 Issues Management Program

iTrack is the issues management tracking database for Fermilab and is used to record, and track to completion, the results of program or project reviews, assessments, audits, inspections and walk-throughs. The program includes provisions for root cause analysis, identification & monitoring of corrective and preventive actions, verification of effectiveness and trend analysis. These are described in various Quality Assurance Manual chapters.

8.6 Dissenting Opinions

In any instance where there is a dissenting opinion by an assessment or investigation team member, a minority report is to be created and submitted up the management chain and to the Chief Safety Officer, along with the final report. The D/S Head or Project Manager and the Chief Safety Officer will resolve any dispute with the team members. If the author of the minority report believes the issue to still be in dispute, he/she may refer the concern to the Laboratory Director.

8.7 Lessons Learned

Fermilab’s Lessons Learned program is described in [QAM 12010](#), “Contractor Assurance Lessons Learned Program and Procedures.” Other references are:

- [FESHM 3010](#), “Significant and Reportable Occurrences”
- [FESHM 8010](#), “Environmental Protection Management”

8.8 Performance Measures

There are a variety of methods by which Fermilab measures its ES&H performance. These include quarterly analysis of incidents as per [FESHM 3010](#), “Significant and Reportable Occurrences,” FermiDash metrics, Performance Evaluation and Measurement Plan (PEMP) Goals and Notable Outcomes assigned to Fermilab by DOE.

8.9 ES&H Performance – Guidelines for Awards and Discipline

Each D/S/P has the latitude to recognize strong ES&H performance within their organization in a way they determine appropriate. Some suggestions for recognizing/rewarding safe behavior include:

- Reward and Recognition (R&R) money – money which may be used for reinforcing good ES&H performance. See [Guidelines for use of R&R money](#).
- Incentives – given by the supervisor, line management, or the ES&H Section in an effort to recognize a unique event or rare milestone. Incentives may also be awarded for service on the Fermilab ES&H Committee or one of its subcommittees.

A D/S may have a situation where a person demonstrates poor ES&H performance or behavior and disciplinary action maybe warranted. The following actions may result in disciplinary action up to and including termination:

- Fabricating information on a Form 5 (incident involvement form).
- Willful violation of a written HA that has been signed.
- Willful violation of applicable rules.
- Violation of Lockout Tag Out (LOTO).
- Failure to immediately report an injury/illness.
- Failure to report to the Occupational Medical Office after a vehicle accident if instructed to do so by the investigating officer.

This list is intended to be representative of the types of behavior that may result in [disciplinary action](#). It is not exhaustive, is not intended to be comprehensive, and does not change the [employment-at-will](#) relationship between the employee and the Laboratory. If a supervisor is concerned about an employee's ES&H performance or behavior they are strongly encouraged to contact the Employee Relations Department in WDRS for assistance.

9.0 TECHNICAL APPENDIX 1: FERMILAB ES&H DOCUMENTATION

A number of Fermilab ES&H documents and handbooks have been developed for specific audiences and are retained in accordance with the Department of Energy (DOE) records retention program. They include:

1. [Worker Safety and Health Program](#)

This top-level program document describes management's commitment to, and responsibility for, establishing 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.

2. [Fermilab ES&H Manual \(FESHM\)](#)

This manual is available in electronic form on the ES&H Section web page. It provides detailed descriptions of the policies and procedures that are applicable to a wide range of ES&H related activities at Fermilab.

3. [Fermilab Radiological Control Manual \(FRCM\)](#)

This manual is available in electronic form on the ES&H Section web page. It provides details of policies, procedures and plans which pertain to control of ionizing radiation at Fermilab. The FRCM implements the DOE-approved Radiation Protection Program required by 10 CFR Part 835.101, "Radiation Protection Programs."

4. Comprehensive Emergency Management Plan

This manual provides details of policies, procedures and plans which are applicable in emergency situations at Fermilab.

5. D/S/P ES&H Implementation Documents

Divisions/Sections/Projects may have documents which implement Laboratory ES&H policies by tailoring the details of policy implementation to the needs of the particular organizations. They are revised as necessary to keep them current and are subject to audit by the ES&H Section as part of the Fermilab Contractor Assurance Program.

10.0 TA 2: PROCEDURE FOR STOPPING AND RESTARTING ACTIVITIES

10.1 Stopping Work

1. Any person who discovers an activity that they believe poses an imminent danger to the safety and health of individuals or to the quality of the environment shall immediately request termination of that activity. This shall be accomplished verbally with the individuals engaged in the activity or through the managers of the activity.
2. Individuals who have been asked to terminate an activity because it appears to pose an imminent danger shall immediately comply with the request. The activity may resume after the hazard has been evaluated and/or abated.
3. Disagreements shall be rapidly escalated up through management chain.
4. In the case of subcontract work, the Fermilab employee responsible for managing the contract shall be notified as soon as possible following termination of the activity. Where formal notification is required to terminate subcontract work, use the ([Subcontractor ES&H Stop Work Order](#)) included in the forms associated with FESHM 7010, “Environment, Safety & Health Program For Construction.”
5. Requests to stop an imminent danger activity by any safety or environmental professional shall be obeyed immediately regardless of disagreements. Discussions to resolve disagreements or differences of opinion can occur only after the activity is stopped and people are removed from the hazard.
6. The Chief Safety Officer is available to counsel participants and to facilitate implementation of these procedures.

10.2 Restarting Activities

1. If work is paused, it may resume after the hazard has been abated and all involved agree it is safe to resume. Dissenting opinions shall be elevated up the management chain until a resolution is reached. Corrective actions needed to abate the unsafe condition shall be entered into the lab’s issues tracking system.
2. If an official stop work order is directed, either through procurement for subcontractor work or laboratory management for FRA work, a corrective action plan shall be developed by line management that explains the means and methods necessary to abate the risk and resume work.
 - a. Restarting Subcontractor Work - Corrective actions needed to abate the unsafe condition shall be entered into the lab’s issues tracking system. The corrective action plan shall be completed and actions approved by the line management (FESS). The Chief Safety Officer shall concur before a recommendation is given to procurement to lift the stop work order.

- b. Restarting Laboratory Work- Corrective actions needed to abate the unsafe condition shall be entered into the lab's issues tracking system. The corrective action plan shall be completed, and actions approved by the line management, up to and including the line division head or Chief. The Chief Safety Officer shall concur before a recommendation is given to lift the stop work order.

11.0 TA 3: PROCEDURE TO REEVALUATE TASKS UNDER A STOP WORK ORDER

A subcontractor may need to perform tasks to eliminate a risk in a situation where a Stop Work Order has been issued. Typically, this would be a situation where resultant corrective actions have not been fully implemented that would allow authorization for full return to work, but risks have emerged from not performing work. Additionally, there may be partial return to work that may be performed where risks can be adequately evaluated and mitigated. The procedure below outlines the process for Fermilab to consider and approve the completion of specific activities while maintaining the Stop Work Order.

1. Fermilab's subcontractor identifies an activity that must be completed. The subcontractor must develop a proposal which will include the following:
 - a. Outline the work to be done and complimentary controls that will protect personnel from associated hazards.
 - b. Detail specific controls that must mitigate any vulnerability associated with the reason(s) for the Stop Work Order.
 - c. Include the trade-offs between not performing an activity and the risk associated with performing the activity.
2. The formal proposal shall be formally sent, in writing, to the Procurement Administrator with copies to the associated Chief, Directorate, Division/Section Head and other stakeholders.
3. The Chief within the line organization where the Stop Work is in place is responsible for approving or rejecting the proposal. He or she must consider the proposed activity and trade-offs and seek guidance from the Chief Safety Officer and other Subject Matter Experts prior to approval or conditional approval. Rejection of the proposal can be made without CSO or SME guidance.
 - a. SMEs will be selected based on hazards associated with the proposed activities and the justification for Stop Work.
 - b. SMEs shall consider the trade-offs between not performing an activity and the risk associated with performing the activity.
 - c. SMEs shall provide feedback regarding their area of expertise and recommend approval, conditional approval, or rejection. The feedback shall be made in writing to the Chief and/or Directorate as appropriate
 - d. The CSO shall also provide written feedback.
4. The Chief formally recommends full or conditional approval or rejection based on the input of the CSO and SMEs and must communicate in writing to the subcontractor through the associated Procurement Administrator.
5. The subcontractor shall comply with all conditions of an approval and may not perform work if the proposal is rejected. Fermilab's responsibilities for ES&H oversight will be in effect for all work performed.