Energy Technologies Area (ETA)

Integrated Safety Management Plan

June 20, 2018
Revision 16

Energy Technologies Area
Integrated Safety Management Plan

Rev 16- 6/20/18

1. **Purpose**
   The purpose of this Integrated Safety Management Plan is to ensure that a safe and healthful workplace is provided to Energy Technologies Area (ETA) employees, affiliates, subcontractors, and the public. This is accomplished through the implementation of the elements identified in this ISM Plan.

2. **Scope**
   The Energy Technologies Area (ETA) performs analysis, research and development leading to better energy technologies and reduction of adverse energy-related environmental impacts. Our work increases the efficiency of energy use, reduces its environmental effects, provides the nation with environmental benefits, and helps developing nations achieve similar goals through technical advice. The Energy Technologies Area consists of four divisions:

   - Building Technology and Urban Systems (BTUS)
   - Energy Analysis and Environmental Impacts (EAEI)
   - Energy Storage and Distributed Resources (ESDR)
   - Cyclotron Road (CY)

   ETA has its operations located in LBNL Buildings 31, 33, 46, 50, 51F, 60, 62, 63, 64, 70, 71, 71T, 75C, 90, and FLEXLAB. There are also other off-site research locations such as the LBNL Potter Street building (977). The ETA Safety Manager maintains a listing of all ETA work areas in each of these buildings.

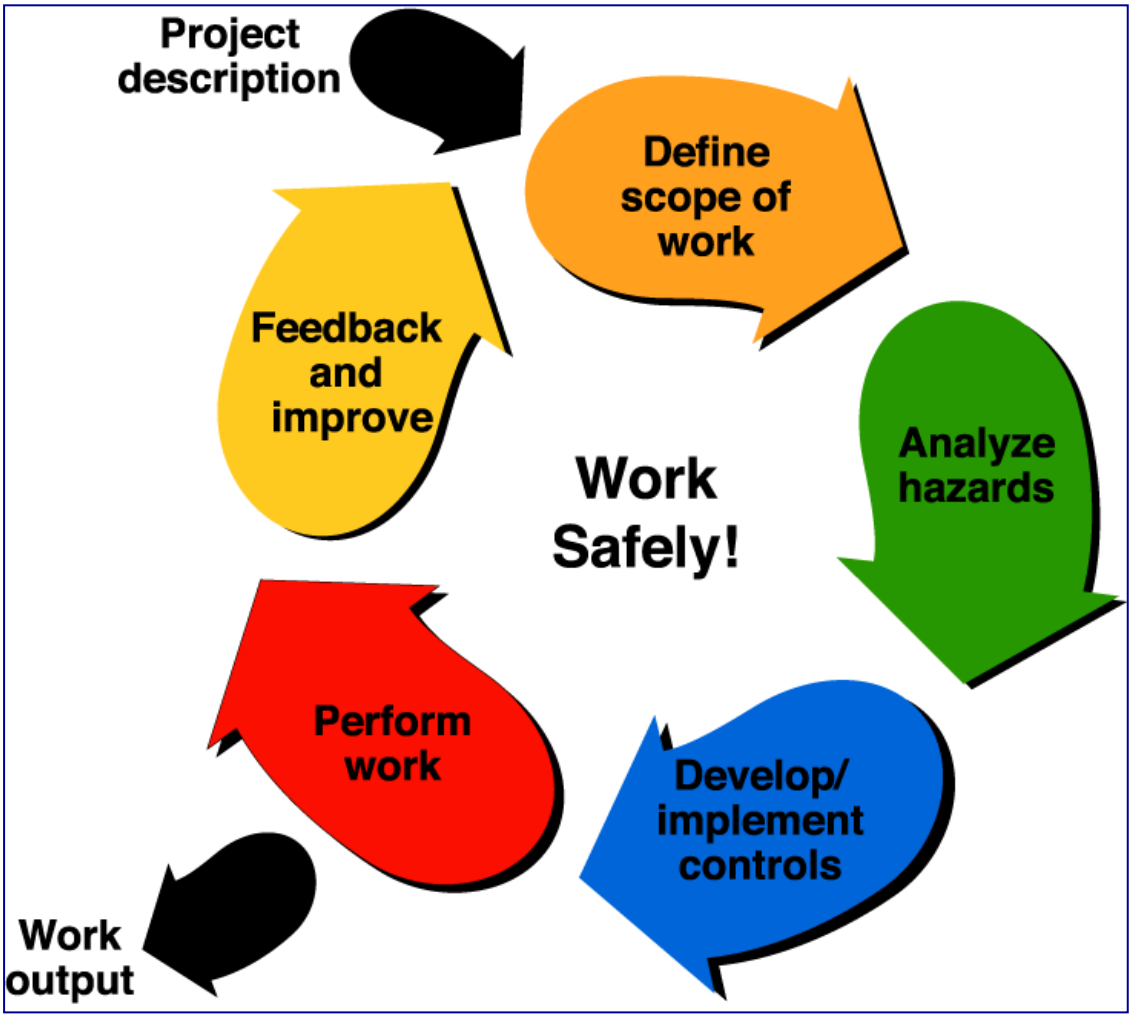
   The following publications are applicable to the scope of ETA's Integrated Safety Management Plan:
   - LBNL PUB-3851 "Worker Health and Safety Program"
   - LBNL Pub-3111 "Quality Assurance Program Manual"
   - LBNL PUB-3140 "LBNL Integrated Safety Management Plan"
   - LBNL PUB-3000 "Health and Safety Manual"
   - LBNL PUB-5341 "Chemical Hygiene and Safety Plan"
   - RPM-ES&H Core Policy

3. **Integrated Safety Management**
   Integrated Safety Management (ISM) is a core principle used within ETA. ETA has integrated each of the five functions and seven principles of ISM from the LBNL Integrated Safety Management Plan (PUB-3140).

   The five functions are:
   (1) Define the scope of work
   (2) Analyze the hazards

(3) Develop and implement hazard controls
(4) Perform work within controls
(5) Provide feedback and continuous improvement

The following is a diagram of the ISM work cycle:



Daily ISM

The following practices must be followed on a daily basis:

- Actively perform ISM and work planning each day by making sure the chemicals, tools, machines and equipment are appropriate for the task.
- Check laboratory equipment prior to starting work, and make sure it is in good condition and functioning properly.
- Perform work within the parameters defined by this Work Activity. This includes established pressures, temperatures, quantities, and set points.
- Ensure all safety controls required by this Work Activity are available and in use. This includes adequate personal protective equipment and engineering controls.

- Immediately report any equipment, machine or tool failures, deviations from normal operations, or other deficiencies to the Activity Lead or Principal Investigator.
- Decommission defective equipment immediately if the failure or deficiency may affect its safe operation. Attach a "DEFECTIVE DO NOT USE" tag to prevent use until repaired.

Side Work

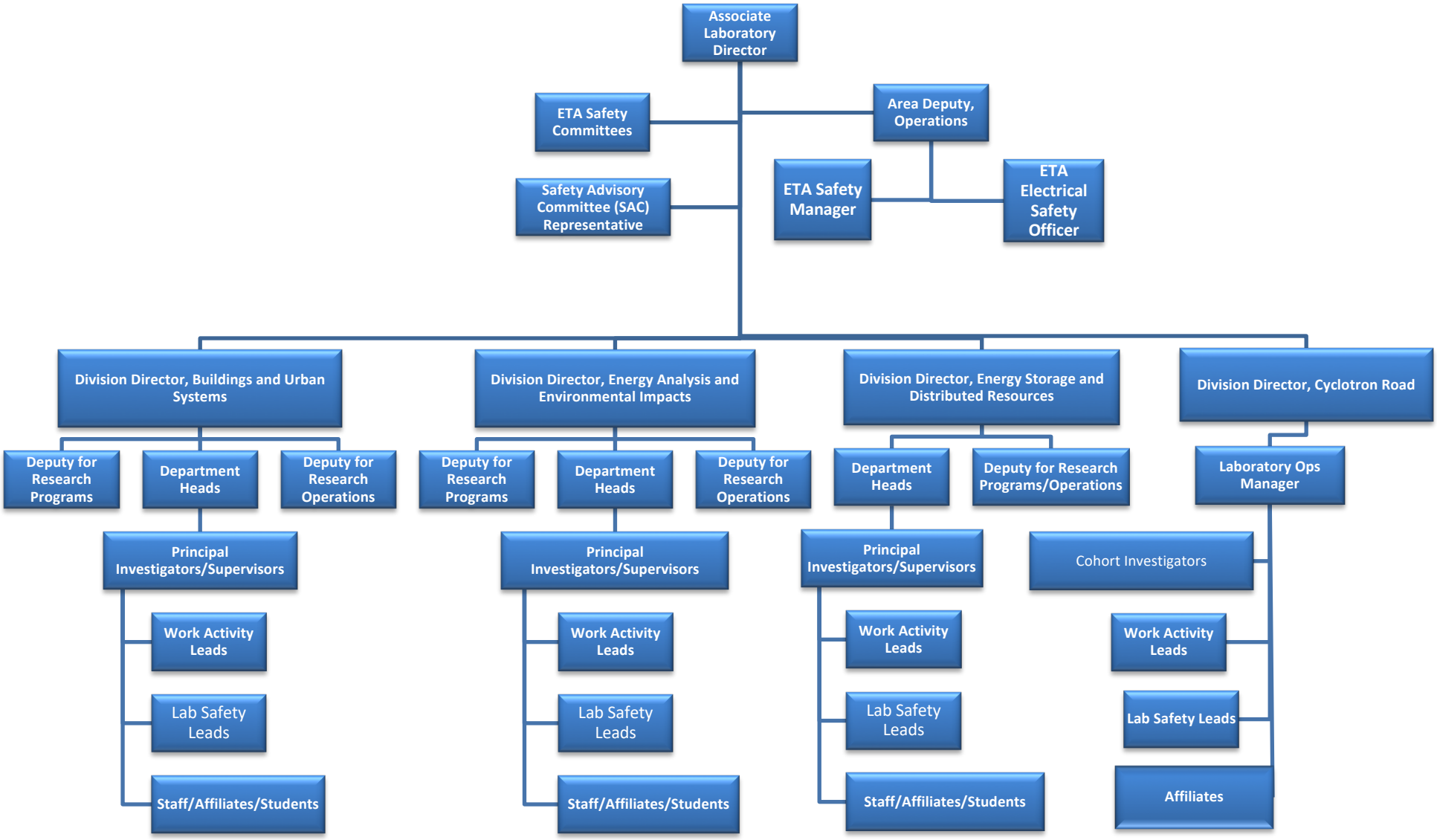
"Side Work" is not permitted. This is work being performed outside the approved scope of work. All work performed must be reviewed and authorized within the scope of the assigned WPC Work Activity. If you are not sure if a work task is within the scope of your Work Activity, check with the Activity Lead or Principal Investigator PRIOR to performing the work.

4. Area/Division Safety Structure

The ETA Environmental Safety & Health (ES&H) program structure consists of the Associate Laboratory Director, Area Deputy for Operations, Division Directors, Deputy Division Directors, ETA Safety Manager, ETA Electrical Safety Officer (ESO), ETA Division Safety Committees, and the Safety Advisory Committee (SAC) Representative.

Each ETA division conducts research in one or more buildings containing laboratory areas. Principal Investigators (PIs), Lab Area Safety Leads and Activity Leads are assigned to each laboratory area.

The following is the ETA safety organization chart:


Associate Laboratory Director
ETA Safety Committees
Area Deputy, Operations
Safety Advisory Committee (SAC) Representative
ETA Safety Manager
ETA Electrical Safety Officer
Division Director, Buildings and Urban Systems
Division Director, Energy Analysis and Environmental Impacts
Division Director, Energy Storage and Distributed Resources
Division Director, Cyclotron Road
Deputy for Research Programs
Department Heads
Deputy for Research Operations
Deputy for Research Programs
Department Heads
Deputy for Research Operations
Department Heads
Deputy for Research Programs/Operations
Laboratory Ops Manager
Principal Investigators/Supervisors
Principal Investigators/Supervisors
Principal Investigators/Supervisors
Cohort Investigators
Work Activity Leads
Lab Safety Leads
Staff/Affiliates/Students
Work Activity Leads
Lab Safety Leads
Staff/Affiliates/Students
Work Activity Leads
Lab Safety Leads
Staff/Affiliates/Students
Work Activity Leads
Lab Safety Leads
Affiliates

5. Roles and Responsibilities

The following are roles and responsibilities for the various functions within ETA:

a. Associate Laboratory Director
- Assure that ES&H policies and programs are established and implemented within ETA.
- Ensure that ETA provides sufficient resources for ES&H efforts.
- Lead the discussions on relevant safety issues at Area senior management meetings.
- Demonstrate line management commitment to safety, health, and environment by periodically walking through ETA workspaces.
- Establish committees as necessary to consider ES&H problems and recommend solutions to Area management.
- Appoint the ETA Safety Advisory Committee (SAC) representative.

b. Area Deputy, Operations
- Manage operational matters within the Area including safety.
- Lead the Area Research Operations Council, which is a resource for managing safety matters in the divisions.
- Supervises the ETA Safety Manager.
- Oversees the responsibilities of the ETA Electrical Safety Officer (ESO)
- Participates in the Division Safety Committees as needed.

c. Division Directors
- Maintain overall responsibility for safety within their respective divisions.
- Lead discussions on relevant safety issues at their division meetings.
- Perform at least one safety walkthrough each year for areas under their responsibility.
- Provide the necessary resources within the division to ensure a safe and healthy work environment.
- Ensure the ETA employee performance assessment process is used to hold employees accountable for their ES&H obligations, responsibilities, and performance.
- Review the status of key division health and safety metrics on at least a quarterly basis.

d. Deputy Division Director, Research Operations
- Support operational matters within their division including safety.
- Ensure that line managers within their department understand and follow the provisions of this Plan.
- Ensure that all work areas within their division are operated in accordance with LBNL ES&H requirements.
- Coordinate periodic management walkthroughs of work areas operated by their Divisions.
- Oversight of division safety committees.
- Ensure that Project Leads and Activity Leads are assigned and updated as needed for all Work Activities within their division.
- Identify personnel within their division that support key safety activities such as Building Emergency Team (BET), Ergonomics Advocates, and Safety Committee members.

- Participate in the Research Operations Council, which is a key resource for managing safety matters in the division.

e. Deputy Division Director, Research Programs
- Support research programs within their division including consideration of safety requirements as new programs are developed.
- Participate in the Division Research Operations Council as needed, which is a key resource for managing safety matters in the division.

f. ETA Safety Manager
- Assist the ETA Associate Laboratory Director and senior staff in establishing and maintaining an effective safety culture at all levels of the Area.
- Manage the ETA's annual Self-Assessment process.
- Serve as a point of contact for Area staff regarding implementation and interpretation of ES&H policies, procedures, and programs.
- Conduct inspections and monitoring of ETA work activities to ensure that work is conducted in a safe and environmentally sound manner.
- Ensure that corrective actions for EH&S issues within the division are identified, assigned, and completed in a timely manner.
- Coordinate ETA accident and near-miss investigations.
- Oversees implementation of the Work Planning and Control "Activity Manager" system.
- Ensure that ES&H training is implemented within ETA.
- Develop and delivers ETA-specific training.
- Ensure that compliance records and documentation are kept up to date.
- Coordinate the ETA ergonomics program.
- Generate regular ES&H communications to ETA personnel.
- Provide support to the Safety Committee Chairs and participates in Safety Committee activities.
- Provide regular ES&H metrics updates to the ETA senior management.
- Maintains the ETA Safety website.
- Consult with the ES&H Division Liaison as needed.

g. Principal Investigators and Supervisors
- Ensure that all activities in their labs and related facilities are carried out in accordance with LBNL and ETA safety and health policies and procedures.
- Ensure work areas are well maintained and adequately supervised.
- Perform regular walkthroughs of work areas to ensure all personnel are following good safety practices and proper safety equipment is made available.
- As Work Planning and Control "Project Lead", assigns and oversees "Activity Leads" as needed.
- Ensure that personnel are assigned to the appropriate Work Planning and Control "Work Activity" and they complete all required training.
- Ensure that all employees working within their work areas have received adequate "on the job" training on hazards and needed controls.
- Participate in "Incident Review Teams" for any accidents involving their personnel.

- Meet with assigned personnel at least annually to discuss safety performance and goals as part of the annual performance review process.
- Ensure that all electrical equipment is maintained in good condition. Defective equipment must be immediately taken out of service until repaired.
- Ensure that new or modified equipment is reviewed for hazards and controls prior to being used.
- Ensure that personnel follow good housekeeping practices in their work areas. This includes regular clean out of unwanted samples, chemical containers, and unused electrical equipment.
- Ensure that all off-site work is conducted safely and within regulatory requirements.

h. Staff, Affiliates, Students, Post-Doc, Rehire/Retiree

- Conduct their work activities safely and in an environmentally sound manner at all times.
- Know how to respond to emergencies and incidents. Evacuate work areas when emergency alarms sound.
- Immediately call **X911** in the event of a chemical spill, fire, or serious injury.
- Immediately stop any activities, including the activities of others, which pose an imminent danger to personnel or the environment, and report these activities to their supervisor or activity lead (see Stop Work policy).
- Review, understand, and sign their assigned WPC Work Activity at the required frequency (1-3 years), follow all listed hazard controls, and complete all required training.
- Perform work only for which they are authorized and qualified.
- Promptly report all injuries, unsafe conditions, safety violations, and near-miss incidents immediately to their Area Safety Lead or supervisor.
- Report promptly to LBNL Health Services in the event medical attention is needed.
- Keep work areas clean and orderly at all times.
- Inspect tools and equipment prior to use.
- Wear proper personal protective equipment when required.
- Follow proper safety precautions when working with electrical equipment. Report damaged or malfunctioning equipment to their supervisor. Do not use until repaired.
- Practice good work postures to avoid ergonomic related injuries. Report any discomfort promptly to their supervisor or activity lead.

i. Work Activity Lead

- Assigned by the Project Lead (Principal Investigator or Supervisor) to oversee work being performed. The work can be defined by a specific work area and/or by types of equipment or processes used.
- Develop assigned Work Activities in the Activity Manager system. This includes the preparation of a statement of work outlining the scope of the activity, determination of the hazards associated with the work, and designating the controls needed to mitigate the hazards.
- Update assigned Work Activities as needed to ensure they reflect the work being performed.

- Assign workers to Work Activities. This includes establishing the work authorization levels based on the worker's level of competence and hazards of the work being performed:
  - Not Authorized to Work
  - Work with Supervision
  - Authorized to Work
- Determine what On the Job Training (OJT) is needed and prepare assigned workers to safely carry out the defined scope of work.
- Ensure all supplemental work authorizations are obtained and maintained. This includes radiation work authorizations, laser work authorizations, and hot work permits.
- Communicate any changes in Work Activity scope, hazards, or controls to all affected workers.

j. Lab Safety Lead
- Ensures that day-to-day work activities in assigned technical work areas are conducted safely and within established work authorizations.
- Ensures that employees working within their assigned work areas are aware of work hazards and controls. This includes use of personal protective equipment, engineering controls (hoods and glove boxes), and emergency procedures.
- Report any health or safety concerns identified to their supervisor.
- Ensure that the door Hazard Placard information is up to date.
- Ensure that any Satellite Accumulation Areas (SAA) for hazardous wastes generated in their work areas are properly maintained.
- Ensure that hazardous materials located in the area are properly stored.
- Ensure that the chemical inventory entered into the Chemical Management System (CMS) is updated regularly.
- Ensure the technical area is well maintained and good housekeeping is being followed.
- Ensure that personnel protective equipment such as safety glasses, gloves, and lab coats are made available to workers in the area.
- Ensure that all equipment is properly maintained in a safe condition. Any defective equipment just be placed out of service until repaired.
- Ensure that emergency equipment in the area is available and maintained. This includes chemical spill supplies. Emergency Response Guide, emergency shower/eyewash, and fire extinguisher.

k. Building Manager (each ETA building)
- Complete required Building Manager training courses.
- Advise Facilities Division regarding building hazards relevant to planned construction/maintenance work.
- Coordinates building construction and maintenance activities within assigned buildings.
- Oversee the space management of their buildings.
- Serve as building representative/escort to visitors and compliance inspectors.
- Ensure the emergency preparedness of their buildings.

- Identify a Building Emergency Team (BET) Lead. If a Lead is not identified, the Building Manager will assume BET Lead responsibilities.
- Maintain a "Building Emergency Plan" and make available to building occupants and BET.

l. Building Emergency Team (BET) and Community Emergency Response Team (CERT) Members

- Complete required BET and/or CERT training courses.
- Participate in planned drills and pre-planning meetings.
- Assist employees when buildings are being evacuated.
- Provide primary first aid emergency care during building emergencies.
- Assist emergency responders such as the fire department.
- In the absence of the BET Lead and Building Manager, assume the BET Lead position.

m. Qualified Electrical Worker (QEW)

- Only perform electrical work within the limits of qualification, using the required tools and PPE.
- Only perform work on electrical equipment that has been placed in an electrically safe work condition, unless proper authorization has been obtained and required controls have been established in accordance with this program.
- Where necessary, comply with the letter, intent, and prescribed sequence of all the steps and requirements listed in written procedures, such as Lockout/Tagout Procedures, Electrical Safety Work Plans, Switching Plans, and Energized Electrical Work Permits.
- Stop work and place the equipment in a safe state when questions arise in the implementation of any written procedure. Resolve the issue to everyone's satisfaction prior to restarting work.
- Continually apply the ISM process in the performance of daily work activities.
- Satisfactorily complete all training and certification requirements necessary to maintain certification as a Qualified Electrical Worker.
- Seek out additional guidance or training for tasks that are performed less than once a year.
- Notify a supervisor of any condition that poses a potential hazard for which the QEW is not able to adequately analyze the hazard or develop controls.
- Immediately report any occupational injury or illness, including any electrical shock, regardless of how minor the shock is perceived to be, to their supervisor and to Berkeley Lab Health Services.
- Assist Non-QEWs in the performance of Lockout/Tagout of electrical systems, including the absence of voltage verification.
- Comply with all program requirements of the Electrical AHJ for Safe Installations and the Electrical AHJ for Safe Equipment.

n. ETA Electrical Safety Officer (ESO)

- Fulfill the function of "Competent Person" for R&D Facilities as required by NFPA 70E Article 350.

- Maintain NFPA 70E certification as Certified Electrical Safety Compliance Professional (CESCP).
- In cooperation with the Laboratory Electrical Safety Officer, develop the Division ISM Plan for implementing the requirements of the *Electrical Safety Program*.
- Assist division line management in the enforcement of the Berkeley Lab requirements for electrical safe work practices and workplace conditions.
- Consult with the Electrical AHJ for Safe Work Practices for interpretation assistance as necessary.
- Review and approve Electrical Safe Work Procedures for the division.
- Perform annual work-practice audits of all QEWs within the division and submit written reports to the Laboratory Electrical Safety Officer.
- Lead division annual self-assessments in the areas of Electrical Safety and Lockout/Tagout.
- Act as a resource to employees, managers, and Division Safety Coordinators for electrical safety-related concerns.
- Reinforce good work practices to reduce at-risk behaviors.
- Perform or assign workplace-condition inspections to look for electrical hazards in office, industrial, and/or laboratory spaces.
- Perform or assign surveys of electrical equipment and enter non-NRTL equipment into the Electrical Equipment Database for inspection.
- Coordinate with the Electrical Safety Group to resolve issues with electrical workplace conditions.
- Are familiar with relevant resources including the Electrical Safety website, the Electrical Safety Database (QuickBase), and the *Electrical Safety Manual*.
-

o. EH&S Division Liaison

- An EH&S Division representative who serves as a point of contact to ETA.
- Provides appropriate technical support to implement and interpret LBNL E&SH policies.
- Familiar with the ETA various work activities, personnel, and associated hazards. Assists in hazard identification and the development of controls appropriate to the hazard and work being performed.
- Provide consultation to allow for resolution and closeout of the customer division's ES&H issues or concerns.
- Develop and/or leads cross-functional ES&H teams when necessary to assess complex operations and equipment.
- Participate in a customer division's self-assessment as requested and other ES&H assessments as required.
- Serve as the lead to coordinate an EH&S Division review of formal authorizations (e.g., WPC Activity Manager), which involves coordinating feedback with subject matter experts (SMEs) and the customer, and overall approvals.
- Participate in incident reviews of illnesses, injuries, accidents, and other safety and environmental incidents as requested by the incident investigation manager.
- In relation to assigned divisions or facilities, and in collaboration with his or her respective Division Safety Coordinators (DSCs), supports as requested, the elements of the ES&H program.

p. Subcontractors
- Subcontractors are non-LBNL personnel performing hands-on work for ETA. Hands-on work includes:
  - Use of hand or power tools
  - Use of ladders or scaffolding
  - Electrical work
  - Servicing equipment
  - Handling of hazardous materials
  - Material handling
- Complete the required SJHA documentation and submit to the requesting supervisor or activity lead.
- Follow all requirements listed in the SJHA. See: https://sjha.lbl.gov
- Obtain proper LBNL authorizations prior to performing any hands-on work.
- Understand and follow the safety and health requirements that apply to their work.
- Observe and follow all posted warning signs.
- Notify their ETA contact in the event of any safety concerns or identification of a safety hazard.

q. Workers Working Off-Site
- Off-site workers must conduct work in a manner that complies with LBNL and ETA environment, safety and health (ES&H) policies and procedures.
- Off-site workers must conduct work in a manner that complies with all applicable regulatory requirements for the particular area (jurisdiction) work is being performed.
- Off-site workers performing work at another national laboratory or institution will comply with the ISM Program, policies, and procedures of that institution.
- New projects involving off-site work must be authorized prior to performing the work. This can be accomplished by use of an approved Work Activity in the Activity Manager system. Each off-site worker and the locations being worked at are identified in the Work Activity.
- The employee supervisor and LBNL Health Services must be notified immediately of any off-site project related injuries.

r. Workers Working at UC Berkeley
- ETA workers performing work at the UC Berkeley campus must conform to the *"Partnership Agreement Between UCB and LBNL Concerning Environment, Health and Safety Policy and Procedures"* dated March 15, 2004, as provided in the LBNL Institutional ISM Plan: http://www.lbl.gov/ehs/ism/ucb_lbl_partnership_3_15_04.pdf.

s. Telecommuting Workers
- Complete and submit a LBNL "Agreement and Authorization for Telecommuting" form for their supervisor's and Division's authorization. This form is available on the Human Resources website.
- Employees are responsible for maintaining their off-site workspace in a safe condition, free from hazards to persons and equipment. If computer equipment will be used as part of the telecommuting function, the following activities must be completed and documented using the "Agreement and Authorization for Telecommuting" form and returning a copy to the supervisor and the ETA Safety Manager.

- Complete the Ergonomics Self-Assessment (EHS0059) training.
- Conduct an ergonomic self-assessment of the immediate telecommuting work area.
- Acquire and install the necessary ergonomic accessories identified in the self-assessment to assure the telecommuting work area provides controls against ergonomic risk exposures.

t. Workers Working Alone

- ETA personnel are not allowed to work alone when the hazards associated with their work could incapacitate them to such a degree that they cannot "self-rescue" themselves or activate emergency services. Example hazards include:
  - Work involving exposed live electrical circuits >50V or 5mA.
  - Work with >2L of highly corrosive liquids.
  - Work with pyrophoric materials outside a glove box.
  - Quenching water reactive materials such as sodium.
  - Work with highly toxic incapacitating chemicals.
  - Changing toxic gas cylinders.
  - Use of stationary power tools such as a drill press.
  - Use of fall arrest or fall restraint equipment on elevated work surfaces.
  - Use of aerial lifts, boom lifts, or scissor lifts.
  - Entry into permit required confined spaces.
- The Working Alone Policy is implemented through the WPC Activity Manager system. Work is assessed to identify activities where the severity of mitigated hazards may prevent workers from self-rescuing or activating emergency services in the event of an accident. Authorizations for the identified work activities place restrictions on working alone.
- Work Activity Leads may also determine that a working alone restriction is necessary for individual workers where a one-time task is not covered by their assigned Activity.
- **Working Accompanied** occurs when:
  - There is a second person within sight or earshot
  - The second person is available, agrees to, and understands his or her responsibilities
  - If the second person has to leave the area, the activity is considered to be Working Alone, and must terminate if prohibited in the Work Authorization.
  - See RPM-ES&H Work Alone Policy or further details.

6. ETA Safety Committees

ETA Research Operations Council (ROC)

The ETA Research Operations Council is the primary safety committee for ETA. It is led by the ETA Area Deputy Director for Operations. It consists of the Deputy Directors of Operations for each division along with representatives from Human Resources, Finance, ETA Safety Manager, and ETA Building Manager. The Council meets at least quarterly. EHS issues are a standing agenda item. These include but are not limited to:

- Division management safety walkthroughs
- Division safety stand downs
- Recent accidents/incidents

- Self-assessment project planning
- Performance Management Process (PMP)
- LBNL-wide safety initiatives

Division Safety Committees

Each ETA division is encouraged to form Safety Committees that address safety issues relevant to their operations. The membership, meeting frequencies, and agenda topics are determined by the management of each division**. See Attachments 2 through 5 of this ISM Plan for detailed descriptions of each division's safety management strategy.**

Recommended Safety Committee structure is as follows:

Each Division Safety Committee consists of the following personnel:

- Committee Chair (Scientist appointed by the Division Deputy Director)
- Division Deputy, Operations (Ex-Officio)
- Division personnel representing various aspects of work performed
- ETA Safety Manager (Ex-Officio)
- EH&S Division Liaison (Ex-Officio)
- ETA Building Manager(Ex-Officio)
- ETA Electrical Safety Officer (Ex-Officio)

Other optional participants as needed: Division Directors, Division Deputies for Operations, DOE-BSO Representative, Human Resources Representative, Office of Contract Assurance Representative, EH&S Division Subject Matter Experts, any interested ETA personnel.

The Safety Committee should meet at least quarterly or more often if issues warrant. The primary responsibilities of the Safety Committee are:

- Review available division safety data, identify trends and suggest appropriate corrective actions
- Assist in the development and implementation of effective environmental, safety and health (ES&H) programs.
- Consult on any proposed changes in safety and health policies, practices, and procedures.
- Provide feedback on ETA safety program strategic planning
- Act as a problem-solving group to help with the identification and control of hazards.
- Provide oversight of the ETA Self-Assessment program
- Review annually and provide input to the update of the ETA ISM Plan
- Encourage feedback and participation from all individuals within the division with regard to health and safety related ideas, problems, and solutions

Safety committee meetings will be documented with meeting minutes. The meeting minutes will include a list of attendees and a listing of action items identified. The Safety Committee Chair is responsible for ensuring meeting minutes are generated and distributed to all Safety Committee Members, the Division Director, Department Heads, and Deputy Department Heads for Research Operations. The meeting minutes are also made available to ETA employees by posting on the ETA Safety Website. See Attachment 1 for the "Safety Committee Charter".

Safety Advisory Committee (SAC) Representative

LBNL's Safety Advisory Committee (SAC) performs research for and makes recommendations to the Laboratory Director on the development and implementation of Environment, Safety & Health (ES&H) policy, guidelines, codes and regulatory interpretation. It conducts peer reviews of special safety problems and provides recommendations for possible solutions if requested to do so by the Laboratory Director. The ETA representative to the SAC is selected by the Associate Laboratory Director and is typically a researcher from one of the ETA divisions.

7. Description of Work and Associated Hazards

ETA staff performs office work, laboratory work (wet and dry), and off-site fieldwork. The following is a summary of the general hazards associated with these types of work:

ETA Work Type	Potential Hazards
Laboratory Work- Dry Lab	• Electrical hazards • Elevated work locations • Ergonomic hazards • Hand tool use • Soldering • Slip trip fall hazards
Laboratory Work- Wet Lab	• Biohazards • Class 3B and 4 lasers • Compressed gases • Cryogenic liquids • Electrical and mechanical hazards • Ergonomics hazards • Flammable gases • Hazardous chemicals • Hazardous gases • Hot surfaces • Ionizing radiation • Non-Ionizing radiation • Engineered nanomaterial (bound and unbound) • Radioactive materials • Reactive metals • Ovens/Furnaces (hot surfaces) • Slip trip fall hazards
FLEXLAB	• Electrical and mechanical hazards • Elevated work locations • Confined spaces • Hand tool use • Soldering • Slip trip fall hazards
Machine Shops	• Compressed gases • Electrical hazards • Mechanical hazards- machine guarding

	• Flammable gases • Hand tool use • Machine tools and equipment • Welding and soldering
Office Work	• Ergonomic hazards • Slip trip fall hazards • Office equipment electrical hazards
Off-Site Field Work	• Compressed gases • Electrical and mechanical hazards • Elevated work locations • Ergonomic hazards • Hand tool use • Hot/cold climates • Wildlife • Traffic hazards • Transportation of Hazardous Materials (limited) • Aerial Transport (drones, balloons, aircraft)

8. Work Planning and Control- Activity Manager System

All work must be authorized before it is performed. Work authorization has two distinct components. First, the work activities must be planned, reviewed and authorized. Second, individual workers must be then be assigned to work activities, properly trained, and authorized before they can proceed with work. The primary Work Planning and Control (WPC) process used by ETA is called the "Activity Manager" system. In order to meet Integrated Management System principles, the Activity Manager system allows personnel to:

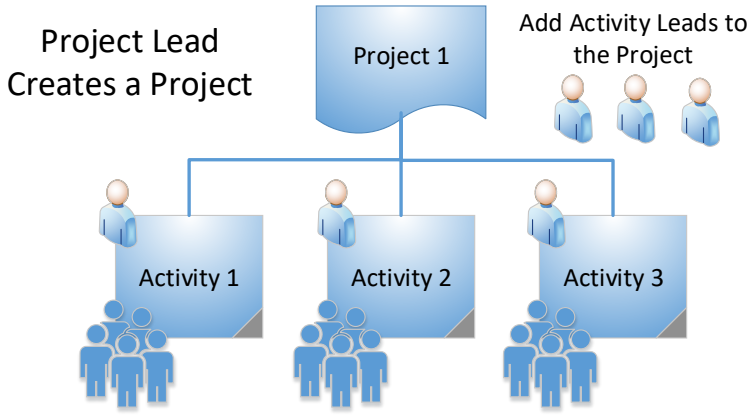
- Define the scope of work that will be performed
- Identify the hazards associated with the work
- Identify the controls necessary for the hazards
- Authorize the work activity
- Assign and authorize workers to perform the work activities

Project Leads are assigned to oversee all ETA work. The Project Leads are Managers, Principal Investigators, or Supervisors. Project Leads organize their work into Projects with one or more associated Work Activities. The Project Lead maintains overall control and responsibility for each Work Activity within their Project. Work Activity Leads are assigned for each Work Activity. They define the work, identify the hazards, and implement the controls associated with the Work Activity. The Activity Lead also assigns and authorizes workers to perform work.

Work Activities are authorized following a risk-based approach. Work Activities involving low or moderate hazards (Level 1 and 2) are authorized by ETA line management. Work Activities involving higher hazards (Level 3) requires concurrence of the EH&S Division in addition to ETA line management authorization.

Workers are authorized by Work Activity Leads at a level commensurate with their knowledge and skill level given the particular hazards associated with their assigned Work Activity. Workers may

be authorized to work under direct supervision only, to work without direct supervision, or are not authorized to work. Once assigned to a Work Activity, the worker will review, accept and follow the conditions and controls listed. The worker can perform work only for which they are authorized and qualified.



WPC processes are specified in PUB-3000 Chapter 6 "Work Planning and Control."
To access the on-line "Activity Manager" system, go to: Activity Manager. WPC information resource tools, and training materials for Project Leads and Activity Leads is also available at: Work Planning and Control (WPC) website

9. Other Work Authorizations

There are other types of work authorizations not included in the Work Planning and Control "Activity Manager" system that are required at LBNL depending on the type of work being performed. These include:

a. Qualified Electrical Worker (QEW)- required authorization for any personnel who works on equipment above 50 volts. Only an approved QEW may perform electrical work, including zero-energy verification after Lockout/Tagout (LOTO).
b. Generally Licensed Source Authorization (GLA)- Sources exempt from NRC regulation, which require an LBNL authorization. Includes internal calibration sources, static eliminators, gas chromatographs, and electron capture devices.
c. Hot Work Permit- required for activities such as welding, cutting or grinding that could produce sparks. Call (510) 486-6015 for a same-day hot work permit.
d. Human Subjects- Research involving human subjects or human derived data or tissues must have a protocol reviewed and approved by the Human Subjects Committee (HSC).
e. Lock-Out/Tag-Out Permit- required for any subcontractor work requiring the shutdown and control of hazardous energies.
f. Penetration Permit- required for the penetration of any ground, wall or other surfaces greater than 1-5/8 inches.
g. Radiation Work Authorization (RWA)- used to establish radiological controls for intended work activities and research projects. The RWA informs workers of area radiological conditions (or potential conditions), limitations, entry requirements, engineering and administrative controls and provides a mechanism to relate worker exposure to specific work activities.

h. Subcontractor Job Hazard Analysis (SJHA)- required for all" hands-on" work performed by subcontractors/vendors. See this link for a complete list of SJHA's assigned to ETA sub-contractors.

In some cases, external authorizations (regulatory permits) may be required as specified in PUB-3000 Chapter 11 "Environmental Protection."

10. Identification and Assessment of Hazards

There are a number of ways that ETA identifies and assesses potential ES&H hazards. This is accomplished through inspections, walkthroughs, self-assessments, and peer reviews.

Inspections and Walkthroughs

This includes regular inspections of ETA work areas and authorized work activities. They are summarized as follows:

Type	Purpose	Frequency	Who	Documents
Satellite Accumulation Area (SAA)	Ensure that hazardous wastes are properly stored, identified, and disposed within storage time limits	Quarterly	ETA Safety Manager, Waste Generator Assistant, Lab Safety Lead	SAA Inspection Check sheet
Lab Area Self-Inspection	Maintain good safety and health practices in each lab, review lab records	Quarterly	Lab Safety Lead/PI	ETA Safety Self-Inspection Form (Posted in Lab Area)
Level 3 Work Activity Renewal	Walk through area covered by Work Activity to ensure all hazards are identified/updated	Annual	ETA Safety Manager, EH&S Liaison, PI	Updated Activity in Activity Manager
Division Management Walkthrough	Promote safety culture, ensure areas meet LBNL and ETA safety expectations	Annual	Division Director, Deputy Directors, Associate Laboratory Director, ETA Safety Manager, EH&S Division Liaison	Management Checklist
Self - Assessment Program	Identify key ES&H weaknesses and strengths for self-assessment.	2-3 each year	ETA Safety Manager, Division Deputies	Self-Assessment Plan
Ergonomics Assessment	Address personnel discomfort due to work station set-up	On request	ETA Ergonomics Advocates, EH&S Division Ergonomics Assessors	Ergonomic Assessment Form

Electrical Safety Assessment	Ensure ETA equipment is maintained in good condition and safe work practices are followed	Annual	ETA Electrical Safety Officer	Report to Electrical AHJ
Electrical Equipment Inspection Program	Ensure all equipment >50V meets NRTL requirements	On request	Electrical Equipment Surveyors	EEIP Database

See Attachment 7 for the recommended Quarterly Lab Area Self Inspection check sheet. These should be posted in an obvious location in each lab area for worker awareness and management review.

All inspections must be documented with the date, personnel involved, areas inspected, and findings. Any issues identified that require follow-up or further tracking should be entered into the CATS (Corrective Action Tracking System). For ergonomic assessment follow-up items, go to the Ergonomics Database

Annual Division Self-Assessments

The division self-assessment is a continuous process that evaluates ETA's worker safety, impacts to the environment, and the effectiveness of this Integrated Safety Management Plan. Each year, an Area Self-Assessment Plan is prepared that identifies 2-3 selected focus areas to be evaluated, the methodologies to be used, persons responsible, and evaluation timelines. As each focus area is completed, it is summarized in a Self-Assessment Report and submitted to the Office of Contractor Assurance (OCA). The Division Self-Assessment Plan and past Self-Assessment Reports can be found on the ETA Safety Website.

New Project Review

In order to identify appropriate hazards/controls of planned research projects involving new hazards, new equipment, or new hazardous materials, ETA Principal Investigators should submit or modify a Work Activity in the Activity Manager system that describes the proposed work. To access Activity Manager, go to: Activity Manager. The ETA Safety Manager will review the submitted Work Activity and determine what safety documentation or other authorizations will be required in order to perform the work safely. These requirements will be communicated to the requestor.

ES&H Peer Review

ETA periodically participates in the Safety Advisory Committee's ES&H peer review that evaluates implementation of Integrated Safety Management Systems for the Associate Laboratory Director. The peer review consists of individuals selected from outside ETA that focus on areas of concern that are typically high-level management issues.

11. Qualification and Training

Most of the safety training requirements are pre-determined through assignment to one or more Work Activities in the Activity Manager system. Until such safety qualifications have been established and satisfied, individuals will only be allowed to work under the supervision of a qualified employee. An

exception to this work under supervision rule is for any training related to a formal authorization that must be completed before any related work can be done under the authorization. Qualifications include skills, knowledge, training and certifications required by law or by Laboratory policy.

The employee's Training Profile shows training courses that are required and recommended, and whether the requirements have been met. The employee, visitor, or affiliate completes his/her training assignments when notified by automated email reminders. The supervisor ensures that the employee's required training is completed in a timely manner. For access to training records, log into the LBNL training system: Berkeley Lab Training.

New employees are assigned into Work Planning and Control "Work Activities" before beginning work and must complete all required training within 30 days. New employees who will work in laboratory areas are also required to complete ETA0010 "ETA Safety Orientation" training. This is a classroom course that covers basic safety requirements for ETA lab workers.

Job-specific EH&S training may include on-the-job training (OJT). OJT is training conducted and evaluated in the work environment through interaction between line management and their staff. It is used to supplement general EH&S training to provide detailed instructions and controls for performing a specific task or operation. Written documentation that describes the training and the means to evaluate successful completion should be kept by the supervisor. As an option, OJT can be documented electronically in the associated Work Activity in the Activity Manager system. This is accessed by going to: Activity Manager. OJT record keeping is a line management responsibility.

See PUB-3000, Chapter 24 "EH&S Training" for a detailed description of the LBNL training program and requirements. Go to the Berkeley Lab Training website for course descriptions and links to on-line training courses offered as well as registration for classroom training courses.

A summary of qualification and training requirements for various functions within ETA is as follows:

Work Type	Training
Managers, Supervisors	EHS0042- Implementing Safety for Supervisors BLI0117- Supervisor Responsibilities at LBL
All Employees- Staff, Affiliates, Post Doc, Students	EHS0470- General Employee Radiation Training (GERT) LBL0010- Safety, Emergency Preparedness, and Trafficking Persons (new hire) PSD0135- Emergency Management Overview EHS0059- Initial Ergonomic Self-Assessment for Computer Users BLI0701- New Employee Briefing
Wet Lab Area Workers	ETA0010- ETA Safety Orientation EHS0103- Compressed Gas Safety EHS0170- Cryogen Safety EHS0171- Pressure Safety EHS0243- Soldering Awareness

	EHS0260- Electrical Safety for Non-QEW Personnel EHS0278- Ladder Safety EHS0344- Safe Handling of Nanoscale Material EHS0346- CMS Web Application EHS0348- Chemical Hygiene and Safety EHS0520/522- Fire Extinguisher Safety EHS0604- Hazardous Waste Generator EHS0657- Self Transport of Hazardous Materials
ETA Safety Manager	EHS0802- Reporting Adverse ES&H Occurrences in ORPS EHS0027- Effective Safety Walk Around EHS0381- Electrical Equipment Surveyor EHS0277- Confined Space Permit Writer EHS0536- Switching for Non-QEW's
Building Emergency Response Team	EHS0145- First Responder EHS0154- Building Emergency Team Training EHS0116- First Aid Training EHS0123- Cardiopulmonary Resuscitation (CPR) EHS0520/EHS0522- Fire Extinguisher Training
Building Manager	EHS0156- Building Manager Orientation EHS0536- Switching for Non-QEW's
Qualified Electrical Worker (QEW-1)	EHS0370- Lock-Out/Tag-Out for Authorized Persons EHS0380- Electrical Gloves and Tools EHS0268- Introduction to NFPA 70E EHS0537- Electrical Injuries and Emergency Response EHS0539- QEW 1 Provisional Approval EHS0540- Electrical Safety Basics EHS0541- Shock Protection EHS0544- QEW 1 Practical Certification EHS0545- AHJ Approval
Ergonomic Advocates	EHS0061- Ergo Advocate Training
Safety Committee	ETA Safety Committee Orientation Training (ppt slides) EHS0027- Effective Safety Walkthrough training
Specific Hazards based on assigned Work Activity- Chemicals, Lasers, Radiation, Elevated Work, etc.	See Berkeley Lab Training website for specific requirements. Typical courses for ETA personnel include: EHS0062- Work Smart Ergonomics (lifting) EHS0276- Fall Protection EHS0288- Laser Eye Exam EHS0302- Laser Safety EHS0310- Respirator Safety EHS0520/522- Fire Extinguisher Safety EHS0535- Hot Work Permit

	EHS0471- Radiation Worker 1 EHS0475- X-Ray Awareness EHS0740- Human Subjects Research

Some work activities also require medical surveillance or pre-qualification prior to performing certain types of hazardous work. See the LBNL Health Services website for specifics regarding medical surveillance requirements. Activities that require medical surveillance include the following:

- Class 3B and 4 Laser Use (includes eye examination)
- Respirator Use (includes face piece fit testing)
- High Noise Areas (includes hearing evaluation)
- New Hire Physical (Voluntary)

12. Communications and Feedback

There are a number of ways to communicate safety and health information to the ETA personnel. This is accomplished through:

a. ETA Safety Website
b. Building Bulletin Boards (hard copy metrics, safety alerts, posters)
c. Building 70 and 62 Lobby Monitors- Safety reminder displays
d. Technical Area Door Hazard Placards. See Attachment 6 for an example. These are posted at the entrance of each lab area
e. Departmental and Division Employee Meetings
f. Division Director and Department Head Safety Walkthroughs
g. ETA "Safety Alerts" notices. See Attachment 8 for an Example Safety Alert. Also see:https://eta-safety.lbl.gov/content/safety-alerts-and-lessons-learned.
h. ETA Safety Metrics. See:https://eta-safety.lbl.gov/content/safety-metrics-and-performance
i. Safety Committee Meeting Minutes. See: http://eta-ehs.lbl.gov/safety-committee-meeting-minutes
j. ETA "Safety Topics" training slides. See: https://eta-safety.lbl.gov/content/job-training-ojt
k. Berkeley Lab Training
l. LBNL Electrical Safety Website
m. Emergency Response Guide
n. Industrial Hygiene Exposure Monitoring Data
o. Safety Data Sheet (SDS) database
p. "1 Minute for Safety" information sheets. See: EHS Division "1 Minute 4 Safety" database

Personnel are encouraged to report unsafe conditions to their supervisor without fear of reprisal. Personnel are also encouraged to ask questions or voice safety concerns at employee meetings. LBNL has established a means of reporting safety concerns through the "Safety Concerns" website. In addition, concerns can be emailed to: safetyconcerns@lbl.gov or by calling X5514.

ETA personnel are recognized for positive contributions to the ETA safety program through the following means:

a. Safety Spot Awards. See: https://eta-intranet.lbl.gov/safety-spot-award
b. Safety Hero cards. See: http://hero.lbl.gov/
c. Performance review (PMP) feedback from supervisor

13. Controls

There are a number of processes and programs available to proactively control hazards in the workplace. These are fully described in PUB-3000, the "EH&S Manual". The specific sections are referenced and linked for each control for more detailed information. Controls for hazards commonly found in ETA include:

a. **Biohazards**- see PUB-3000, Chapter 26 "Bio-Safety"
b. **Chemicals**- see PUB-3000, Chapter 45 "Chemical Hygiene and Safety Plan"
c. **Cryogenics**- see PUB-3000, Chapter 7 "Pressure Safety and Cryogenics"
d. **Electrical**- see PUB-3000, Chapter 8 "Electrical Safety"
e. **Engineered Nanomaterials –** see PUB-3000, Chapter 45, Work Process S – Specific Controls for Engineered Nanomaterials
f. **Ergonomics**- see PUB-3000, Chapter 17 "Ergonomics"
g. **Exposure Monitoring**- see PUB-3000, Chapter 4 "Exposure Assessment"
h. **Fall Protection**- see PUB-3000, Chapter 30 "Fall Protection Program"
i. **Fire Prevention and Protection-** see PUB-3000, Chapter 12 "Fire Prevention and Protection"
j. **Gases**- see PUB-3000, Chapter 13 "Gases"
k. **Hoods and Ventilation**- see PUB-3000, Chapter 4.6 "Ventilation, Hoods, and HEPA Filters"
l. **Hazardous Waste**- see PUB-3000, Chapter 20 "Waste Management"
m. **Human Subjects-** see PUB-3000, Chapter 22 "Research with Human and Animal Subjects"
n. **Ionizing Radiation**- see PUB-3000, Chapter 21 "Radiation Safety"
o. **Lasers**- see PUB-3000, Chapter16 "Laser Safety"
p. **Lock-Out/Tag-Out**- see PUB-3000, Chapter 16 "Lock-out/Tag-out and Verification"
q. **Medical Surveillance**- see PUB-3000, Chapter 3 "Health Services"
r. **Non-Ionizing Radiation**- see PUB-3000, Chapter 4.4 "Non-Ionizing Radiation"
s. **Personal Protective Equipment**- see PUB-3000, Chapter 19 "Personal Protective Equipment"

14. Accident Investigation

Accident reporting and investigation requirements are detailed in PUB-3000, Chapter 5.1 "Incident Reviewing and Reporting.

a. Injuries

All occupational injuries and illness cases must be reported promptly to your supervisor and LBNL Health Services. Typically, the supervisor will direct the injured employee to report to Health Services for evaluation and treatment. When the injured employee does not or cannot report to Health Services at the time of injury, the supervisor must promptly notify Health Services of the injury. Health Services will initiate the Incident Review process by notifying the supervisor, ETA Safety Manager, and the EH&S Division. Health Services will also initiate any required reports for workers' compensation purposes.

All electrical shocks, no matter how minor, must be immediately reported to Health Services. A medical examination must be conducted to determine any potential health effects. For serious shocks, immediately call **X911** for medical assistance.

In the event of off-hour injuries, report to the Fire Department **X911** for first-aid treatment or for transport to off-site medical care. The Fire Department will notify Health Services to initiate all required reviews and reporting.

For work-related injuries that occur off site or away from the Laboratory, the injured employee or supervisor must notify Health Services as soon as possible.

Certain injuries may be reportable to DOE/BSO as required by the "Occurrence Reporting and Processing System" (ORPS). There are levels of reporting and reporting timelines depending on the severity of the injury. See PUB-3000, Chapter 15 "Occurrence Reporting" for specific details.

b. Near Miss
A near miss is an event that could have caused a serious injury or illness but didn't. Reporting these types of events helps to identify hazards and facilitate safety improvements in the workplace. A near miss should be reported to your supervisor or the ETA Safety Manager for follow-up. If necessary, a Corrective Action Tracking System (CATS) report should be issued to prevent a recurrence.

c. Lessons Learned
In the course of our work, we may experience either improved work practices or adverse situations that may benefit others if they are made aware. When we share "lessons learned," it can prevent a repeat incident or increase the likelihood of a positive outcome. ETA employees are encouraged to share ES&H lessons learned with their fellow workers and their supervisor. Go to Lessons Learned and Best Practices to submit a lesson learned.

15. Non-Conformance

There are several processes available for identifying and correcting EHS issues, hazards or compliance matters. These include the following:

a. Corrective Action Tracking System (CATS)- This system is used for tracking of corrective actions associated with accidents, near miss events, inspections, walkthroughs, and other ES&H related issues. A corrective action request is electronically generated in the CATS system by going to: Corrective Action Tracking System. The request is assigned and tracked until resolution.

b. Occurrence Reporting and Processing System (ORPS)- Significant incidents and occurrences related to the environment, health, and safety must be reported to Lab management and the Department of Energy in a prompt manner. There are various types of reportable occurrences and reporting levels. See PUB-3000, Chapter 15 "Occurrence Reporting" for specific details.

c. Work Request- Some safety issues can be resolved by using the formal Facilities work request system. Some safety issues can be given priority and addressed quickly. The Facilities Work Request Center can be accessed by going to: Facilities Work Request System

d. Safety Concerns- Employees are encouraged to report unsafe conditions. LBNL has established a means of reporting safety concerns through the "Safety Concerns" website. In addition, concerns can be emailed to: safetyconcerns@lbl.gov or by calling X5514.

e. Stop Work- All ETA personnel, sub-contractors, and participating guests are responsible for immediately stopping work activities that are considered to be an imminent danger and reporting them by calling **X6999**. The "stop work" policy can be found at: Stop Work

16. Performance Monitoring

The ETA Safety Manager will track key safety and health metrics to monitor the effectiveness of this ISM Plan. The following ETA data will be tracked on a monthly basis:

- Accidents, Incidents, Near Miss
- Safety Training status
- Work Planning and Control Project/Activity status
- Inspection Status
- Open Corrective Action Requests
- Open Ergonomic Assessments and Follow-up Actions
- Significant Safety Events and Lessons Learned

The ETA Safety Manager will distribute the key safety and health metrics results to the Associate Laboratory Director, all Safety Committee members, and ETA Division Directors and Deputy Directors on a monthly basis. The metrics will also be communicated to ETA employees by posting to the ETA Safety Website, central bulletin boards in ETA occupied buildings, ETA Safety website, and presented at periodic employee meetings.

17. Emergency Response

All ETA personnel must understand how to call for emergency assistance if needed and how to safely evacuate their work area/building. See PUB-3000, Chapter 9 "Emergency Services" for details on LBNL emergency requirements. ETA requirements are as follows:

a. Emergency Notification
   - For life threatening events such as: fire, chemical spill, or serious injury immediately call **911.**
   - For non-life-threatening emergencies, immediately call **X6999** or **(510) 486-6999.**
   - Emergency Response Guides are posted in all ETA building hallways and lab areas.
   - Building occupants are notified of emergencies through activation of the building fire alarm system, public address system, and the "Lab Alert" system.
   - LBNL maintains a voluntary cell phone emergency alert broadcast system called "Lab Alert". To register go to: Lab Alert.

b. Building Evacuation
   - Building evacuation location maps are posted in all ETA building lobbies.
   - In the event of fire alarms, immediately evacuate the building.
   - Evacuate immediately.
   - Walk do not run.
   - Do not use elevators.
   - Report to the building assembly area.
   - Do not leave the assembly area unless instructed to do so.

c. Fire Extinguishers

- Fire extinguishers are located near all ETA buildings and lab areas.
- Employees who have completed EHS0520 and EHS0522 "Fire Extinguisher Safety" are authorized to extinguish a small fire.
- Fire extinguishers must be properly maintained and readily accessible.
- Class D fire extinguishers are available near lab areas that use water reactive metals.

d. Chemical Spill Clean-up
- The following requirements must be met prior to attempting a chemical spill cleanup:
  - High school students and interns are NOT permitted to perform cleanups.
  - There is no potential release to the environment.
  - There are no personal injuries resulting from the spill.
  - The chemical hazards are known.
  - Clean-up procedures are known and proper cleanup materials are available.
  - Proper personal protective equipment is available and worn.
  - The spill can be cleaned-up by two people in one hour or less.
  - All personnel have completed EHS0348 "Chemical Hygiene and Safety Training".
  - The spill does not involve elemental mercury or beryllium.

- If chemical spill cleanup requirements are not met or if there are any doubts about the ability to effectively clean up the spill, then leave the area immediately.
  - Close the door.
  - Call X**911** for fire department assistance.
  - Stay close by and control access.
  - Post the entrance with a warning label stating "SPILL- DO NOT ENTER"
- ETA chemical usage areas must have adequate spill cleanup supplies available for addressing small spills.

e. Emergency Shower/Eyewash
- Emergency eyewash/shower stations are located in ETA lab areas where hazardous materials are used.
- Emergency eyewash/shower stations must be properly maintained and readily accessible.
- In the event of chemical contact, rinse the exposed area for a minimum of 15 minutes. Seek immediate medical attention.

f. Building Emergency Teams (BET)
- ETA maintains Building Emergency Team members in Buildings 62, 70, and 90.
- Each BET member completes EHS0154 "Emergency Team Training", EHS0520 "Fire Extinguisher Part 1", EHS0522 "Fire Extinguisher Part 2" and EHS 0116 "First Aid" training. Cardiopulmonary (CPR) training is optional.
- The BET will assist employees when evacuating the building and ensure that a headcount is taken.
- The BET will assist any emergency responders from the fire department.

g. Emergency Planning

- Emergency Guides are posted in all technical research areas and common areas such as conference rooms. The guides contain instructions on how to respond to emergencies such as injuries, fires, chemical spills, and earthquakes: Emergency Response Guides
- An electronic version of the Emergency guide has been made available to all personnel. The "In Case of Crisis" application can be uploaded by going to: In Case of Crisis Application
- All personnel should make themselves familiar with the locations of emergency equipment in their work area. This includes: fire extinguisher, emergency eyewash/shower, and fire alarm pull station.
- All personnel should be aware of at least two evacuation routes from their work area. In addition, they need to know their assigned assembly area when evacuated.

h. Continuity of Operations Plan (COOP)
- ETA maintains a Continuity of Operations Plan (COOP) for planning in the event of a major disruption in operations such as significant earthquake, fire, etc.
- The COOP contains key ETA personnel contact information.
- The COOP will be reviewed and updated annually under the direction of the Area Deputy Director of Operations.

18. ES&H Resources

Principal Investigators are expected to incorporate appropriate resources for ES&H needs in all research proposals, to include provisions for safety equipment, permits, training, maintenance, waste disposal, and facilities modifications.

19. Revision History

Rev 0: 6/5/98	Rev 4: 6/29/03	Rev 8: 10/1/07	Rev 12: 4/1/14
Rev 1: 10/20/99	Rev 5: 6/9/04	Rev 9: 12/18/08	Rev 13: 4/13/15
Rev 2: 6/23/01	Rev 6: 6/3/05	Rev 10: 2/22/12	Rev 14: 4/22/16
Rev 3: 7/10/02	Rev 7: 6/19/06	Rev 11: 2/25/13	Rev 15: 5/5/17
Rev 16: 6/20/18			

ETA Integrated Safety Management Plan (6/20/18)
Approved By:

Date:

Ramamoorthy Ramesh
ETA Associate Laboratory Director

Date: 6/22/18

Jerri Carmo
ETA Area Deputy, Operations

Date: 6/29/18

Mary Ann Piette
Building Technology and Urban Systems (BTUS) Division Director

Date: 6/26/2018

Tom Kirchstetter
Energy Analysis and Environmental Impacts (EAEI) Division Director

07/10/18

Date:

Ravi Prasher
Energy Storage and Distributed Resources (ESDR) Division Director

Date: 7/10/18

Ilan Gur
Cyclotron Road (CYR) Division Director

Date: 6/20/18

Ron Scholtz, CHMM
ETA Safety Manager

ATTACHMENT 1
CONTACT LIST OF ETA SAFETY PERSONNEL

Date: 6/20/18

Safety Responsibility	Name	Phone	Email
Safety Manager (DSC)	Ron Scholtz	(510) 495-8137 (408) 504-5419 (cell)	rgscholtz@lbl.gov
Electrical Safety Officer (ESO)	Ari Harding	(510) 495-2566 (415) 845-5672 (cell)	aharding@lbl.gov
Safety Advisory Committee (SAC) Representative	Peter Therkelsen	(510) 486-5645	ptherkelsen@lbl.gov
Building Manager (B60, B62, B63, B51F, B70)	Joseph Silveira	(510)486-7010 (510) 549-6202 (cell)	jcsilveira@lbl.gov
EHS Division Liaison	Heather Madison	(510) 486-7609 (510) 552-8622 (cell)	hnmadison@lbl.gov
EHS Division Industrial Hygienist	Julie Zhu	(510) 486-6871 (510) 309-4886 (cell)	lizhu@lbl.gov
EHS Division Waste Management Liaison	Kelley Etherington	(510) 486-5867 (510) 542-0612 (cell)	ketherington@lbl.gov
Ergonomic Advocates	Anita Estner Judith Novak Charolette Standish Paula Ashley Deborah Rabuco Julie Glover Kelly Perce Melanie Miller Marion Russell	(510) 486-6848	ergo@lbl.gov

Contact the ETA Safety Manager for current listings of ETA Lab Area Safety Leads, Activity Leads, and Building Emergency Team (BET) members

ATTACHMENT 2
BTUS DIVISION SAFETY MANAGEMENT PLAN

BTUS Division Safety Management

This document is intended to outline the implementation of Integrated Safety Management and an associated safety culture in the operation of Building Technology and Urban Systems (BTUS) facilities. BTUS manages this implementation through a graduated process based on the hazards to which its employees are exposed; however, we incorporate safety awareness universally through our division.

Communication to employees

BTUS emphasizes the importance of safety awareness through regular communication with staff. All three BTUS departments hold monthly department meetings. Safety is a standing agenda item in each of those meetings. The BTUS Division Director also convenes monthly meetings with division deputies, department heads and deputies, and PIs. Safety is a standing agenda item in those meetings, too. Department meetings focus largely on ergonomic or basic safety issues to which all employees at the Lab are exposed (e.g., not texting while walking) and offer the opportunity for employees to raise issues of concern to management. Division meetings focus on division employee status with regard to mandatory training, as well as managing hazards in division experimental facilities and raising issues of concern or coordination with Laboratory management (e.g., EHS).

Management of experimental facilities

In addition to the general hazards to which all BTUS employees are exposed, certain hazards exist in specific BTUS experimental facilities (e.g., FLEXLAB, Building 64 fabrication facility). The predominant hazard to which employees are exposed in these facilities involves the use of power tools or experimental apparatus that can be dangerous if not operated properly.

In all cases of spaces in which specific hazards are present, BTUS has implemented a process of (a) creating specific work activities in the LBNL Work Process Control system that enumerate the hazards to which employees are exposed; (b) identifying responsible parties to oversee those activities and coordinate safety in the facility; (c) posting information about the hazards and the responsible parties outside each facility; and (d) training any staff assigned to those WPC activities on mitigating the hazards in the facility (or facilities) in which they work.

BTUS also employs an electrical safety coordinator (Ari Harding) who takes responsibility for review of electrical safety practices in all BTUS experimental facilities and coordinates with LBNL staff with regard to the electrical safety of experimental equipment.

BTUS management attention to safety

BTUS has established a quarterly walk-through for each of its research facilities. This walk-through is led primarily by the Division Deputy for Operations in coordination with the ETA Safety lead. At each facility, the responsible safety coordinator is asked three questions: (1) Who uses the facility? (2) To what hazards are users exposed? (3) How are those hazards mitigated?

The most recent walkthrough was held on April 17-18. The facilities were found to be in good operational condition. Two specific issues of ongoing attention were noted: (1) Unlike other research facilities at LBNL, many of the BTUS research facilities are not in continuous use. They are used intermittently as particular research projects may require. As a result, it is difficult to get a sense of “typical” employee use of the space and systems with regard to safety, as there is not a consistent routine for facility use. It is therefore critical that the safety coordinator for each space be very aware of each use case of the facility and refresh necessary practical safety training

appropriately. (2) Perhaps because of this intermittent use, budgeting and planning for operational maintenance is not strong. There are no explicit plans for scheduled maintenance, nor clear integration of facility operating cost into research proposal budgeting. This is an area for potential enhancement.

ATTACHMENT 3
CYCLOTRON ROAD DIVISION SAFETY MANAGEMENT PLAN

Safety Management Overview

The following is an overview of Cyclotron Road processes and structures to manage and maintain the safety culture of Cyclotron Road (CY), a division in the Energy Technology Area (ETA) at Lawrence Berkeley National Laboratory.

1. Cyclotron Road Facilities

Cyclotron Road Division headquarters is located in building 50 where the work performed is in an office environment. In addition, Cyclotron Road manages a total of (10) wet and dry laboratories located in several buildings on the campus of LBNL and at Potter Street (977). The following is a list of division spaces including the location, facility type and the responsible principal investigator (PI):

Bldg.	Room	Description	Type	Principal Investigator
50	4038M	Conference Room	Office	Ilan Gur
50	4038	Main Office, Headquarters	Office	Ilan Gur
50	4036	Shared Office, Hoteling	Office	Ilan Gur
977	251B	Potter Street Shared Offices	Office	Ilan Gur
977	251C	Potter Street Shared Offices	Office	Ilan Gur
977	271	Potter Street Shared Lab	Wet Lab	Ilan Gur
977	272	Potter Street Shared Lab	Wet Lab	Ilan Gur
977	274	Potter Street Shared Lab	Wet Lab	Ilan Gur

70	123	Thermionics Lab	Wet Lab	Ilan Gur
70	125A	Office, attached to lab	Office	Ilan Gur
62A	101-107	Shared Office Space	Office	Ilan Gur
62	111, 113, 115	Shared Office Space	Office	Ilan Gur
62	108	Cohort Shared Lab	Wet Lab	Ilan Gur
62	135	Cohort Shared Lab	Dry Lab	Ilan Gur
62	149, 155	Cohort Shared Lab	Wet Lab	Ilan Gur

2. Safety Management Activities

2.1 Overview

Cyclotron Road reviews and manages the implementation of the safety processes based on the hazards to which the employees are exposed. These processes are different for office workers, lab personnel, and test facilities staff. With the help of ETA Safety Lead, Ron Scholtz, Cyclotron Road develops and maintains specific work activity web-based systems as part of the LBNL Work Planning and Control (WPC) program. These systems describe in detail the specifics of the work and associated hazards for each work type.

2.2 Office Safety

The office staff hazards are primarily related to ergonomic issues and the safe operation of the office electrical appliances. The Ergonomic Self-Assessment is required training for all division staff assigned to our two primary WPC work activities. Any ergonomic issues are referred to the ergonomic coordinators, and corrective actions are taken as needed. Office areas are included in our quarterly safety walkthroughs to look for potential hazards related to earthquake, trip and fall hazards, and egress issues.

2.3 Laboratory Safety

Chemical Hazards

Addressing the chemical laboratories hazards is a key issue for Cyclotron Road. The lab's safety structure implements several layers of checks and controls starting with the project principal investigators, work

leads and lab safety coordinators. The lab's staff maintain the required labeling system and activity logs and post the hazards information. Safety leads for each lab space work closely with the ETA Safety Coordinator, Ron Scholtz, to set up required chemical storage and management processes for their research needs.

Electrical Hazards

All newly acquired equipment is reviewed for electrical safety compliance and appropriate certification in accordance with the LBNL Electrical Equipment Inspection Program (EEIP) requirements. If any equipment is not certified appropriately by a Nationally Recognized Testing Lab (NRTL), then a field inspection is requested in coordination with the ETA Safety Lead, Ron Scholtz, and LBNL Electrical Safety staff.

Inspections

Cyclotron Road (CY) requires each research team in dedicated CY labs to perform a weekly safety overview and fill out a checklist form online. This data is reviewed weekly by the CY program management. Each safety lead is responsible for notifying team members and CY management if there are corrective actions identified by the self-inspection. CY has also established a quarterly safety walkthrough for dedicated Division laboratories. The CY Chief Technologist leads this walkthrough in coordination with the CY Program Manager and the ETA Safety Lead. The walkthroughs include informal discussion with lab staff to understand the unique activities and processes that they are performing in that space. The CY Chief Technologist and other participants also provide input about the observed safety issues and potential improvements to lab safety, as needed.

Corrective Actions

Corrective actions for any safety issues are generated through self-report from project team members, ETA Safety staff observations, or through Division safety walkthrough observations. Each corrective action has a start date, description of the issue, person(s) responsible, and status. Significant safety issues are tracked through the LBNL Corrective Action Tracking System (CATS). The individual labs' project leads, the PI and ETA's safety lead have key roles in tracking the implementation of the corrective actions.

3. Safety Management Communications

The CY Division management team meets on a weekly basis with all research project leads. During this "Cohort Tag-Up" meeting, all incomplete safety trainings are reviewed and project leads are asked to work with their team members to ensure quick resolution of pending trainings. Regular safety updates and walkthrough observations are discussed at these weekly meetings, as well. Any issues regarding unsafe conditions or corrective actions required are reviewed with the project leads and discussion of best practices and lessons learned is encouraged. As needed, the CY Program Manager communicates with all division members about outstanding actions required in the WPC or delinquent training, in coordination with the ETA Safety Lead.

ATTACHMENT 4
EAEI SAFETY DIVISION MANAGEMENT PLAN

EAEI Division Safety Management Overview

The following is an overview of EAEI's processes and structures to manage and maintain safety culture in the Energy Analysis and Environmental Impacts (EAEI) Division.

EAEI's Laboratories and Facilities

EAEI's staff is primarily located in Bldg. 90 where the work is done in an office environment. In addition, EAEI utilizes a total of (21) dry and wet experimental laboratories and (2) testing facilities located in several buildings on LBNL's campus. The following is a list including the location, facility type and the responsible PI:

Bldg.	Room	Lab Name	Lab Type	PI
31	100A	Refrigerator Test Chamber	Chamber	Greg Rosenquist
31	106B	Refrigerator Test Instrumentation	Dry	Greg Rosenquist
46	232	Appliance Standards Lab	Dry	Henry Willem
51F	101	Residential Gas Stove	Dry	Brett Singer
63	101	Ventilation Indoor Air Quality	Shop	Brett Singer
63	103	Atmospheric Biogeochemistry	Dry	Marc Fischer
63	101A	Ventilation Indoor Air Quality	Dry	Brett Singer
64	101	Air Conditioner Test Chambers	Chamber	Greg Rosenquist
70	103	Atmospheric Aerosol Characterization	Wet	Hugo Destaillats
70	138	Ventilation Indoor Air Quality	Wet	Hugo Destaillats
70	201	Heterogeneous Chemistry & Prep	Wet	Hugo Destaillats
70	215	Atmospheric Aerosol Research	Wet	Tom Kirchstetter
70	217	Building Materials & Indoor Environment	Wet	Lara Gundel
70	221	Volatile Organic Analysis	Dry	Randy Maddalena
70	223	Volatile Organic Analysis	Wet	Randy Maddalena
70	248	Flammables Storage Room	Dry	Randy Maddalena
70	258	Glassware Washing	Wet	Randy Maddalena
70	260	Sample Prep	Wet	Randy Maddalena
70	275	Heterogeneous Chemistry & Prep	Wet	Lara Gundel
70	278	Indoor Environment Sample Analysis	Wet	Randy Maddalena
70	289	Indoor Environment Chamber	Dry	Hugo Destaillats
71	106	Indoor Environment Lab	Dry	Brett Singer

Offices, Laboratories & Test Facilities Safety Structure

EAEI reviews and manages the implementation of the safety processes based on the hazards to which the employees are exposed. These processes are different for office workers, chemical lab personnel and test facilities staff.

With the help of ETA's safety lead Ron Scholtz, EAEI developed and maintains specific work activity web-based systems as part of LBNL's Work Process Controls. These systems describe in detail the specifics of the work and associated hazards for each work type.

The office staff hazards are primarily related to ergonomic issues and the safety operation of the office electrical appliances. Any ergonomic issues are referred to the ergonomic coordinators, and corrective actions are taken as needed. The administrative staff provides the necessary means (i.e., supplies) to address any safety needs. In the last several years, 100% of the Division staff has been equipped with high quality office equipment (i.e., chairs and desks).

Addressing the chemical laboratories hazards is a key issue for EAEI. The lab's safety structure implements several layers of checks and controls starting with the project principal investigators, work leads and lab safety coordinators. The lab's staff maintain the required labeling system and activity logs and post the hazards information.

The test chambers are new to EAEI. Both facilities (for testing AC and refrigeration equipment) perform complex operations that involve potential electrical hazards (i.e., high voltage) but also other hazards such as danger of falling, work with power tools, etc. LBNL's Facility staff periodically closely inspects and reviews the chambers' safety procedures, experimental apparatus and instrumentation.

EAEI Management Safety Activities

EAEI has established a bi-monthly safety walk-through for the Division laboratories and facilities. This walk-through is led by the Division Deputy for Operations in coordination with ETA's safety lead (Ron Scholtz) and, as needed, by ETA's electrical safety coordinator (Ari Harding).

EAEI's Deputy for Operations maintains a walk-through schedule, which allows periodical visits to each lab/facility and systematically checks and addresses any potential issues. The lab self-inspection form is initialed to document each visit, and EAEI's Deputy maintains a log of observed issues and required corrective actions. The walk-throughs are very detailed and include informal discussion with lab staff to provide input about the observed safety issues and potential improvements of the lab safety. Principal Investigators also perform walkthroughs of their areas monthly. These are documented on the lab self-inspection form. In addition, the Division director performs a walkthrough of all technical areas annually. Specific attention is paid to new lab staff (postdocs, campus researchers, students). It is particularly critical for this staff that the safety coordinator for each space familiarizes them with the safety specifics relate to their area of work.

Corrective actions for any safety issues are generated by the safety committee or through walkthrough observations. Each corrective action has a start date, description of the issue, person(s) responsible, and status. Significant safety issues are tracked through the LBNL Corrective Action Tracking System (CATS). The individual labs' PIs and ETA's safety lead have a key role in tracking the implementation of the corrective actions.

Safety Communications to Staff

Communicating the safety issues to the staff is an important aspect of EAREI's safety culture. Safety is a standing agenda item during EAEI's monthly leadership meetings, which involve division deputies, department heads, group leads and PIs. Division leadership meetings focus on important safety announcements and review of division employee status with regard to mandatory training, as well as managing hazards in division experimental facilities and raising issues of concern or coordination with LBNL's management. The ergonomic or basic safety issues to which all employees at the Lab are exposed are addressed by the Division Administrator, who regularly distributes miscellaneous safety announcements and notes from ETA's safety lead and from the Lab management. The Division Administrator also sends (as needed) reminders about any outstanding safety training requirements

ATTACHMENT 5
ESDR DIVISION SAFETY MANAGEMENT PLAN

ESDR Division Safety Management Plan

ESDR Safety Committee

ESDR established the Division Safety Committee to develop and promote a healthy and safe work environment for all ESDR personnel. The Committee consists of Committee Chair (Deputy Division Director, Robert Kostecki), ESDR Group Leaders (Gao Liu, Adam Weber, Rahul Chopra, Vasileia Zorba, Vincent Battaglia), ETA Safety Manager (Ron Scholtz), EHS Division Liaison (Heather Madison), and DOE Site Office representative (Michael Carr)

The primary purpose of the Committee is: (i) full incorporation of the Integrated Safety Management (ISM) plan in the ESDR management structure; (ii) support researchers, supervisors, leads, students, and visitors to fulfill safety expectations and behaviors while performing their work at LBNL. The committee meets at least quarterly.

Management of Technical Lab Areas

Each ESDR lab area is assigned to a Principal Investigator (PI) who has overall responsibility for that area. The assigned PI is identified on the hazard placard posted on the entry to each lab area. A Lab Area Safety Lead is identified by the PI who oversees the day to day operation of the lab area. This includes ensuring equipment is operating properly, chemicals/gases are properly stored and used, and personal protective equipment is available.

There are one or more Work Activities developed for each lab area. The Work Activities are written documents that describe the scope of work being performed, associated hazards/controls, and training requirements. Each Work Activity has an assigned Activity Lead. The Activity Lead assigns personnel and determines their work authorization level.

Each ESDR lab area is expected to be well maintained following good housekeeping practices. All defective equipment must be taken out of service and either repaired or salvaged. Chemicals must be properly identified and stored.

Walkthroughs and Inspections

Principal Investigators are expected to perform a safety walkthrough of their assigned lab areas at least quarterly. This is documented on a “Quarterly Self-Inspection” form and posted in the area. Any issues identified must be documented and corrected by the PI.

Each management group leader is also expected to perform a walkthrough of their areas (labs and offices) at least quarterly. This should be documented by appropriate comments and initialing the self-inspection check sheet posted in the lab area. Necessary corrective actions must be taken immediately.

Satellite Accumulation Area (SAA) hazardous waste inspections of each ESDR lab area are performed quarterly. These are led by the Division Safety Coordinator and a representative from the EHS Division Waste Management Group. Results are reported to the Principal Investigators. The PI’s are responsible for taking corrective action on any findings in their areas.

ESDR Self-Assessment

An ESDR Safety Stand Down will be performed at least annually. One or more safety topics will be selected as focus areas. Each ESDR Principal Investigator is expected to coordinate with their personnel and prepare a self-assessment for the Safety Stand Down. The results of their self-assessments will be posted. An ESDR top management team will perform a walkthrough and will evaluate each area for safety performance based on the posted self-assessment forms.

Further Stand Downs may be required by ESDR top management in the event there is are safety issues of concern that require a stoppage of work to better evaluate and correct the situation.

ESDR personnel and work areas are also included in the ETA-wide self-assessment program. There are 2-3 self-assessments performed annually based on selected topics of interest.

Communications

Each Principal Investigator is expected to conduct regular meetings with their personnel to discuss current work being performed. Part of this discussion must include safety considerations including work authorizations, changes in scope, additional controls, and any problems being encountered.

Activity Leads and Area Safety Leads will provide On the Job Training (OJT) to workers for specific equipment and operations that occur in their assigned lab areas. OJT requirements are specified in applicable Work Activities.

The Division Safety Coordinator regularly provides “ETA Safety Alerts” that can be used by PI’s as safety discussion points during group staff meetings. These are also distributed to ESDR personnel.

Door hazard placards are posted at the entrance of each lab area. These identify the principle hazards, minimum personal protective equipment requirements, assigned Principal Investigator, Lab Area Safety Lead, Building Manager, and Division Safety Coordinator.

Safety bulletin boards are available in Buildings 62 and 70 for postings of safety metrics, safety alerts, and other information of interest.

Accidents/Incidents

Accidents are reported immediately to Health Services. An accident notification is distributed to the supervisor and Division Safety Coordinator. An accident investigation must be performed by the supervisor and Division Safety Coordinator. The Deputy Division Director and Division Director will be made aware of their findings. Any corrective actions will be coordinated by the supervisor.

ATTACHMENT 6
Example Technical Area Door Placard

CAUTION

Division: ESDR Bldg.: 70 Room: 108
Electrochemistry

MINIMUM AREA PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS:

Safety glasses with side shields, long pants, and closed toed shoes.
Other PPE may be necessary (e.g., 100% cotton flame resistant lab coat, appropriate chemical gloves, or face shield) when handling hazardous chemicals, or for other hazardous tasks. NO Food or Drink in lab.

APPLICABLE FORMAL WORK AUTHORIZATIONS:

EE-0035 Material Preparation and Electrochemical Testing	EE-0036 General Chemistry

COMMENTS:

Hazards & controls details: See Lab A-Z Index for Activity Manager, Safety Data Sheets (SDSs), and Chemical Inventory (CMS).

CONTACT INFORMATION (list additional contacts in the space provided):

Role	Name	Office Location	Work Phone #	Other Phone#
Area Safety Leader	Atetegeb Meazah Haregewoin	70-193	(510) 486-4360	(510) 486-4678
Principal Investigator	Robert Kostecki	90-3026D	(510) 486-6002	(925)519-2978 (cell)
Building Manager	Susan Synarski	90-3027D	(510) 495-2534	(510) 502-4666
Div Safety Coordinator	Ron Scholtz	90-3027E	(510) 495-8137	(408) 504-5419 (cell)

Date Completed: 2/28/17

ATTACHMENT 7
ETA Lab Area Quarterly Self-Inspection Form

ETA Lab Area Quarterly Inspection Checklist

Building:_____ **Room:** _____

Inspected By: _____

Date: _____

Item	Yes	No	N/A
1. **Chemical storage areas are free of spills and leaks**. Work surfaces are free of residues. Work areas are regularly wiped.			
2. **Chemical and sample containers are properly labeled for contents and hazard**. Chemical containers entered into the CMS inventory system.			
3. **Chemical containers are properly stored in containment trays or cabinets**. Incompatible chemicals are properly segregated. Containers are kept closed.			
4. **Satellite Accumulation Area (SAA) is in compliance with hazardous waste requirements**. Wastes are properly labeled. Accumulation is <275 days.			
5. **Emergency equipment and supplies are in good order.** Eyewash/shower has unobstructed access. Chemical spill cleanup supplies accessible. Postings up to date.			
6. **Proper Personal Protective Equipment (PPE) is available**, being used, and is properly stored. Safety glasses, chemical gloves, lab coats, closed toe shoes in use.			
7. **Hood sash is kept closed when not in use.** Hood sash is operating within normal exhaust requirements (no alarms). Hood sash closes properly.			
8. **Equipment is seismically secured**. Wheeled equipment and objects over 4 feet tall secured where egress could be blocked. Straps secured in place.			
9. **Electrical power cords and plug strips are in good condition**. They do not present a trip hazard. Electrical panels are not blocked. Equipment panels secured.			
10. **Lab area housekeeping is satisfactory**. The area is free of unnecessary clutter. There are no trip hazards. Sharps are properly stored. Glove boxes are orderly.			

ATTACHMENT 8
Example ETA Safety Alert Notice

Energy Technologies Area

SAFETY ALERT

April 2, 2018

Bicycle Safety

Hazards: Falls, Broken Bones, Contusions, Scrapes

LBNL has recently experienced a number of bicycle-related crashes. Most have resulted in serious injuries including broken bones and concussions. It is critically important for all individuals who share the roadways at the Laboratory to exercise caution at all times for their own safety and the safety of others. The LBNL Bicycle Coalition has developed a bicycle safety policy which can be accessed at: http://www2.lbl.gov/ehs/misc/BicyclePolicy.pdf

Here are some things you can do to prevent bicycle accidents:

1. Always wear a bike helmet.
2. Keep your bicycle well maintained. Have it checked regularly. This includes brakes, tires, and lights.
3. Stop and look for traffic before entering the road. Stop at all stop signs and red lights.
4. Watch your speed and follow the posted speed limits of 15 mph.
5. Be aware of pedestrians, other bicyclists, and moving or parked cars
6. Wear close-fitting, brightly colored clothing.
7. Do not wear headphones or talk on your cell phone while riding.
8. Keep both hands on the handlebars (except when signaling) and always sit on the seat.
9. Know and use hand signals for turning and stopping.
10. Always ride single file on the right side of the road.

If you have any concerns about road safety at LBNL, submit a LBNL "Safety Concern" at safetyconcerns@lbl.gov. You can also contact the ETA Safety Manager, Ron Scholtz X8137 for assistance.