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Environment, Safety, and Health Self-Assessment Report Fiscal Year 2010

Office of Contractor Assurance

Laboratory Directorate

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LAWRENCE BERKELEY NATIONAL LABORATORY

ENVIRONMENT, SAFETY, AND HEALTH SELF-ASSESSMENT REPORT

FISCAL YEAR 2010

Office of Contractor Assurance
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March 2011

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DISCLAIMER

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I. Introduction

The Lawrence Berkeley National Laboratory (LBNL) Environment, Safety, and Health (ES&H) Self-Assessment Program was established to ensure that Integrated Safety Management (ISM) is implemented institutionally and by all divisions. The ES&H Self-Assessment Program, managed by the Office of Contractor Assurance (OCA), provides for an internal evaluation of all ES&H programs and systems at LBNL. The primary objective of the program is to ensure that work is conducted safely and with minimal negative impact to workers, the public, and the environment.

Self-assessment follows the five core functions and guiding principles of ISM. Self-assessment is the mechanism used to promote the continuous improvement of the Laboratory's ES&H programs. The process is described in the *Environment, Safety, and Health Assurance Plan* (PUB-5344) and is composed of three types of self-assessments: Division ES&H Self-Assessment, ES&H Technical Assurance Program Assessment, and Division ES&H Peer Review.

The *Division ES&H Self-Assessment Manual* (PUB-3105) provides the framework by which divisions conduct formal ES&H self-assessments to systematically identify program deficiencies. Issue-specific assessments are designed and implemented by the divisions and focus on areas of interest to division management. They may be conducted by teams and involve advance planning to ensure that appropriate resources are available.

The *ES&H Technical Assurance Program Manual* (PUB-913E) provides the framework for systematic reviews of ES&H programs and processes. The ES&H Technical Assurance Program Assessment is designed to evaluate whether ES&H programs and processes are compliant with guiding regulations, are effective, and are properly implemented by LBNL divisions.

The *Division ES&H Peer Review Manual* provides the framework by which division ISM systems are evaluated and improved. Peer Reviews are conducted by teams under the direction of senior division management and focus on higher-level management issues. Peer Review teams are selected on the basis of members' knowledge and experience in the issues of interest to the division director.

LBNL periodically requests in-depth independent assessments of selected ES&H programs. Such assessments augment LBNL's established assessment processes and provide an objective view of ES&H program effectiveness. Institutional Findings, Observations, and Noteworthy Practices identified during independent assessments are specifically intended to help LBNL identify opportunities for program improvement.

This report includes the results of the Division ES&H Self-Assessment, ES&H Technical Assurance Program Assessment, and Division ES&H Peer Review, respectively.

II. Results of FY 2009 and FY 2010 Institutional Findings

Each year, during the course of conducting the ES&H Self-Assessment process, LBNL identifies institutional issues that require management action.

Actions completed to address findings identified in the Fiscal Year (FY) 2009 *ES&H Self-Assessment Report* include:

- Update of the Emergency Eyewash and Safety Showers (EESS) database.
- Revision of the LBNL Electrical Equipment Acceptance Program to clarify the responsibilities of Procurement, requestors (University Technical Representatives), and subcontractors/vendors regarding acceptance of products not certified by one or more Nationally Recognized Testing Laboratories (NRTL).
- Update of the LBNL *Institutional Integrated Safety Management (ISM) Plan*. Additional guidance was incorporated to include the ES&H Standards process, a revised Division ISM Plan Checklist, an institutional *ISM Improvement Project Plan*, and integration of the LBNL Environmental Management System per U.S. Department of Energy (DOE) Order 450.1A, *Environmental Protection Program*.
- Development and implementation of an online Subcontractor Job Hazards Analysis and Work Authorization (SJHAWA) Program.
- Provision of four-hour Asbestos Class III training to Facilities Division craft workers who may encounter asbestos-containing materials during the course and scope of their work.

The status of all institutional issues identified in the FY 2009 *ES&H Self-Assessment Report* is described in Appendix A.

Actions completed to address findings identified during FY 2010 include:

- Development of an electronic shipping document to address hazardous-material-transportation requests. This document can be attached to a shipping request generated via the Point & Ship Program.
- Revision of the Respiratory Protection Program to address subcontractor respiratory-protection requirements, including (1) a review of subcontractor program documentation, (2) the tracking of respiratory-protection approvals, and (3) a process for ensuring that medical services providers are provided feedback and guidance regarding LBNL medical documentation requirements.
- Revision of the Radiation Authorization Reporting System (RADAR) to ensure that X-ray authorizations accurately track the status of each X-ray unit.
- Revision of the MAXIMO® Work Control and Hazards process to ensure that work permit information is specifically referenced anytime a permit is required to conduct work.

- Development of online training modules for Personal Protective Equipment, e.g., head, eye, hand, foot, and skin protection, for construction and shop workers. A link has been implemented in the Job Hazards Analysis (JHA) system to document such training.

The status of all institutional issues identified during FY 2010 is described in Appendix B.

III. Division ES&H Self-Assessment Program

During FY 2010, LBNL transitioned from an institutionally developed set of ES&H performance measures to one that is self-directed at the division level. Divisions conduct formal, issue-specific ES&H self-assessments to systematically evaluate selected work activities, workplaces, programs, or operations. The key objectives of formal self-assessments are the identification of program deficiencies and sharing of Noteworthy Practices.

The Division ES&H Self-Assessment Process is a tailored, risk-based approach to assessing ES&H program effectiveness. Each self-assessment is guided by a formal plan that describes focus areas, methodologies, lines of inquiry, and evaluation frequencies. It addresses those programs and hazards of importance to the division and, in the process, identifies Institutional Findings, Observations, and Noteworthy Practices.

Each division conducts multiple self-assessments during the year. They are generally conducted by teams and involve advance planning to ensure that appropriate resources are available during the self-assessment. Self-assessment reports are shared by the divisions.

Formal ES&H self-assessments, combined with ongoing informal assessment activities (including workplace inspections, hazard reviews, walk-throughs, interviews with managers and staff, and reviews of ES&H performance indicators), constitute the Division ES&H Self-assessment Program.

The Division ES&H Self-Assessment Program was implemented in 16 divisions. A total of 54 ES&H self-assessments were performed. The areas assessed included:

Accelerator and Fusion Research Division

Earth Day	Work Outside Normal Hours
Ergonomics	

Advanced Light Source

Accident Prediction Exercise	Accelerator Safety
Institutional Requirements	

Chemical Sciences Division

Satellite Accumulation Area Inspection	Hazardous Waste Management
Job Hazards Analysis Field Observations	

Computing Sciences Directorate

Computer Workstation Ergonomics	Work Authorizations and Training Needs
Review and Update of the Integrated Safety Management Plan	Building Emergency Teams
Computer Room Fire Protection	Environmental Management
Safety Walk-Throughs	

Operations Directorate

Assessment of Ergonomics Risk Management	Assessment of Issues Management
New Employee Training	

Environment, Health, and Safety Division

Ergonomics	JHA and Required Training
Formal Authorizations	Effectiveness of EHS Division Walkthrough and SAAR Programs

Earth Sciences Division

Laptop Ergonomics	New Employee and Staff Orientation

Engineering Division

Ergonomics Performance and Workstation Configuration	Multi-Division Collaboration and Support of the Ultra-High Vacuum Cleaning and Plating Facility
Observation of Job Hazards Analysis Completion Rate and Incomplete Required Training	Satellite Accumulation Areas

Facilities Division

MAXIMO® Work Planning and Control	Subcontractor JHA and Work Authorization (SJHAWA) Process
Respiratory Protection	

Information Technology Division

Effectiveness of Division Safety Communications	Effectiveness of Subcontractor Job Hazards Assessment and Work Authorization (SJHAWA) Processes
Emergency Preparedness of Information Technology Data Centers	

Joint Genome Institute

Chemical Inventory Management	Line Management Safety Walkthrough Program
Ergonomics Program Perceptions: Supervisor/ Employee Relationships	

Life Sciences Division

Cryogen Safety	Job Hazards Evaluations
Electrical Safety and Lock Out/Tag Out	Hazardous Waste Management

Materials Sciences Division

Computer Workstation Issues: Students and Postdocs	Management of Satellite Hazardous Waste Accumulation Areas
Chemical Exposure	

Nuclear Science Division

Ergonomics Safety	On-the-Job Training

Physical Biosciences Division

Hazardous Materials Transportation Review	Laser Safety Procedure Review
Hazard Identification and Control Implementation	Satellite Accumulation Area Compliance

Physics Division

Ergonomics	On-the-Job Training
New Projects Hazards Analysis	

Noteworthy Practices and Institutional Findings identified by the Division ES&H Self-Assessment Program during FY 2010 are included in Section VI and Appendix B, respectively.

IV. ES&H Technical Assurance Program

The ES&H Technical Assurance Program (TAP) provides the framework for systematic reviews of ES&H programs and processes. The intent of TAP assessments is to provide assurance that ES&H programs and processes are compliant with their guiding regulations, are effective, and are properly implemented by LBNL divisions.

The EH&S Division (EHSD) owns and manages TAP. In collaboration with OCA, EHSD establishes and maintains a three-year ES&H TAP Assessment schedule, provides training and guidance to ES&H Subject Matter Experts (SME), and reviews TAP assessments to identify program-improvement opportunities. TAP review frequency varies, depending on subject matter hazards and risk levels. SMEs develop TAP assessment plans and conduct assessments according to those plans.

TAP assessments include regular inspections of the workplace, work activities, and facilities. Assessments also include reviews of documentation such as formal work authorizations, hazardous work permits, and ES&H and Corrective Action Tracking System (CATS) databases. The primary elements of TAP assessments are:

- Formal authorization compliance
- Regulatory compliance
- Program or process effectiveness
- Issues documentation (via the CATS database) and timely resolution
- Corrective Action effectiveness (implemented via data monitoring and analysis)
- Lessons Learned effectiveness

Systematic assessments of the technical programs and processes also provide a basis for EHSD and other divisions to direct divisional resources for improved ES&H performance.

In FY 2010, EHSD implemented a TAP for each of the 46 subject areas listed below:

Environmental Services Group

Air Emissions/Quality	Hazardous Waste Fixed Treatment Units
Environmental Management System	Storm-Water Quality
Environmental Radiation Protection	Underground Storage Tanks
Environmental Restoration	Wastewater Discharge

Industrial Hygiene Group

Asbestos	Gases – Compressed/Hazardous/Toxic
Beryllium	Laser Safety
Biosafety (Includes Select Agents)	Lead
Chemical Hygiene and Safety	Noise – Hearing Conservation

Chemical Management System
Confined Space
Emergency Eyewash and Safety Showers
Exposure Assessment
Pressure Safety and Cryogenics
Respiratory Protection
Ventilation

Occupational Medicine Group

Occupational Medicine

Occupational Safety Group

Aerial Lifts
Construction Safety
Cranes and Hoists
Electrical Safety
Ergonomics
Fall Protection
Injury and Illness Record-Keeping and Reporting
Lock Out/Tag Out
Motor Vehicle/Pedestrian Safety
Non-Construction Safety Assurance
Personal Protective Equipment
Powered Industrial Trucks (Forklifts)
Shop Safety – Machine Guarding

Radiation Protection Group

Accelerator Safety
Department of Energy Laboratory Accreditation Program
Nuclear Safety Management (Inventory)
Radioactive Material Transportation
Radiation Protection Program
Radiation Protection – Material Control and Accountability
X-Ray Safety

Waste Management Group

Medical Waste
Satellite Accumulation Areas

Noteworthy Practices and Institutional Findings identified by the ES&H Technical Assurance Program are included in Section VI and Appendix B, respectively. A description of each ES&H Technical Assurance Program is presented in Appendix C.

V. Peer Review

Peer Review is a key element of Core Function No. 5 of the Integrated Safety Management (ISM) process. The Safety Advisory Committee (SAC) oversees periodic Peer Reviews that assess the effectiveness of environment, safety, and health management in operations and/or research divisions. Of particular interest is the higher-level implementation and effectiveness of selected divisions' ISM plans. Peer Reviews are intended to evaluate one or more topics of interest to the division director, and to follow a plan and schedule approved by the SAC.

During FY 2010, a Peer Review was conducted in the Materials Sciences Division (MSD). Of particular interest to the Division Director were MSD's processes for higher-level supervisory oversight and safety training. In general, the Peer Review found that MSD's supervision and safety training processes are functioning effectively and are tailored to the needs of the Division. In addition, it found that supervisor awareness of research operations is apparent, and that there are abundant opportunities for interactions between Principal Investigators (PIs), senior staff, and graduate students. MSD in general and MSD groups in particular emphasize and rely upon on-the-job training and senior graduate student oversight of day-to-day operations. All PIs interviewed maintain an "open door" to senior staff and students on matters related to safety. New staff and students are assigned mentors who monitor their progress and assure that on-the-job training and related work authorizations are properly executed. Overall, the Division was found to be maintaining adequate supervisory and safety training processes.

Going forward, Peer Reviews are scheduled as follows:

Division	Peer Review Date
Accelerator and Fusion Research Division	Second Quarter FY 2011
Earth Sciences Division	Third Quarter FY 2011
Environmental Energy Technologies Division	Fourth Quarter FY 2011
Engineering Division	First Quarter FY 2012
Nuclear Science Division	Second Quarter FY 2012

VI. Noteworthy Practices

The Noteworthy Practices presented below are compiled from current ES&H self-assessment processes as implemented in the Division ES&H Self-Assessment, ES&H Technical Assurance, and Peer Review programs.

Noteworthy Practices identified during FY 2010 include the following activities:

- The Chemical Sciences Division (CS) implemented a safety process at an Advanced Light Source (ALS) beamline that assures laser safety by enclosing laser-system light paths to effectively make them Class I lasers while data is being collected.
- The Computing Sciences Directorate (CSD) established "drop in" and "shared" workstations at the Oakland Scientific Facility (OSF) and Building 50F sites to accommodate staff members who work intermittently at those locations. Workstations are fully adjustable.
- CSD developed a self-assessment Web site and online form for documenting walk-around observations titled "CS Self-Assessment FY10 Walkthroughs." The completed form populates a spreadsheet facilitating review by the ES&H Self-Assessment Team and CSD staff. Similarly, the Laboratory Operations Directorate developed an interactive version of the Supervisor Walk-Around Checklist that provides timely, detailed information about employee safety to the Computing Sciences Division Safety Coordinator.
- CSD developed a Google site for the Building 50 (B50) Complex Building Emergency Team (BET). A B50 BET member [from the Information Technology Division (IT)] has expanded this Google site for use by the entire Laboratory population and demonstrated the site at a BET seminar. Features include (1) dedicated pages for individual buildings including the B50 Complex and Building 943; (2) links to BET documents, seismic status lookup, emergency services pages; (3) current weather; and (4) upcoming event announcements.
- The EH&S Division (EHSD) developed a document titled *EH&S Division Ergonomic Program Guidelines for EH&S Supervisors and Group Leaders*. This document is designed to assist first- and middle-level managers in anticipating, recognizing, and responding to ergonomics issues.
- The Engineering Division (ENG) developed a Satellite Accumulation Area (SAA) questionnaire that is used to compile data during an SAA self-assessment. Information is used to identify opportunities for improving SAA management opportunities.
- The Joint Genome Institute (JGI) implemented a Chemical Inventory Program employing the bar coding of chemicals using a Personal Digital Assistant (PDA) with specific software that links scanned data to the Chemical Management System (CMS) database. Area Safety Leaders are responsible for validating the chemical containers' status to ensure

compliance and accuracy of JGI's chemical inventories. The scanned data serves as a basis for comparison for future assessments of the Division's chemical inventory program.

- MSD assigns one or more responsible individuals (which may include Principal Investigators, senior staff, postdocs, and/or senior graduate students) to mentor new and less-experienced team members. They are also responsible for providing the majority of on-the-job training to help assure that research operations are conducted safely. In addition, letters of recommendation include information about safety attitude and performance. This is made clear to students and postdocs as they begin their tenure within the division.
- The Physical Biosciences Division (PBD) employs a system by which a label is attached to a waste container after requisitioning the waste through the EHSD Waste Management database. This helps the researcher recognize which containers have or have not been requisitioned. Labeling also helps identify requisitioned containers during laboratory walk-throughs, and assist in the tracking of waste pickup frequency by EHSD Waste Management, as needed.
- MSD, in collaboration with the Chemical Hygiene and Safety Program (CHSP) Subject Matter Expert (SME), has developed a portable benchtop glove box to provide a low particle background for monitoring operations using nanomaterials. This minimizes high-background particle counts that would otherwise interfere with measurements. It is equipped with a sampling port that permits real-time monitoring of the nanomaterial process that is conducted in the glove box.
- The Facilities Division (FAC) has implemented a hands-on Lock Out/Tag Out (LOTO) training program that includes a LOTO lab where students demonstrate proficiency in the use of LOTO procedures and devices. The class meets the goal of teaching through the observation of demonstrated skills.

Appendix A
Status of FY 2009 Self-Assessment Institutional Findings

(As of February 2011)

The institutional findings presented below are compiled from FY 2009 ES&H self-assessment processes that include the Division ES&H Self-Assessment, ES&H Technical Assurance, and Peer Review programs.

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Electrical equipment purchased through Procurement does not always meet Nationally Recognized Testing Laboratories (NRTL) requirements.	1. Revise LBNL Electrical Equipment Acceptance Program to clarify the responsibilities of Procurement, requestors, and subcontractors/vendors re: acceptance of non-NRTL products. 2. Emphasize requestor's responsibility in those cases where NRTL-certified products are unavailable or procured via blanket purchase orders. 3. Acceptance of all electrical equipment used on site to be completed by 9/30/11.	Open
LBNL Procurement may not be aware of procured items that create hazards due to poor manufacturing. One example was an unstable server lift extension used by the Information Technology Division (IT).	IT recognized the problem, removed the equipment from service, and contacted the manufacturer for assistance. The equipment was taken out of service and returned to the manufacturer.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
An update to the Institutional Integrated Safety Management (ISM) Plan was drafted, but was not finalized and implemented. Consequently, the guidance provided to divisions to update their divisional plans was in draft form and never finalized. Therefore, divisions were not properly instructed on when to update their plans or what to include in the updates (e.g., new policy).	The ISM Plan was revised and signed by the DOE Berkeley Site Office (BSO) Manager on 1/8/10. The document was posted on the LBNL Web site.	Closed
Clear and formalized institutional expectations regarding ongoing oversight of employees during on-the-job training are not provided. Clear and formalized expectations for the "competency expectations" to be demonstrated are not consistently evident. This is especially true when a Job Hazards Analysis (JHA) is the governing work authorization document.	1. Develop formal institutional expectations for OJT that include both activities that require formal authorizations [e.g., an Activity Hazard Document (AHD)] as well as lower-hazard activities covered by other authorizations such as a JHA. 2. Update PUB-3000 to reflect changes developed in Corrective Action No. 1. 3. Develop and implement an OJT training record system. This may be tied to the LBNL LMS system, which will be implemented by 2013.	Pending
Ownership of the management and responsibility for assurance of safety of filling stations for dewars was unclear. Local organizations appeared to be taking on activities that might normally be viewed as Maintenance and Facilities functions.	LBNL developed standard protocols regarding the determination of potential oxygen deficiency in these environments. This item was identified and managed through the Health, Safety, and Security (HSS) Corrective Action Plan (CAP).	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
There does not appear to be an overarching set of institutional expectations regarding the conditions under which personnel should be working alone.	LBNL will develop institutional working alone policies.	Pending
Current JHAs do not fully identify the hazards associated with the work to be performed nor do they consistently contain the Work Group Description of Work for the appropriate work group. Specific concerns include: (1) Current JHAs do not fully identify the hazards associated with the work. The complete identification of hazards arising from chemical use requires the further development of an Exposure Assessment Program, and (2) JHA profiles do not consistently contain the Work Group Description of Work for the appropriate work group.	This issue is covered by the HSS CAP under C1. Twelve corrective actions are associated with this issue. Ten have been closed and two remain open.	Pending
Safety walk-arounds are not being performed as required in division ISM plans. Deficiencies include not performing walk-arounds per required frequency and not documenting them as required.		Pending
Hazards are not documented as required. Use of the Hazard Management System is inconsistent.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The relative safety oversight roles and responsibilities of area safety leads and work leads are not consistently understood. This represents a vulnerability when the Principal Investigator or PI (1) is not consistently resident in the laboratory and (2) has not assured that the work lead has been vested with and can demonstrate responsibility for monitoring work, assuring work is performed consistent with the authorization process, and recognizing and communicating any changes in hazard profile to the PI.	This issue was covered by the HSS CAP under CC-2. Roles, responsibilities, and expectations with respect to accountability of division directors, department heads, PIs/supervisors, work leads/area safety leads, and line workers were clarified in PUB-3000.	Closed
With one exception, a traceable and rigorous process for systematically evaluating hazards and applying controls for unsupervised off-site (i.e., outside) projects has not been implemented.	1. Develop a methodology based on the HSS CAP implementation plan. 2. Manage the JHA improvement process through a formalized project plan that addresses (1) regulatory requirements, (2) communications and training, (3) JHA program content and guidance, and (4) ongoing feedback and improvement.	Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The Activity Hazard Document (AHD) development process is not timely due to database limitations and availability of EH&S staff. Specific concerns include: 1. Division PIs and safety leaders are unclear regarding how to properly implement the AHD process due to difficulties in using the AHD database, in particular training information, employee records, and course listings. 2. Maintenance of AHDs is susceptible to database usability problems and availability of support from EH&S Subject Matter Experts. 3. The time required to authorize and maintain AHDs is dependent on the availability of EH&S Division reviewers.		Pending
Development of an AHD system that addresses electrical hazards was not completed during FY 2009. This resulted in several instances of unfinished Electrical AHDs for work involving exposures to less than 50 volts and 5 milliamps. Current authorizations to work with electrical equipment are general in nature and based on a description of work in an employee's JHA.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Highly symptomatic individuals and subgroups of at-risk employees with prior ergonomic evaluations for discomfort exchanged their ergonomic desks and chairs for new laboratory standard furniture. This furniture was not properly fitted for all employees and three such cases became classified as recordable injuries. In addition, there were other problems with older furniture that didn't always fit or function well in new spaces allocated for them.	Facilities Division is now collaborating with the EH&S Division Ergonomics Team to select furniture standard for LBNL that will consider the adjustability, workstation layout, and functionality needed by individuals and by work groups, within cost and space constraints. Employees who have been evaluated by an ergonomist and have demonstrated need for specific workstation features will be provided that type of furniture and will be able to bring it, or an equivalent, with them when they move. All employees changing office locations will be seen by the Ergo Team in a pre-move survey conducted by the Ergo Team and personnel representing the moving division to identify at-risk employees and those using/needing special equipment/furniture. Post-move ergo evaluations will also be conducted for all such employees.	Closed
Training courses are not consistently offered with sufficient frequency to support operational demands. Examples include: (1) though LBNL line managers are required to complete EHS027, the course was suspended during FY 2009 and therefore divisions couldn't comply with this requirement, and (2) LBNL does not offer training for Fire Extinguisher Use and Bloodborne Pathogen training at a periodicity or class size to ensure timely completion of training.	LBNL now offers a sufficient number of classes to meet the demands for those who require EHS0027, EHS0530, and EHS0735.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Chemicals are not managed as required. The Chemical Management System is not used as required. Chemical ownership and line management responsibility for chemical management/maintaining inventories have not been resolved. Management of peroxidizable chemicals at University of California, Berkeley, laboratories is inconsistent.		Pending
Compliance with Satellite Accumulation Area (SAA) program requirements is inconsistent. Three hundred and ninety-nine waste storage areas were inspected, and 78% were found to be in compliance with LBNL policies and regulations. The most prevalent area of noncompliance was in the category of SAA signs and labels. Flammable-waste storage practices also emerged as an area of noncompliance. Prevalent SAA noncompliances were noted, such as unlabeled bottles and debris in SAA trays. In some instances, waste is left by departing groups or individual researchers without proper characterization.	1. EETD is currently developing and piloting a program to improve SAA labeling compliance. 2. The Waste Management Group will review and assess the results of the EETD pilot program. 3. The Waste Management Group will determine if the program can be used Lab-wide via a Web interface. 4. The Waste Management Group will prepare a yearly report listing the SAA compliance rate by division.	Pending
LBNL did not provide adequate guidance to divisions to evaluate compliance with applicable environmental permit requirements.	Signage will be modified to include required information.	Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Divisions are not tracking safety findings as required. Not all applicable findings are being entered into the Corrective Action Tracking System (CATS), especially findings from safety walk-arounds. Timeliness of entering items into CATS also needs improvement, as some findings are not entered into CATS within five days of discovery.	A consultant will be secured to review CATS. Based on the consultant's review, CATS will be modified or replaced, as appropriate.	Pending
Some injury reports (supervisor and liaison) are submitted late with incomplete or no data. Supervisor Accident Analysis Reports (SAARs) are not consistently completed as required. SAARS are not always completed within the seven-day time requirement. Some older SAARS had not been released as required.		Pending
Institutional Unresolved Safety Issue (USI) procedures have not been promulgated at all LBNL accelerator facilities.	USI procedures were promulgated at LBNL accelerator facilities.	Closed
The JHA system does not currently include aerial lifts, and affected work groups must manually address hazards and controls. While this could be compliant, the ad-hoc supervisor JHA input has been documented to leave out the requirement for Fall Protection Training (EHS0276) in conjunction with aerial lift operations.	Add question to JHA regarding use of aerial lifts. Answering “yes” should trigger EHS0276 as a required control.	Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Log sheets for two emergency generators showed run times exceeding allowable permit conditions.	The "Standby Emergency Generator Checklist and Operating Log" was modified by changing the wording from "BAAQMD Yearly Reliability-Related Operating Limit" to "BAAQMD Consecutive 12-month Reliability-Related Operating Limit." Logs now clearly indicate the maximum allowed run time.	Closed
Some Facilities crafts employees who may occasionally perform work that could disturb building materials that contain asbestos lack required Occupational Safety and Health Administration (OSHA) Class III asbestos training.	Facilities Division provided four-hour Asbestos Class III training to 87 affected LBNL craft workers.	Closed
The B77 abatement subcontractor performing work for the B77 Mechanical Upgrade Project did not meet OSHA and LBNL asbestos work practice and air sampling requirements.	The asbestos abatement subcontractor was removed by LBNL Facilities Project Management and will no longer be permitted to perform asbestos abatement work at LBNL.	Closed
References in the Chronic Beryllium Disease Prevention Program (CBDPP) are not current. Also, the CBDPP did not address all of the requirements established by 10 CFR 850.	Changes were made to affected sections in LBNL Chronic Beryllium Disease Prevention Program (CBDPP) to address sections in 10 CFR 850. References were included in the current CBDPP.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Beamlines designated as Biosafety Level 2 (BL2) containment work areas did not have (1) proper access control nor posting requirements implemented per the Biological Use Authorization (BUA); (2) proper labels posted on a biohazardous waste container and an incubator where biological materials are processed per the BUA; and (3) a sink for hand-washing.	The appropriate biohazard labels were installed. A sink was installed.	Closed
Training requirements and courses completed on two JHA training profiles were not consistent with person-specific training requirements noted on the BUA. A review of training profiles for workers listed on a Biological Use Registration (BUR) indicated that training was incomplete for nine of the 13 workers. A review of training profiles for workers listed on BUAs indicated that training was incomplete for a majority of workers. Training requirements and courses completed on four Job Hazards Analysis training profiles were not consistent with person-specific training requirements noted on the BUA.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
BUA requirements noncompliances: (1) No lab coat laundry service was provided in a BL2 containment work area per National Institutes of Health and Centers for Disease Control BL2 containment criteria. Also, cloth lab coats in several BL2 containment work areas were reportedly thrown away and not cleaned. (2) Hand soap dispensers were not present at the sinks in two laboratories per requirements of the BUA. (3) Chairs used during laboratory work involving handling of human cells were not covered with material that can be easily cleaned and decontaminated by using disinfectant per the BUA. (4) A flow cytometer equipped with a Buffalo Filter Aerosol Evacuation System was in use but not covered by a BUA or BUR. In addition, the evacuation system's Ultra Low Penetration Air Filter was found to be under a recall and had not been tested and certified. (5) Employees working under BUA B079 were not informed about specific risks and health recommendations related to working with HIV lentiviral vectors. (6) The location and quantities of toxins stored in a laboratory were not entered into the Chemical Management System. (7) Bar codes were not present on the toxin containers as required by the BUA.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The Hazard Management System (HMS) and the EH&S Summary Report it generates do not contain confined-space hazards.	Update the HMS MAXIMO® interface screen and supporting code to allow the selection of confined-space hazards as an option for transfer, and ensure this hazard option is selected for transfer.	Pending
One dosimetry technician's training qualifications had lapsed for the following EHS30S procedures: 370, 371, 373, 386, 387, 388, and 389.	Update qualifications for specified procedures.	Pending
Not all divisions completed the LBNL 2008 annual Lock Out/Tag Out (LOTO) review/inspection as required by PUB-3000, Chapter 18, Section 18.15, *Periodic Inspections*.		Pending
Electrical cords were found damaged, plugged into non-construction-approved devices, daisy-chained, missing ground pins, in unprotected runs, and improperly used in construction sites.		Pending
Quarterly inspections and flow testing of sampled Emergency Eyewash and Safety Showers (EESS) were not consistently carried out per established frequency. In addition, some EESS units provided marginal distribution of water, and two were incapable of flushing both eyes simultaneously. Absence of a flow restrictor in an EESS unit caused very low flow and distribution through the eyewash nozzles.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The Facilities database containing EESS unit locations was not up to date.	The EESS database was updated during FY 2010.	Closed
Fifty percent of eyewashes evaluated were installed in an offset manner that would prevent simultaneous use of the eyewash and shower per referenced standards.	As funding becomes available, repair and fix the alignment problems with the eyewash stations. Repairs should be made on a risk-based schedule	Pending
Emergency contact information for the Fixed Treatment Unit (FTU) technician was not available at the site nor was it included in the Contingency Plan.	Cell numbers for emergency contacts have been updated on the Emergency Contacts posters and in the Contingency Plan for the Building 67 FTU.	Closed
The current version of the Building 67 FTU Monthly Maintenance & Calibration Procedure and the Building 67 FTU Monthly Checklist, respectively, were not in use.	Current versions of the procedures have been provided.	Closed
The Building 77 FTU inspection schedule did not include the frequency of calibration of (1) the pH and the ORP probes and (2) the water-flow meter. Set points for pH and ORP probes were not documented in a procedure.	Underground Storage Tank (UST) operating procedures were updated to include current contact lists: OPER-230 (Building 2 USTs), OPER-236 (Building 55/90 UST), OPER-243 (Building 76 USTs), and OPER-343 (Building 85 UST).	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The newest version of PUB-3000 Section 16.5.3, (*Laser Alignment and Beam Manipulation)*, requires the Laser Safety Officer (LSO) to complete the Alignment Eyewear Authorization Form (PUB-3000 Chapter 16, Appendix C) if laser alignment eyewear is allowed. The use of this form has not started yet nor been applied to existing AHDs that allow alignment eyewear but do not call for the form.	The LSO visited the affected labs, followed the new laser policy in PUB-3000 Chapter 16, and completed the laser alignment eyewear form. E-mails were sent to all laser PIs and work leads, informing them of PUB-3000 requirements.	Closed
ANSI Z136.1–2000, Safe Use of Laser Standard, Section 4.6.4, requires that a blocking barrier, screen, or curtain that can block or filter the laser beam at the entryway shall be labeled with threshold limit and exposure times and the beam exposure conditions under which protection is afforded. Not all such barriers are labeled at this time.	The LSO collected the required information from vendors or performed barrier tests with assistance of laser users. Commercial documentation was collected and a researcher in MSD (Joel Ager) tested a collection of non-laser-certified materials used at LBNL. Documentation from the testing was reviewed by the LSO.	Closed
LOTO-related administrative conditions were identified, including (1) one improperly completed administrative tag discovered at a Building 71 construction project, and (2) a construction manager requesting an extension on a permit that had expired before the work began. It was noticed that a 480-volt source was not identified in the original review of the permit.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
LOTO-related process/procedural conditions were identified. These included: (1) one disconnect found not to be locked out due to an insufficient equipment-specific LOTO; (2) an employee who did not attempt to restart the equipment after the LOTO was applied; (3) a preventative-maintenance technician who did not have his phone number on his LOTO tag; (4) a LOTO briefing that was inadequate; (5) an equipment-specific procedure that did not match the work being done; (6) incorrect application of the "live-dead-live" procedure; and (7) a safety standby who did not have a nonconductive object in case an electrician became "hung up" on the circuit.		Pending
One Personal Protective Equipment (PPE)–related procedural condition was identified. This included an LBNL electrician getting ready to switch a 480-volt breaker with a top button unbuttoned and keys dangling off a belt loop.		Pending
During FY 2009, there were five machine tools found without required debris shields.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Lack of required guards was observed. These included: (1) three employees using machine tools without guards; (2) 12 unguarded pinch/nip points; and (3) eight unguarded points of operation (other than entanglement and pinch/nip points identified above).		Pending
Employees who belong to an exposure group (as identified in their JHAs) were not included in the Hearing Conservation Program (HCP). Therefore, they have not taken EHS0285 (Noise Exposure Hearing Test).		Pending
Implementation of Non-Construction Safety Assurance Program process steps was less than adequate for a scope of work. LBNL identified safety deficiencies requiring the work to be stopped and an Occurrence Report was submitted.	Eleven corrective actions associated with this issue were developed and closed. Key corrective actions included: 1. Root cause analysis and extent-of-condition review; 2. Development and distribution of a "Start-Up Kit" for construction managers, superintendents, and subcontractors; 3. Delivery of OSHA 30-hour training to Facilities Division personnel; 4. Publication of PUB-3000 Chapter 31 (*Non-Construction Safety Assurance for Subcontractors, Vendors, and Guests*); and 5. Implementation of PUB-3000 requirements.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Completion of some Subcontractor Job Hazards Analysis and Work Authorization (SJHAWA) forms was less than adequate. During the assessment period, it was found that some of the SJHAWAs reviewed lacked signatures, work hazard ratings, dates, responses to all questions, and adequate descriptions of the work.	An online SJHAWA form linked to a database was developed and implemented. Required fields will now be required before the SJHAWA can be completed.	Closed
Information gathered during the Non-Construction Safety Assurance Program's safety assurance processes indicated that safety performance by some subcontractors was less than adequate.	A summary of the Technical Assurance Program (TAP) assessment results for the Non-Construction Safety Assurance Program was presented at the 11/13/10 Division Safety Coordinator meeting. The program manager met with Division Safety staff from ALS, EH&S, FAC, LSD and PBD to discuss results.	Closed
Radiological Work Authorization (RWA) 1020 was found to have a small number of low-activity (nCi and below) items that were not listed on the inventory. These items must be characterized by the PI and added to the Heavy Elements Research Laboratory (HERL) inventory.	The PI characterized the materials and added them to RWA 1020 inventory report.	Closed
Specific instances were identified during the site-wide confirmatory inventory that were inconsistent with the inventory-control requirements necessary to satisfy requirements of DOE STD 1027 CN1.	Legacy material will be added at the next available Radiation Protection Group Quarterly Inventory Report	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The Occupational Injury and Illness Reporting and Record-Keeping Program document requires notification of the EH&S Division Director and Berkeley Site Office every time the OSHA log is updated. It is noted that updates occur approximately once a month and therefore the program procedure requirement is not met. The notification requirement should be restated in a manner that is practical and that can be met reliably.	Prepare and submit specific instructions to be published in PUB-3000 Chapter 5, Section 5.1, which give employees specific defined steps for reporting an injury or illness.	Pending
Some users did not receive specific PPE training as required by 29 CFR 1910. During FY 2009, there were five cases where PPE was not used as authorized.	As of 2/18/11, 544 staff members at LBNL completed EHS0161 per their JHA training requirement.	Closed
Training programs for certain types of PPE (head, eye, hand, foot, skin protection) are not available. Training should include how to select PPE; how to don and doff PPE; limitations of PPE; and PPE maintenance, storage, and/or disposal.	A PPE class (EHS0161) was developed. This is an online class available at the EH&S Division Training Web site.	Closed
There is no documented evidence of the Radiation Protection Group (RPG) approving the procurement of sealed sources as required by EH&S Procedure 711 (*Sealed Radioactive Source Program*).	EH&S Procedure 711 was revised to clarify processes on how researchers document approval from RPG before procuring sealed sources. Researchers were provided written notification regarding the need to obtain written permission from RPG prior to procurement of sealed sources.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The language within PUB-3000 Chapter 21 (*Radiation Safety*) and RPG procedures was found in several instances to be contradictory.	PUB-3000 Chapter 21 needs to be revised to make it consistent with implementing procedures.	Pending
There is no validation of JHA completion prior to training or fit-testing of respirator wearers.	1. Fit-test personnel now incorporate a step into the fit-test procedure that assures that the worker has identified respirator use on his or her JHA prior to being fit-tested. 2. The LBNL Respiratory Protection Program now reflects the review of proper JHA status prior to fit-testing.	Closed
Flammable liquids were stored in inappropriate containers, and deficiencies were found in signs and labels.		Pending
A cooling-tower release and a petroleum-spill adsorbent were not cleaned up as required.	A Today at Berkeley Lab article was prepared regarding spill prevention and storm-water protection.	Closed
The *Storm-Water Pollution Protection Plan* did not identify a specific responsible person, specific training dates, and a five-year record-retention period.	The LBNL *Storm-Water Pollution Prevention Plan* was revised to include all required information. The plan was posted online.	Closed
Tank and drum storage areas were not inspected and documented as required by Facilities and EH&S procedures. Underground storage tank operating procedures were not current.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Ventilation system surveys were not completed per the requirements outlined in PUB-3000 Chapter 4, Section 4.6. Specifically, some systems in the Ventilation Database were shown as past due (three months beyond the nominal due date).	One hundred percent of the past-due systems have been completed. All have been logged into the ventilation database.	Closed

Appendix B
Status of FY 2010 Self-Assessment Institutional Findings

(As of February 2011)

The Institutional Findings presented below are compiled from FY 2010 ES&H self-assessment processes that include the ES&H Technical Assurance, Division ES&H Self-Assessment, and Peer Review programs.

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Memory errors were found during periodic reinstallation of the Chemical Management System (CMS) Mobile software. The CMS bar-code table is now too large to be loaded into the limited memory of the mobile scanning devices. The CMS Mobile software cannot be used until the memory issue can be resolved.	CMS Mobile scanning devices with larger memory have been obtained.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The overall LBNL Satellite Accumulation Area (SAA) compliance rate for FY 2010 is 79%. Compliance rates for SAAs, Radioactive Waste Collection Areas (RWCA), and Mixed Waste Satellite Accumulation Areas (MWSAA) are not satisfactory. Examples: (1) 43% compliance at ALS in the First Quarter (Q1), (2) 80% compliance in the EH&S Division (EHSD) in Q1, (3) 81% compliance at the Chemical Sciences Division in Q1, and (4) 80% compliance at the Materials Sciences Division in the Second Quarter (Q2).		Pending
Active Activity Hazard Documents (AHDs) have incomplete user electronic sign-offs.		Pending
The Facilities Division (FAC) cannot provide objective evidence that 67% (16/24) of their non-construction service purchase orders requested in FY 2010 Q1 and Q2 were authorized with a completed Subcontractor Job Hazards Analysis and Work Authorization (SJHAWA).	A review of the SJHAWA process is discussed each month at the FAC Executive Safety Committee meeting. In addition, the online directions for non-construction subcontractors and vendors have been revised to include information and guidance regarding Safe Work Authorizations.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Exposed materials are frequently found at the Building 77-79 yard, including (1) uncovered large metal bins (a repeat finding) and (2) salvage electronics left exposed to the weather (a repeat finding).	1. The two large bins with lids that cannot be closed have been replaced. 2. A Today at Berkeley Lab article was generated and posted to inform the laboratory community about the enforcement of the cover practices to prepare salvaged electronics for shipment to Building 79 (Salvage).	Closed
Six Powered Industrial Truck (PIT) inspections were performed on subcontractors working at LBNL. Three were observed to be noncompliant with Occupational Safety and Health Administration (OSHA) requirements for forklift operations.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Changes in office location are not triggering a requirement to either retake the ergonomic assessment training or initiate an evaluation by an Ergo Advocate, as required by PUB-3000.	A process was implemented to ensure that all office relocations are reviewed beforehand by the Facilities Division Move Coordinator along with representatives from the affected division and the EH&S Ergonomics Group. Prior to moves, a "Pre-Move Survey" is conducted to identify at-risk employees and anticipate ergonomic requirements. Once the move is completed, an ergonomist from the EH&S Division conducts an ergo sweep to ensure that all personnel- and equipment-related requirements have been met, that people know how to adjust new furniture and seating, and that at-risk employees get the level of consultation needed to mitigate ergonomic risks. In addition, any change in the LBNL directory triggers an invitation to a Remedy Interactive online self-assessment to provide a second tier of risk prevention.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Supervisors'/work leads' signatures are missing from Hazard Level 2 work orders.	Improve training and develop a process to ensure new employees receive training on the MAXIMO® Work Control and Hazards Process: 1. Emphasize the need for workers to obtain re-authorization for the work order when the selected hazard levels are incorrect. 2. Highlight appropriate signature responsibility prior to starting work. 3. Review the document "Hazard Analysis Process/ MAXIMO Work Flow" to eliminate confusion about what is routine, i.e., use of a respirator, hot work permit, scaffolds, etc. 4. Clarify the requirements and train work leads in Industrial Hygiene (IH) notification procedures.	Open
The Hazard Management System (HMS) interface to MAXIMO® has hazards deactivated or removed.	A "patch" was installed in the HMS that limits MAXIMO® access to the specially designated MAXIMO® Administrator. This will prevent unauthorized users from accessing the MAXIMO® HMS hazard filter screen.	Closed
Permits are not consistently attached to or referenced in Facilities Division work orders.	Two new fields have been added to MAXIMO®. Permit Type and Permit Number must be filled in now anytime there is a permit required for work orders.	Closed
The link provided in PUB-3000 Chapter 1 to Appendix G is not functional.	The link was activated.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
There is a need to expand the number of Competent Persons to ensure that delivery of Fall Protection Matrices is not delayed. Completion of a Fall Protection Matrix is required whenever contractor or Laboratory employees are to perform work tasks that meet criteria requiring work controls under PUB-3000 Chapter 30 (*Fall Protection Program*).	Develop an in-house training program to train additional Fall Protection Competent Persons.	Overdue
A gap exists that allows a Fall Protection Plan to be approved by a Non-Qualified Person.	The Non-Construction Subject Matter Expert (SME) has implemented an online SJHAWA that directs the subcontractor and requester to contact the EH&S Division Fall Protection SME when a fall hazard exists.	Closed
The connection between "At-Risk Condition" work observations entered by LBNL Construction Safety personnel into the Design, Build, Own, Operate (DB02) "SafetyNet" database and the determination of the corresponding "Unsafe Conditions Severity" ranking level of Medium or High is not well defined or articulated. As a result, a number of prior observations may have been ranked as Lows instead of Mediums or Highs. This would result in the potential for an underreporting in the Noncompliance Tracking System (NTS) or Occurrence Reporting System (ORPS), since Low-severity-level observations are not reviewed by the 10 CFR 851 Program Manager.	The Occupational Safety Group performed a review of DBO2 data and analyzed fall protection "Lows" to determine whether they should have been ranked "Medium" or "High."	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
SJHAWAs are not consistently completed in a manner that is compliant with institutional requirements. Deficiencies include (1) failure to provide accurate work hazard levels, (2) absence of required signatures, (3) absence of work practice documentation, (4) absence of supporting documentation, and (5) absence of the requestor's signature. The WAS-999 "Procedure for Safe Work Control Release" document is not always completed, and work is sometimes performed on pending work orders.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
A Molecular Foundry sprinkler head was broken by a subcontractor performing a low-hazard scope of work, causing the release of water over laboratory equipment. This incident occurred during performance of a low-hazard scope of work in a research division when a subcontractor inadvertently bumped a fire sprinkler head, which released water over laboratory equipment. An ORPS report (SC-BSO-LBL-MSD-2010-0001) was filed by the home division for this incident.	1. LBNL will establish a cross divisional team to develop a detailed plan and schedule to evaluate the existing SJHAWA process and all other applicable LBNL work authorizations in order to recommend a cost-effective and risk-based method for including property protection into each of these work authorizations as appropriate in order to institutionalize the existing LBNL policy expectations in the *Integrated Safety Management Plan* (PUB-3140, Rev.7) and the *Health and Safety Manual* (PUB-3000) for protection of property. 2. LBNL will periodically conduct an evaluation of the implementation of the requirements in the *Construction Projects Department Manual* issued March 16, 2010. 3. Procurement analyzed the feasibility of developing contractual requirements for incidents that require subcontractors to cooperate with LBNL during the conduct of investigations, and incorporated these requirements into LBNL contracts. 4. Installation of protective guards has been completed.	Pending
Vehicle accidents at the Laboratory are currently not being investigated, and thus causes have not been identified nor corrective action(s) initiated.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Lab policy is unclear regarding which division provides oversight of the drivers of Laboratory vehicles holding Class A or B Commercial Driver's Licenses (CDLs).	Clarify the ownership, administration, and oversight of the drivers of Laboratory vehicles holding a Class A or B CDL, and update the Regulations and Procedures Manual (RPM) and PUB-3000 to reflect the ownership and administration of the program, including current U.S. Department of Transportation (DOT) regulations.	Open
Non-laboratory technical area (construction site and shop) workers have not received specific Personal Protective Equipment (PPE) training as required by 29 CFR 1910.	Online training modules for head, eye, hand, foot, and skin protection have been developed and are in beta testing. Communication strategy has been developed. A link with the Job Hazards Analysis (JHA) system is under development.	Closed
Storm-water monitoring is not performed to measure potential radioactive material discharges at the lower yard of the Hazardous Waste Handling Facility (HWHF).		Pending
New employees are not completing their JHAs because an EH&S Division (EHSD) handout stated that new personnel have 30 days to do this.	EHSD confirmed the handout is inaccurate. HR staff drafted a revised flyer. EHSD approved the revision.	Pending
Supervisors and employees have expressed concern regarding the length of time (an average of six to eight weeks) to order and receive ergonomic chairs.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Inadequate labeling of chemicals, chemical storage areas (including secondary containment), and/or area placarding are consistently identified as deficiencies in technical assurance reports.		Pending
"At-risk" electrical cord/GFCI (Ground Fault Circuit Interrupter) conditions at construction and non-construction sites are consistently identified as deficiencies in technical assurance reports.	Immediately corrected upon discovery.	Closed
Documentation and traceability of National Institute of Standards and Technology (NIST) calibration standards used for external dosimeters are not compliant with the requirements in the Radiation Protection Group's Quality Assurance Program.	1. Obtain NIST-traceable documentation for reader calibrations. 2. Revise EH&S Procedure 300 to explicitly state that a defective set of standards used for calibration of the badge readers must be returned to the manufacturer.	Pending
"At risk" conditions are consistently noted in Lock Out/Tag Out (LOTO) technical assurance reports. At-risk conditions include permit-related deficiencies, PPE-related deficiencies, and/or procedural deficiencies.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The Halon 1275 fire suppression system in the Information Technology Division (IT) computer room (Building 50 complex) has not been tested to confirm that fire suppressant will be deployed. Potential points of failure have been identified. System failure presents a life-safety and equipment-damage liability. A computer system failure would have widespread impact.	A test of the system needs to be performed to verify that it will activate in the event of a fire.	Open
Two AHDs (one requiring arc flash calculations) have been delayed pending availability of the FAC staff to perform the arc flash calculations.	AHDs have been finalized.	Closed
There are no instructions for accurate and thorough completion of a hazardous materials transportation requests.	An electronic version of the Shipping Document has been created. This document can be attached to the shipping request developed through the Point & Ship Program.	Closed
The term "Job Hazards Questionnaire" or "JHQ" is repeatedly used in PUB 3000 Chapter 17 and should be replaced with "Job Hazards Analysis" or "JHA."		Pending
Toshiba copier purchases have not been reviewed for environmental/health impact prior to purchase for Laboratory-wide use.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
Building 2 and Building 70A Fixed Treatment Unit (FTU) emergency-response procedures are deficient. Procedure OPER-087 was last reviewed in 2002 and is out of date. OPER-089 and OPER-091 were last revised in 2005, but were never approved for use by Facilities Division management.	The Facilities Division (FAC) shall update and revise emergency procedures OPER-087, OPER-089, and OPER-091 for the FTUs located at Buildings 2 and 70A. Emergency procedures shall include a list of spill equipment available at each FTU, names and phone numbers of emergency responders (primary FTU operator and backup), and actions to be taken in response to emergencies. Phone numbers for the EH&S Division and the Waste Management Group are to be updated in procedures OPER-087 and OPER-089.	Overdue
Confined spaces are not adequately identified and classified.	Re-evaluate LBNL confined spaces against revised operational definitions.	Open
The written Confined Space Program needs to be revised to include (1) operational definitions, (2) all types of confined-space entry processes, and (3) entry permit revisions. In addition, roles and responsibilities (including the assignment of an entry supervisor or entry supervisors) and training requirements or improvements needed to be addressed.	1. A gap analysis of Confined Space Program was completed. 2. The written Confined Space Program was revised. 3. Operational definitions/interpretations of regulatory terms were developed.	Closed
Laser-related AHDs do not contain laser hazard tables that are listed as "active." Such tables would show (1) the lasers that are authorized by the AHD and (2) the required filtration level of protective eyewear.	Each laser hazard table (per the active AHD) has been updated and listed as current in the AHD upload tab.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
The LBNL Respiratory Protection Program is out of compliance regarding subcontractor respiratory protection program requirements.	1. Section V, "Roles and Responsibilities," in the LBNL Respiratory Protection Program, was updated to include responsibilities for reviewing subcontractor documentation. 2. Section V, "Roles and Responsibilities," in the LBNL Respiratory Protection Program, was updated to include responsibilities as documented in the Health Services Respirator Medical Approval Program, Section IV, Medical Approval Requirements for Subcontractors. 3. Appendix A, "Review of Subcontractor Respiratory Protection Programs," was updated to include specific language stating that the Construction Health Manager (or another Industrial Hygienist) is reviewing the subcontractor documentation for conformance with 1910.134(e)(5). 4. A Process Improvement Team was established to evaluate a tracking system for the ongoing review of subcontractor respirator questionnaire approvals. 5. The Health Services Medical Director (or designee) will provide feedback and guidance as needed on LBNL respiratory-protection medical documentation requirements.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
In a limited number of instances involving potential for exposure above established occupational exposure levels, cartridge respirators do not have a cartridge-change schedule or End-of-Service-Life Indicator (ESLI) as required.	The Respirator Program Administrator has reviewed chemical cartridge use and determined which employees warrant further evaluation for chemical cartridge change-out schedules. Less than 30% of respirator users have chemical cartridges.	Closed
Compressed air cylinders were not recertified as required every five years. Without recertification, cylinders are not allowed to be recharged.	Cylinders were taken to Building 79 to be recycled.	Closed
Recurrent Respirator Supervisor training was found to be incomplete or overdue for some supervisors. Work leads' and users' JHAs did not consistently reflect the required training.	The JHA question related to respirator use was modified. A JHA work group was created to address training requirements for all elastomeric respirator users that will be used to automatically populate the respective work leads' training profiles to include the required EHS0318 Respirator Supervisor Training.	Closed
The design of Hazard Evaluation Forms used in the Respiratory Protection Program does not provide a means for the proper identification of mandatory or voluntary users.	The LBNL Respiratory Protection Program Hazard Evaluation Form (Appendix H of the *Respiratory Protection Program*, Revision 2.3) was modified to include a checkbox that, when used, will reflect when respirator use is mandatory.	Closed
Newly installed ventilation systems (or relocated systems) are being used before the EH&S Division has been notified. Such systems are required to be commissioned prior to use.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
There have been recurring, unexpected discoveries of uncontrolled hazardous energy sources (ORPS-10-0008).	1. The Maintenance, Repair, and Operations Manager and Construction Service Manager will attend, review, and validate a sample of pre-job meetings every quarter to ensure that the scope of work, changes to the scope of work, job hazards, and roles and responsibilities are communicated by the supervisor and/or work lead to the worker. 2. Facilities Division management added "work performed" by in-house crafts to the *Construction Projects Department Project Management Manual*. Any electrical changes are submitted to the facilities electrical engineer for inclusion in the drawing file. 3. Newly implemented policy related to scope of work, hold points, and "stop work" will be defined and communicated to workers. A Lessons Learned addressing zero-energy verification will be included in this communication. 4. An effectiveness review of corrective actions will be performed.	Pending
Written subcontractor requirements regarding communication of housekeeping and PPE requirements, methodology for tracking repeat offending subcontractors, and criteria for issuing safety deficiency notices are not in place.		Pending

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
A safety presentation addressing subcontractor at-risk ladder-usage work is not available.		Pending
Crane inspection logs were unavailable, out of date, incomplete, or not completed at all.		Pending
Loop swings used during crane lifts were out of date.		Pending
Respiratory protection equipment was improperly stored.		Pending
Shop machines were inadequately guarded (i.e., guards either missing or available but not used).	Missing machine guards were replaced.	Closed
General Employee Radiological Training (GERT) given to some FAC subcontractors was not reviewed by the Radiological Control Manager (RCM) and approved as required.		Pending
The Radiation Authorization Reporting System (RADAR) used by RPG to track two separate X-ray authorizations did not accurately reflect the status of each X-ray unit.	RADAR2 programmers were notified of the problem to eliminate replication in RADAR2.	Closed

INSTITUTIONAL FINDING	CORRECTIVE ACTION	STATUS
An X-ray area monitor was installed to replace a failing instrument. When the replacement monitor was due for recalibration, it could not be located because Technical Services' records were not updated at the time the failing monitor was replaced. As a result, the replacement monitor was erroneously declared "missing."	The RPG Technical Services policy was updated to address the declaration of instruments determined to be missing.	Closed
Signed X-ray user signature pages were missing from the X-ray authorization files for individuals who had recently used an X-ray machine.	The X-Ray Program was revised to require all X-ray users to be listed on an X-ray authorization and obtain a briefing from the X-Ray System Supervisor regarding X-ray user responsibilities. Users must now sign their respective authorization signature page prior to using the X-ray machine.	Closed
Contractors do not use aerial lift equipment per established requirements. They do not always recognize hazardous operating conditions and equipment limitations.		Pending
Fall protection equipment, though available, is not consistently used per established requirements by LBNL and subcontractor employees.		Pending
LBNL and subcontractor employees do not consistently identify fall hazards (roof edges, openings, etc.) in work areas.		Pending

Appendix C
Acronyms and Abbreviations

AFRD	Accelerator and Fusion Research Division
AHD	Activity Hazard Document
AHJ	Authority Having Jurisdiction
ALARA	As Low As Reasonably Achievable
ALS	Advanced Light Source
ANSI	American National Standards Institute
BAAQMD	Bay Area Air Quality Management District
BET	Building Emergency Team
BL2	Biosafety Level 2
BSO	DOE Berkeley Site Office
BUA	Biological Use Authorization
BUR	Biological Use Registration
CAP	Corrective Action Plan
CATS	Corrective Action Tracking System
CBDPP	Chronic Beryllium Disease Prevention Program
CCCSD	Central Contra Costa Sanitary District
CDL	Commercial Driver's License
CDTSC	California Department of Toxic Substances Control
CHSP	Chemical Hygiene and Safety Program
CMS	Chemical Management System
CS	Chemical Sciences Division
CSD	Computing Sciences Directorate
DART	Days Away, Restricted, or Transferred
dBA	Decibels (A-weighted)

DBO2	Design, Build, Own, Operate Database
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EBMUD	East Bay Municipal Utilities District
EESS	Emergency Eyewash and Safety Showers
EETD	Environmental Energy Technologies Division
EFCOG	Energy Facility Contractors Group
EHSD	Environment, Health, and Safety Division
ENG	Engineering Division
ES&H	environment, safety, and health
ESD	Earth Sciences Division
ESLI	End-of-Service-Life Indicator
FAC	Facilities Division
FTU	Fixed Treatment Unit
FY	Fiscal Year
GERT	General Employee Radiological Training
GFCI	Ground Fault Circuit Interrupter
HCP	Hearing Conservation Program
HERL	Heavy Elements Research Laboratory
HMS	Hazard Management System
HMTA	Hazardous Material Transportation Authorization
HSS	Healthy, Safety, and Security
HWHF	Hazardous Waste Handling Facility
IH	Industrial Hygienist or Industrial Hygiene
ISM	Integrated Safety Management
IT	Information Technology Division
JBEI	Joint BioEnergy Institute

JGI	Joint Genome Institute
JHA	Job Hazards Analysis
JHQ	Job Hazards Questionnaire
LBNL	Lawrence Berkeley National Laboratory
LOTO	Lock Out/Tag Out
LSD	Life Sciences Division
LSO	Laser Safety Officer
MC&A	Material Control and Accountability
MOU	Memorandum of Understanding
MSD	Materials Sciences Division
MWSAA	Mixed Waste Satellite Accumulation Area
NCAR	Non-Conformance and Corrective Action Report
NEPA/CEQA	National Environmental Policy Act/California Environmental Quality Act
NERSC	National Energy Research Scientific Computing (Center)
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NRTL	Nationally Recognized Testing Laboratories
NSD	Nuclear Science Division
NTS	Noncompliance Tracking System
OCA	Office of Contractor Assurance
OHM	Occupational Health Manager
OIIRR	Occupational Injury and Illness Reporting and Record-Keeping
OJT	on-the-job training
Ops/Dir	Operations Directorate
ORPS	Occurrence Reporting and Processing System
OSF	Oakland Scientific Facility
OSHA	Occupational Safety and Health Administration

OSSEP	Off-Site & Environmental Protection Plans
PBD	Physical Biosciences Division
PDA	Personal Digital Assistant
PEMP	Performance Evaluation and Measurement Plan
PI	Principal Investigator
PIT	Powered Industrial Truck
PPE	Personal Protective Equipment
RADAR	Radiation Authorization Reporting System
RCM	Radiological Control Manager
RPG	Radiation Protection Group
RPM	Regulations and Procedures Manual
RWA	Radiological Work Authorization
RWCA	Radioactive Waste Collection Areas
SAA	Satellite Accumulation Area
SAAR	Supervisor Accident Analysis Report
SIA	Security Industry Association
SJHAWA	Subcontractor Job Hazards Analysis and Work Authorization
SME	Subject Matter Expert
TABL	Today at Berkeley Lab
TAP	Technical Assurance Program
TRC	Total Reportable Case
TWA	Temporary Work Authorization
UCOP	University of California Office of the President
USB	User Support Building
USI	Unresolved Safety Issue