

# Environmental Energy Technologies Division


## ES&H Self-Assessment Report for FY2009

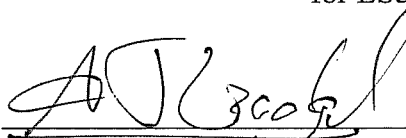
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# Environmental Energy Technologies Division

## ES&H Self-Assessment Report for FY09<sup>1</sup>

### I. Executive Summary

#### I.1. Division ES&H Structure

##### I.1.1 Overview

The Environmental Energy Technologies Division (EETD<sup>1</sup>) Environment, Safety & Health (ES&H) program structure consists of the Division Director, the Assistant Division Director for ES&H and Space (ADD) (representing Division senior management and chair of the Safety Committee), the Division Safety Coordinator (DSC), and the Safety Committee. The Division has five research Departments. These five Departments are further divided into 30 research facilities. Each research facility has a particular research focus, and a relatively unique set of tasks, hazards and controls. With some exceptions, each research facility has its own Job Hazard Analysis (JHA) Work Group associated with it. Each research facility conducts research in one or more buildings and rooms, has one or more Principal Investigators (PIs), and one or more Facility Work Leads. Each room (Technical Area) has an Area Safety Leader assigned to coordinate safety issues. The Area Safety Leader is often the same person as the Facility Work Leader. PIs, Work Leads, Area Safety Leaders, and Technical Areas are further defined in PUB-3000, Sect. 1.9, <http://www.lbl.gov/ehs/pub3000/CH01.html#sec19>.

##### I.1.2 Division Council

The Division Council is responsible for Division management, and consists of the Division Director, the two Deputy Division Directors, the ADD, the Program Development Office Leader, the Division Senior Advisors, and the heads and deputies of each of the five research departments. The principal means of communicating within the Division regarding health and safety issues are through the DSC and the ADD, Division Council meetings, and the Safety Committee. The ADD discusses safety issues at every Division Council meeting by way of a standing safety agenda item. The Division Council nominally meets weekly. The DSC attends the Division Council meeting periodically to present and discuss safety reports and issues as needed

##### I.1.3 Division Safety Committee

The Division Safety Committee is composed of the ADD (chair), the DSC, The Deputy Division Director for Operations, the Division Senior Advisor, the EETD representative on the SAC, and the EH&S Division Liaison. There are two Safety Sub-Committees, one representing laboratory-type operations and the other representing non-laboratory operations. Each of these sub-committees has 6 or 7 members, including representatives from each relevant Department. The Safety Committee nominally meets quarterly or more frequently when issues arise. The Committee discusses pertinent ES&H issues, and reviews the DSC's safety reports. Meeting minutes are posted on the EETD ES&H website. A direct communication link from the Safety

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<sup>1</sup> See Appendix 3 for Acronyms and Glossary of Terms.

Committee to senior Division management is provided through the Safety Committee members who are also members of the Division Council. Communication from the Safety Committee down to employees is provided through numerous communication channels to help assure distribution.

#### **I.1.4 Self-Assessment Process**

The Division Self-Assessment (SA) approach is a combination of ongoing periodic inspections and a more comprehensive annual facility Self-Assessment Checklist.

The on-going inspections are done by the DSC and by line management. The frequency of the DSC safety walkthroughs depends on the activities in the labs, and the issues on hand. A few labs are inspected only once or twice a year, most labs are inspected quarterly, and a few labs are inspected monthly or more frequently. Line management walkthroughs are focused primarily on PIs doing walkthroughs of their spaces quarterly, and secondarily on senior management walkthroughs of selected spaces at least annually. Line managers use a Lab Safety Inspection Checklist tailored to EETD (<http://eetd.lbl.gov/EHS/docs/eetd-lab-insp-checklist.xls>), and they are encouraged to invite Division safety staff on their walkthroughs. [See Appendix 1 for a list of all supporting documents available online with links.]

The more comprehensive annual ES&H SA Checklist is sent to the PIs and Work Leads of each of the Division's 30 research facilities. Normally, the annual Self-Assessment Checklist is seven pages, with a three-page occupational safety checklist supplement sent to those facilities that have machine tools or shops. To avoid redundancy with the unusual number of audits and reviews early in FY09 (including the activities associated with the DOE HSS audit), a special abbreviated annual checklist was used this year. The abbreviated FY09 self-assessment checklist and review process included verification of the normal quarterly lab inspection checklists, plus questions on environmental impact and offsite work. The FY09 annual SA process also included having line managers review the EETD ISM Plan, entering findings into CATS, updating the chemical inventory, reviewing door placards, updating the HMS database, and checking training completion.

#### **I.2. Goals and Objectives**

The principal goal of the Division's ES&H effort is to ensure that all research activities in the Division are conducted safely and in compliance with the applicable federal, state, local, and Laboratory standards. Recognizing that much of the responsibility rests with the Division, our efforts focus on working with the Division scientific and supervisory staff to successfully meet these responsibilities.

To this end, our objectives are to: i) ensure that all Division staff recognize and act upon their ES&H responsibilities; ii) support these activities with oversight by Division management, the Safety Coordinator and the Safety Committee; iii) provide advice, necessary solutions, tools, etc. to all responsible parties within Division; and iv) collect data and maintain records for Division and Laboratory use, such as for trend tracking, periodic reports, the annual SA report, and Laboratory audits.

### **I.3. Conclusions**

Overall, the Division's safety performance was good. Evidence shows that EETD's safety program is mature, effectively founded on the ISM principles, and provides a safe work environment for its staff. Formal authorization reviews were thorough and frequency was appropriate to the authorization. The DSC inspected all lab spaces approximately quarterly. PIs are doing their quarterly lab walkthroughs, mostly on time, and they are documenting their walkthroughs on the EETD Lab Safety Inspection Checklists posted in each lab. Senior Division managers have conducted at least one walkthrough during FY09 (most in November). Job Hazard Analysis (JHA) completion rates and training compliance were both excellent. Five of the 7 Opportunities for Improvement from the FY08 SA Report have been completed and one is partially complete (as detailed in Sect. II.2).

The one incomplete Opportunity for Improvement pertains to poor SAA performance, which continued through FY09. Also, waste quality assurance worsened to only fair during FY09.

The partially complete F08 Opportunity for Improvement pertains to CATS. Efforts to get Division personnel (other than just the DSC) to track issues in CATS, and to do so accurately, have been very successful. Publishing the EETD CATS Primer has been instrumental in this regard. This has resulted in a significant increase in CATS entries, showing good Division-wide participation in walkthroughs, awareness of safety issues, and issue closure. However, there are still a number of issues that get tracked outside of CATS, or are not entered or closed in a timely manner. This will continue to receive attention in FY10.

## **II. Effectiveness of Division ES&H Programs**

### **II.1. Accomplishments and Noteworthy Practices**

**II.1.1.** We continue to enjoy productive relationships with staff in the EH&S Division, especially the EH&S Division Liaison to EETD and the Waste Generator Assistant; but also including Subject Matter Experts in the areas of electrical safety, chemical hygiene, laser safety, and SAA compliance. These latter issues are key potential hazard areas within EETD.

**II.1.2.** The Division conducted 3 all-hands meetings, 2 of which had safety as an agenda item. The Division Director continues to clearly articulate his commitment to safety and his expectations for safety from the Division staff.

**II.1.3.** The Assistant Division Director for ES&H and Space is a member of the Division Council. ES&H issues are presented and discussed at each Division Council meeting. The Assistant Division Director is also a member of the Laboratory's Safety Advisory Committee, and this provides an important communications channel between the Division and the Laboratory.

**II.1.4.** Although less than in the past due to competing DSC responsibilities, the DSC continued a reasonable presence "in the field," conducting inspections and safety reviews, and providing 'on-the-spot' advice. The presence of the DSC also helps improve communications between the research staff, Division management and ES&H personnel. All of the Division's lab

and shop spaces are inspected by the DSC at least once per year, and typically every few months. The Assistant Division Director also conducts walkthroughs of Division space on a regular basis. Deficiencies are tracked, generally in CATS.

**II.1.5.** The overall completion rate for JHAs was 97% at the close of FY09. (The JHA completion rate was 98% at the end of FY08.) The completion rate for required training courses was 94% at the close of FY09. (The completion rate was 89% at the end of FY08.) The Division management, in cooperation with the Human Resources Department, has a policy to not renew employment terms for Guests and Visitors until their JHAs are current and all required training is completed or scheduled. The active role of Division management, continuous efforts of the DSC, and improvements in the on-line JHA process have contributed to a significant improvement in the JHA compliance rate in the past two years.

**II.1.6.** Again this year, our radiation authorizations (1 RWA, 1 SSA, 7 GLAs, and 2 X-Ray) have all been renewed on time, have had no major deficiencies, and have 100% completion on required training.

**II.1.7.** EETD had no Nonconformance and Corrective Action Reports (NCARs) issued by Waste Management and no environmental violations or unplanned releases.

**II.1.8.** The Division participates in “Green Purchasing” and mandated the use of recycled paper on a Division-wide basis. In the Division’s two largest buildings, 70 & 90, dedicated collection areas have been established to promote and ease recycling and proper disposal of materials. An environmental impact query is included in the annual Self-Assessment Checklist, and line managers are asked to review and optionally fill out the [Environmental Review and Self-Assessment Checklist](#). Normally various waste streams are evaluated each year to identify potential waste minimization opportunities, however, this process was preempted this year due to workload.

**II.1.9.** EETD continues to maintain the meticulous process of record keeping, which is critical for assessing long-term performance of specific facilities as well as Division programs. Databases maintained by the DSC provide a full overview of all the Division research facilities, including key personnel, space assignments, authorizations, a summary of hazards, and notes on action items. The databases also track many key self-assessment metrics, and serve as a primary source of information to identify potential problems and long-term trends.

**II.1.10.** Ongoing accident prevention efforts have helped keep the accident rate at a low level. Six injuries were reported during the FY09 performance period. One of the 6 injuries was ergonomic related, and 2 of the 6 were recordable (including the ergonomic injury). Our 14-year average is 6.9 injuries per year, with 52% of these related to ergonomics, and 34% recordable. The Division Safety Coordinator reviews occurrence reports, exposure reports, safety notices, injury and accident rates, and “lessons learned” reports; and as part of our accident prevention efforts, acts upon them and redistributes the information to the Division personnel, as appropriate.

**II.1.11.** The Division has an ergonomics policy that dates back to 1999 and is detailed in the ISM Plan. Using ergonomic evaluators from EETD and EH&S, the Division has an active

workstation ergonomic evaluation program. A total of 382 of the Division's 490 personnel have completed the EHS0059 Remedy Interactive ergonomic workstation evaluation (up from 310 last year).

**II.1.12.** PIs and laboratory staff maintain their chemical inventories on an on-going basis. Help from EH&S chemical inventory staff is used when needed. Of the 44 chemical owners in EETD, 35 (holding 94% of the total chemicals) have updated their chemical inventories since the beginning of FY09. Of the 9 chemical inventories that were not updated during this time period, all but 2 are all small and static inventories.

**II.1.13.** The Division maintains a website (currently being updated) specifically for safety items pertinent to our Division. The EETD ES&H website (<http://eetd.lbl.gov/EHS/EHS.html>) includes the Division ISM Plan, the annual Self-Assessment Report, near-miss data, walkthrough checklists, Safety Committee meeting minutes, acronyms, Division ES&H staff contact information, a synopsis of the new PPE and food policy, CATS instructions, HSS audit preparation documents, and HSS audit preparation EETD mock interview videos. The website is periodically updated with additional and revised information.

**II.1.14.** EETD has established a Safety SPOT award program that recognizes exemplary performance and commends groups or individual employees that expend extra effort to conduct work operations in a safe and pollution free manner. In addition to adhering to all LBNL safety regulations and ensuring that personnel are adequately trained and motivated, the candidates are selected for going beyond the call of duty to enhance safety and environmental protection within the Division. Examples of notable performance include: identifying near-miss situations and new potential work hazards, fast response to safety issues, voluntary preventive actions etc.

The objectives of this program are to:

- Elevate awareness of safety & pollution prevention in EETD
- Encourage compliance with safety regulations
- Provide personnel with a better understanding of job-related hazards
- Enhance protection of personnel and equipment

The award nominations are reviewed, selected and approved by the ADD, DSC, and Division Director. Award winners are officially recognized at EETD Town Hall Meetings. Five safety related OPA and Spot Awards were granted during FY09, and 3 Spot Awards were granted during FY08 (since January 2008 when the program was established).

**II.1.15.** The Division has established a pilot program of recording and analysis of near hit situations. The goal of this program is to strengthen the feedback part of ISM, and identify possible patterns in the safety risks and deficiencies that need to be addressed on the Division level to prevent accidents and injuries. EETD requires that all near hits be reported by supervisors to the DSC. The DSC collects all reports, includes them in a database posted on the EETD ES&H website, and processes the information, looking for possible coincidence. Significant near hits are reported to the EETD staff via the What's New newsletter. The Division Safety Committee reviews and evaluates near hit information provided by the DSC quarterly. Annual analysis of near hits and implementation of corrective actions will be part of our future self-assessment process as needed. EETD Safety SPOT award can be granted for exemplary performance in recognizing and reporting near hit situations.

**II.1.16.** The HSS Audit Preparation and HSS Emulation Review activities were significant ES&H events during FY09, and they resulted in a profound improvement with the Division safety culture. Some of these safety review and preparation techniques and activities will be continued as part of the Division's efforts to maintain the momentum.

From late 2008 through January 2009, EETD had extensive HSS audit preparation activities that included lab stand-downs, ISM training sessions, mock audits, red team inspections, improvements with house keeping and storage, and greatly increased visibility of safety in Lab and Division communications and meetings. For the Lab Stand-downs, the 30 EETD research facilities were reorganized into 12 stand-down groups in order to have a reasonable number of attendees, and some commonality with hazards. Each stand-down was led by a PI; and at least one Senior Manager and one EETD ES&H staff person was required to be present. The EH&S Division Liaison or a SME was typically present also. The Division developed clear guidance for the stand-downs that included a discussion of ISM, mock audit sessions, review of injuries and near misses, and a safety walkaround of lab spaces.

Then, since EETD was not selected as a focus division during the January HSS audit of LBNL, EETD had an HSS Emulation Review conducted on 5/12/09 by McCallum-Turner and the LBNL EH&S Division. Findings and corrective actions from this review are discussed in Sect. III.2.D10-9) on Page 27.

A particularly noteworthy accomplishment was the creation of several short [EETD mock interview videos](#) by the EETD Communications Office. The four videos show correct and poor responses to an office environment interview, and correct and poor responses to a lab environment interview.

## **II.2. Status and Progress on Corrective Actions for Issues Identified in FY08**

Opportunities for improvement or corrective actions identified in the Office of Contract Assurance (OCA) Validation Report for FY2008

### **Divisional Findings:**

**II.2.1** Unsatisfactory SAA compliance. EETD plans to focus efforts on monitoring SAAs, and educating waste generators and associated Principal Investigators (PI's) on SAA requirements.

*Responsible Person: Guy Kelley, EETD Waste Generators, SAA Responsible Persons, and PIs with SAAs*

*Status: Incomplete*

- *FY09 SAA compliance was 83% (compared to 88% in FY08). Most violations were minor, and the majority were related to labeling issues. Continuing efforts focused on raising awareness of SAA performance issues, and raising the knowledge level regarding SAA and waste procedures and regulations. Tools used included Quarterly SAA and Waste Management Newsletters from the DSC (See Appendix A2.1.), walkthroughs, one-on-one contact with waste generators and SAA Responsible Persons, and line management involvement with the SAA issues.*

- *The Division did a good job with putting out good quality quarterly newsletters on the subject. Although walkthroughs, contact with waste generators, and obtaining line management involvement was sustained at close to the normal level from previous years; the goal of boosting*

efforts in these areas was not achieved due to competing demands on Division ES&H resources.

- This opportunity for improvement will be carried over as a goal for FY10. Included will be a continued discussion with Waste Management about a web-based system to print waste labels and track waste containers. (See Sect. II.3.)

### **II.2.2** Entry of issues into CATS needs improvement.

*Responsible Person: Guy Kelley, and EETD PIs and Work Leads*

*Status: Partially complete*

- *Early in FY08, many issues were not entered into CATS in a timely manner or at all. Reasons included time constraints, poor functionality of the CATS system, and inadequate user training on the CATS system. However, by the end of this review period, the majority issues are being entered into CATS in a timely manner.*
- *During FY09, 106 CATS issues were closed. 47 issues are currently still open. These numbers show that use of CATS has increased significantly.*
- *Although all issues are tracked either in CATS, walkaround records, and/or the DSC's master facility spreadsheet, some issues are still not entered into CATS in a timely manner. Also, many corrective actions are not being closed on time. Thus this opportunity for improvement will be carried over as a goal for FY10.*
- *See Sect. I.3 (Executive Summary Conclusions) and Sect. II.3 (Significant or Recurring ES&H Issues) for further discussion of CATS.*

### **Divisional Process Improvements:**

**II.2.3** Improve the Offsite Safety Review Forms to increase the robustness of the analysis of offsite work tasks, hazards and controls.

*Responsible Person: Guy Kelley*

*Status: Complete.*

- *Offsite work is being tracked and analyzed by use of the EETD Offsite Safety Review form. (See Appendix A2.2.) The form has been revised to increase the robustness of the analysis of tasks, hazards, and controls.*

**II.2.4** Determine if use of the Offsite Safety Review Form as a Task-Based JHA requires EH&S Division approval and obtain such approval, if necessary.

*Responsible Person: Guy Kelley*

*Status: Complete.*

- *The EETD Offsite Safety Review form does not need EH&S approval if used to analyze offsite safety, which is how it is currently used. (Reference email from John Seabury, 10/22/09.) John goes on to say that if the Offsite Safety Review form is used as an alternate to the Task-Based JHA, then it would need EH&S approval. As the offsite safety review process evolves in EETD, the potential for using this form as an alternate to the Task-Based JHA will be evaluated.*

**II.2.5** Continue monitoring for compliance with EETD's requirements for safety walkthroughs.

*Responsible Person: Guy Kelley and Division Line Management*

*Status: Complete*

- *As per the Division ISM Plan, PIs are expected to conduct walkthroughs of their lab spaces at least quarterly. The Division uses a Lab Safety Inspection Checklist that is tailored to EETD. Completed quarterly walkthrough checklists are left in a document pocket inside the door to every lab. During the DSC's safety walkthroughs, these quarterly walkthrough checklists are spot-checked. During the September annual Self-Assessment process, PIs were asked to send to the DSC a copy of their FY09 4<sup>th</sup> quarter checklists. To date, 77% of EETD's 30 research facilities have complied.*

- *Senior line management is also required to conduct periodic safety walkthroughs. The Division Council agreed upon a minimum of once a year for these walkthroughs. All senior managers conducted FY09 walkthroughs during the November 2008 HSS audit preparation lab stand-downs. The next scheduled walkthroughs by senior managers is planned for January 2010. Many senior managers conduct walkthroughs at other times as well.*

**II.2.6** Continue monitoring JHA and required training completion. Expedited the training of new hires.

*Responsible Person: Guy Kelley*

*Status: Complete*

- *JHA completion rate is 97%. Training completion rate is 94%.*
- *Training of new hires has been greatly expedited by having most training courses available online.*

**II.2.7** Verify the renewal periodicity for EETD's X-ray authorization. The Division's Self-Assessment report referenced a 5-yr renewal, whereas EH&S Procedure 735 specifies a review every 18 months, not to exceed 20 months.

*Responsible Person: Guy Kelley*

*Status: Complete*

- *EETD acknowledges that current regulations require X-Ray Authorization renewals every 18 months, not to exceed 20 months. Although the Division thought the renewal period was 5-years, based on old standards, the Authorizations were in fact being renewed on time by the EH&S Rad Protection Group. Renewal periods for the old X-Ray Safety Document and X-Ray System Safety Analysis Document were every 5 years up until a few years ago.*

### **II.3. Significant or Recurring ES&H Issues**

- *SAA Performance: Efforts failed during FY09 to improve SAA performance and maintain the excellent waste QA performance achieved during FY08. SAA compliance dropped from 88% in FY08 to a marginally fair 83% in FY09. (It is worth noting that most violations were minor, and the majority were related to labeling issues.) Waste QA performance dropped from 100% in FY08 to a marginally fair 92.9% in FY09. The Division will again attempt to focus efforts on stepped up monitoring of SAAs, and educating waste generators and associated PIs to improve SAA and Waste QA compliance.*

During FY09, the Division had discussions with the Waste Management Group about the possibility of a Lab-wide web-based system to fill-out chemical waste labels and track the containers. This could easily avoid most of the SAA violations, including missing information on the waste labels, improper containers, and late container pickup.

• *CATS*: CATS has become a necessary and important tool to track corrective actions. The Division has made significant improvements with getting issues and corrective actions entered into CATS. However, the complexity of the CATS system continues to be an impediment to full implementation. Although each institutional upgrade to CATS has made the system more encompassing with its new data entry and analysis features, the Division is concerned that the time it takes to enter each deficiency into the system also increases with each upgrade, further straining division resources. As with last year, with the increased number of audits, reviews, and lab stand-downs, most of the burden of entering issues into CATS had to be shifted from the DSC to the users. Initially, about 80% of the user CATS entries were incomplete or improperly entered to the point where the issue failed to progress through the system. The DSC wrote a [CATS Primer](#) document that was distributed to PIs and Work Leads, and posted on the EETD ES&H website. This significantly reduced data entry errors and improved compliance with entering CATS items in a timely manner. This set of step-by-step instructions was tailored to typical EETD entries and ignored unnecessary fields. Despite this attempt to make a simple set of instructions, the document was still 2-1/2 pages long, which indicates how complicated the CATS system has become.

As in past years, Facilities' response to corrective actions ranges from good to poor. A common complaint about Facilities from our staff is the excessive time taken to complete work orders.

#### **II.4. Possible Root Causes**

As described last year, the difficulty in obtaining a consistent and appropriate degree of attention to ES&H issues within the Division appears to stem from several factors. An important – possibly the predominant – factor is the safety ‘culture’. Until the last several years, safety issues often did not receive the level and consistency of attention required. This is also true in terms of incorporating recent changes in safety procedures into projects initiated years ago. However, with continued line management “buy-in”, and as new personnel with a higher level of safety awareness replace older, more rigid staff, the safety culture is improving in the Division. More importantly, as discussed in Sect. II.1.16 above, the recent DOE HSS audit preparation activities have resulted in a profound improvement with the Division safety culture.

There are some weaknesses with the Lab-wide ergonomics program. Personnel moves do trigger the EHS0058 Ergo Self-Assessment Refresher course, but only in the cases where the individual had the EHS0059 Remedy Interactive Ergo Self-Assessment course requirement in the first place. (In EETD, this requirement is currently triggered by answering “yes” to the JHA question about working more than 4 hours per day on a computer, however making this a requirement for all personnel is being considered.) There is no other mechanism to reevaluate workstations or notify the ergo team when people are being moved. Also, the Remedy Interactive response time is too slow. It may be a couple months before a red flag is raised for an issue after a person relocates. Other ergo improvement ideas include more emphasis on follow-up, particularly after relocations or significant workstation changes, and having a Division short list of high risk persons.

There has also been little Lab-wide guidance on analysis of offsite work. Tracking the presence and nature of offsite work has been difficult. Significant improvements were made during FY09 with the robustness of the EETD Offsite Safety Review process. These improvements will continue to be incorporated into offsite safety reviews during FY10.

## **II.5. Corrective Measures Planned For FY10**

### **Specific “high effort” activities:**

**II.5.1 *SAA and Waste QA Performance:*** SAA performance dropped to 83% and waste QA compliance dropped to 92.9% in FY09. The Division will focus efforts on stepped up monitoring of SAAs, and educating waste generators and associated PIs to improve SAA and Waste QA compliance. The Division will continue FY09 discussions with Waste Management regarding the possibility of an institutional web-based system to fill-out chemical waste labels and track the containers. This could easily avoid most of the SAA violations, including missing information on the waste labels, improper containers, and late container pickup.

**II.5.2 *Tracking issues in CATS and closing out Corrective Actions:*** Although significant improvements were made in FY09, effort will be made to provide more prompt entry of deficiencies into CATS after inspections. In addition, specific follow-up activities will be undertaken, such as reminders to close corrective actions, and verification visits by the Division Safety Coordinator. As appropriate, we will work with Facilities and EH&S to resolve issues that have caused extensive and frustrating delays in evaluating and closing findings. A significant advantage of the CATS system is that it sends out automatic reminders at specific intervals.

### **Specific “moderate effort” activities:**

**II.5.3 *JHA Completion and Accuracy, and Training Completion:*** JHA accuracy, as measured by the quality of the Description of Work statements, improved significantly during FY09 due to a Division-wide campaign. However the 89% accuracy rate the Division achieved leaves room for improvement, and this will be a focus area for FY10. As in FY09, the Division will continue to spot check and address other JHA accuracy issues and problems. Monitoring status and sending reminders will continue in order to maintain the good JHA and Training completion rates. Focus will also continue on “mission critical” training, such as that required by AHDs or for other specific work functions.

**II.5.4 *Offsite Work Reviews:*** The robustness of the analysis of offsite work tasks, hazards, and controls in the EETD Offsite Safety Review form was improved significantly late in FY09. (See Appendix A2.2.) The Division will continue to implement these more robust reviews during FY10, with a first priority given to new offsite projects and a second priority with re-evaluating ongoing projects. We will work further with Division management and research staff to assure that all groups who conduct offsite experimental work (other than work on UCB Campus) use the Division’s Offsite Safety Review form, and that the DSC reviews the offsite work. The objective is to improve tracking and identification of offsite work, and ensure that offsite work hazards are identified and controlled with the same rigor as onsite work. The Division will cooperate with any Lab-wide efforts to deal with this issue on an institutional level.

**II.5.5 *OJT Robustness:*** Assure appropriate Division personnel recognize that when OJT and/or mentoring are used as a mechanism to demonstrate that personnel can work without supervision, this action represents a second and final work authorization step. (From HSS Emulation Review.)

**II.5.6 *Heavy Lifting:*** Assure relevant Division personnel who move heavy objects have the knowledge and tools to do this task safely. (From the HSS Emulation Review.)

### **III. Measurement of Division ES&H Performance against FY09 ES&H Performance Criteria**

#### **III.1. EETD Division Specific Self-Assessment Measures for FY09**

**III.1.1.** Offsite Work Reviews. The Offsite Safety Review Forms will be improved to increase the robustness of the analysis of offsite work tasks, hazards, and controls. We will work further with Division management and research staff to assure that all groups who conduct offsite experimental work (other than work on UCB Campus) use the Division's Offsite Safety Review form, and that the DSC reviews the offsite work. The objective is to improve tracking and identification of offsite work, and ensure that offsite work hazards are identified and controlled.

*Implementation Status: Complete.*

*The robustness of the analysis of offsite work tasks, hazards, and controls in the EETD Offsite Safety Review form was improved significantly late in FY09. (See Appendix A2.2.) The DSC worked with Division management and research staff to identify groups who conduct offsite experimental work (other than work on UCB Campus). The objective is to improve tracking and identification of offsite work, and ensure that offsite work hazards are identified and controlled with the same rigor as onsite work.*

**III.1.2.** Line Management Participation in ES&H. The Division will develop an improved structure and more realistic schedule of walkthroughs by senior Division management. The Division will explore new methods to track these walkthroughs. A good program for quarterly walkthroughs by PIs and Work Leads is in place (with EETD Lab Safety Inspection Checklists posted near the door of each lab), and monitoring of this program for compliance will be continued. Promoting safety as an agenda item at meetings, will continue to receive attention.

*Implementation Status: Complete.*

*The Division Council agreed upon annual senior management walkthroughs as a minimum. All senior managers conducted FY09 walkthroughs during the November 2008 HSS audit preparation lab stand-downs. The next scheduled walkthroughs by senior managers is planned for January 2010. Many senior managers conduct walkthroughs at other times as well. Senior managers are encouraged to invite Division ES&H staff to attend the walkthroughs, and this occurred for all the November walkthroughs. The DSC will be kept apprised of the walkthroughs for tracking purposes.*

*The program for quarterly lab walkthroughs by PIs or Facility Work Leads continues to be a success. Some reminders are necessary when these walkthroughs are overlooked, and monitoring by Division ES&H staff will continue.*

**III.1.3. Safety and the Annual Performance Review and Development Process.** The Division will explore the feasibility of increasing the weight of safety in the annual PRD process. The question of whether the Division can make this change or whether this has to be an institutional change will be explored.

*Implementation Status: Complete.*

*The Division Council decided not to modify the established PRD form. This form asks whether institutional expectations for EH&S have been met, including having an up-to-date JHA and completing required training. Supervisors will be charged with making an adequate ES&H assessment of their employee, and to solicit feedback from the DSC to help with this as necessary.*

**III.2. Institution-wide Division ES&H Self-Assessment Measures for FY09**

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<b>1. DEFINE WORK</b>		
E1. Division revises division ISM plan to reflect a) ES&H policy changes, and b) updates to the Institutional ISM plan. Line management communicates updates to the plan to division personnel and assesses effectiveness of that communication.	1-1. What is the status of the Division ISM Plan relative to the Division ISM Implementation Plan Review (Attachment A)? Has the checklist been completed for the Division Plan? Have any Gaps been identified? Has a Corrective Action Plan been developed to resolve any identified Gaps?  1-2. Are the EH&S roles and responsibilities described in Division Plan current with the Division's	D1-1) The <a href="#">Division ISM Plan</a> structure and content meets most of the elements of the Division ISM Implementation Plan Review, and the checklist has been completed. The elements that are not addressed are either not applicable or minor. These minor missing elements will be addressed in future revisions.  D1-2) Yes, roles and responsibilities are current. There were no significant Division business changes.

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>E2. Division ensures workers have a current (reviewed/reauthorized within the previous 12 months) Individual Baseline Job Hazards Analysis (JHA) that accurately reflects the work performed and hazards present.</p> <p>E3. Division ensures that before non-construction work is performed by Subcontractors, Vendors, or Guests at LBNL facilities, a Subcontractor Job</p>	<p>business practices? Were there any business changes that resulted in changes to the Division's ES&amp;H management practices?</p> <p>1-3. Are the Work Locations, Facilities and Work Location Hazards lists (e.g. HMS System) current within the Division ISM Plan? Were there any facility and/or work scope changes that resulted in changes in the Division's ES&amp;H management practices?</p> <p>2-1. Did we document our process for performing JHA's in our ISM Plan?</p> <p>2-2. What percentage of staff have a current Individual Baseline JHA?</p> <p>3-1. How were the LBNL non-construction safety assurance requirements (for work performed by Subcontractors, Vendors and Guests at LBNL facilities) communicated to Division staff?</p>	<p><b>DIVISION SYSTEMS</b></p> <p>D1-3) Lists of work locations, facilities, and hazards are not maintained within the ISM Plan. However, these items are covered in detail in the HMS system, which is referred to in the ISM Plan. It is Division policy to update the HMS information at least annually. The DSC normally validates this information, but this task was only partially completed this fiscal year.</p> <p>A more useful and always up to date listing of work locations, research facilities, hazard summaries, responsible persons, and formal authorization summaries is kept by the DSC in a master facilities database. This database is not referenced in the EETD ISM Plan, but is scheduled to be in the next revision.</p> <p>D2-1) Yes. JHA procedures and expectations are discussed in the EETD ISM Plan, including Sect. 3 (PI responsibilities), Sect. 5 (DSC reporting responsibilities), Sect. 6a (scope of work), Sect. 6b (offsite work), and Sect. 7 (qualifications and training).</p> <p>D2-2) The EETD JHA completion rate was 97% at the end of FY09. (For comparison, the EETD JHA completion rate was 98% at the end of FY08, and the Lab-wide JHA completion rate was 97% at the end of FY09.) (EETD JHA accuracy rate, as measured by the quality of the Description of Work statements, was 89% (93% Lab-wide).)</p> <p>D3-1) On 12/11/08, there was a SJHAWA Training session for all EETD Administrative personnel who assist PIs and researchers with purchase orders and similar issues. On 12/14/08 EETD completed and posted on the EETD Safety website a SJHAWA procedures and policy document tailored to EETD. On 12/12/08, an email notification was made to all EETD staff announcing the new SJHAWA policy. This notification included a <a href="#">link</a> to the EETD SJHAWA procedures and policy document, a <a href="#">link</a> to a Subcontractor Safety PowerPoint document that was placed on the EETD safety website, and a link to the <a href="#">EH&amp;S Division NSSA website</a>.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>Hazards Analysis and Work Authorization (SJHAWA) form is prepared and pre-job meeting is held to review and sign the SJHAWA form. Oversight of the work is performed and recorded using a risk-based graded approach.</p>	<p>3-2. How does the Division determine when SJHAWAs are required?</p> <p>3-3. Are the Division's completed SJHAWA forms signed by the Requester and initialed by the Subcontractors, Vendors and Guests?</p> <p>3-4. Are work oversight observations recorded at a frequency that is commensurate with the hazard level of the work?</p> <p>3-5. Does the Division have a repository for completed SJHAWA forms?</p>	<p>Each time a requisition for non-construction subcontractor services is processed by the Procurement Department, an email is sent to the requestor and DSC regarding SJHAWA procedures and requirements.</p> <p>D3-2) As per procedures described in SJHAWA related documents as mentioned in D3-1) above.</p> <p>D3-3) Requestors are informed that these sign-offs are required. Of the 7 completed SJHAWA forms received by the DSC, 5 had these signatures and initials.</p> <p>D3-4) About half the SJHAWA forms turned in to the DSC don't have the oversight observations recorded. But it is likely that these are not the final forms.</p> <p>D3-5) Yes, it is Division policy that the DSC is responsible for retaining all SJHAWA forms for reference and future use.</p>
<p>What noteworthy accomplishments in the ISM core function #1, <i>Define Work</i> did we achieve?</p>		<ul style="list-style-type: none"> <li>• Major: The DSC maintains a master research facility overview spreadsheet that accurately lists building and rooms, responsible persons, formal authorizations, a hazard summary, and various self-assessment data.</li> <li>• Major: The EETD JHA completion rate was an excellent 97%.</li> <li>• Minor: The Division ISM Plan was revised to reflect the primary elements of the Division ISM Implementation Plan Review, as well as updates to ES&amp;H policy.</li> </ul>
<p>What opportunities for improvement in the ISM core function #1, <i>Define Work</i> exist?</p>		<ul style="list-style-type: none"> <li>• Minor: Improve JHA accuracy (currently at 89%).</li> <li>• Minor: Ensure that all SJHAWA forms are sent to the DSC, and signatures and work oversight observations are completed.</li> </ul>
<b>2. IDENTIFY HAZARDS</b>		

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>E4. Division reviews work activities to identify, analyze, and categorize hazards and environmental impacts for the associated work. Examples of hazard inventory include: Hazard Management System (HMS) database (or equivalent), project safety review, workspace safety review, Job Hazard Analyses (JHA), environmental review (NEPA/CEQA, permits, regulations), and chemical inventory.</p>	<p>4-1. Review division's hazard identification and inventory documentation.</p> <p>4-2. Did we review our work activities to identify, analyze, and categorize hazards consistent with Lab policy?</p>	<p>D4-1) EETD primarily uses HMS, the DSC's master research facility overview spreadsheet, project safety review (PSR) forms, Offsite Safety Review (OSR) forms (Appendix A2.2.), JHA, NEPA/CEQA, and CMS to identify and inventory hazards.</p> <p>D4-2) To date, 77% of the Division's research facilities have turned in their safety walkthrough checklists and other supporting information related to the annual Self-Assessment process. (Research facility PIs who have not yet responded are Arasteh, Selkowitz, Asaro, Srinivasan, Destailats, Fisk, Apte, Goth-Goldstein, McKone, Gundel, Lunden, and Singer.)</p> <p>100% of the Division's lab space was inspected by the DSC at least once and typically about quarterly during the review period.</p> <p>PIs conduct quarterly walkthroughs of their spaces using the EETD Lab Safety Inspection Checklist (<a href="http://eetd.lbl.gov/EHS/docs/eetd-lab-insp-checklist.xls">http://eetd.lbl.gov/EHS/docs/eetd-lab-insp-checklist.xls</a>). The completed checklists are kept in a document pocket inside the door of their labs. Issues not corrected on the spot are entered into CATS.</p> <p>All senior Division management (including the Division Director, Assistant Division Director, and Department Heads) conduct periodic walkthroughs of their spaces, at least annually. Documented walkthroughs occurred last November, and the next planned walkthroughs are next January.</p> <p>Most of the Division office space has been inspected by the DSC, Department Heads, and Supervisors on a graded as-needed basis, and is generally only documented when deficiencies exist.</p> <p>As described in the Division ISM Plan, the Division's inventory of hazards and special equipment is maintained in the HMS database. Facility PIs are reminded to update HMS during the annual Self-Assessment process. Due to difficulties with the HMS database, some PIs were not able to record their reviews. This problem is currently being investigated. The DSC also makes spot checks of HMS information for all spaces.</p> <p>NEPA/CEQA forms and our Project Safety Review (PSR) forms also identify hazards and remind researchers to properly allocate resources for ES&amp;H each year when the project is renewed and for each new project. The PSR form can be found at <a href="http://eetd.lbl.gov/EHS/chem-hazards/docs/psr.rtf">http://eetd.lbl.gov/EHS/chem-hazards/docs/psr.rtf</a>.</p> <p>Also very important are the DSC's numerous visits to each experimental facility during the year. Thus he is very familiar with existing and any new hazards and potential adverse environmental impacts.</p> <p>Through regular communications, PIs know that they must maintain an up-to-date chemical inventory and perform peroxide former testing as required. This is reinforced during the Self-Assessment process.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>E5. Division participates in pollution prevention, energy and resource conservation, recycling, and waste minimization programs, as appropriate for the environmental impact of their activities.</p>	<p>4-3. Do we have a specific hazards review process described in our ISM plan? If so, did we follow this process?</p> <p>4-4. How do we ensure our inventory is comprehensive (i.e. did we include all of our workspaces)?</p> <p>5-1. Complete the Environmental Review Checklist (Attachment 1), or similar process.</p>	<p>The above processes to identify hazards cover EETD's offsite work as well. However, considering the unique situations that can arise with offsite work, EETD has developed an Offsite Safety Review form (Appendix A2.2.) to further assure the identification and control of offsite hazards.</p> <p>D4-3) The EETD IDM Plan discusses hazard reviews, including the use of the CMS, HMS, JHA, Project Safety Review Form, and Offsite Safety Review Form. The processes were followed.</p> <p>D4-4) The inventory is comprehensive as per discussion in D4-2) above. Regarding the chemical inventory, of the 44 chemical owners in EETD, 35 (holding 94% of the total chemicals) have updated their chemical inventories since the beginning of FY09. Of the 9 chemical inventories that were not updated during this time period, all but 2 are all small and static inventories.</p> <p>D5-1) For many years, we have identified and tracked a number of waste streams that have waste minimization potential. Generally these waste streams are already using the most practical waste minimization procedures and equipment possible, and still allow research objectives to be met. We have continued to monitor each year these waste streams and associated procedures in an attempt to identify further reduction possibilities. This process was greatly reduced during FY09 due to competing safety activities. The EETD Waste Minimization Program report, last updated 10/22/07, is available upon request.</p> <p>EETD's annual Self-Assessment process this year included a request to all facility PIs and Work Leads to review the Environmental Review Checklist, and to either fill out the checklist for their individual groups or to send to the DSC any noteworthy accomplishments or impediments their group has experienced in this regards over the past year.</p> <p>The Division participates in "Green Purchasing"; and the Lab-wide program of placing paper, glass, plastic, and battery recycling containers in prominent locations in each building. Waste Minimization posters are scattered throughout the Division. The Division mandated the purchase of recycled paper for copiers/printers on a division-wide basis - this went into effect on April 10, 2007. We also sent a Division-wide What's New article on June 20, 2007 on how to save energy and linked to a list of a dozen actions to save energy. The list is still on EETD's Intranet.</p> <p>In May 2007, a new 90-0096 Excess Room was put into operation, and widely publicized for all Bldg. 90 and 90-Trailer occupants. This new program is modeled after the Bldg. 70 loading dock collection area that EETD spearheaded the year before, and allows building occupants to recycle and dispose of property with no costs to them and minimal effort. Instructions and all necessary</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>E6. Division, with assistance from EH&amp;S, surveys all of its electrical equipment by September 30, 2009, as required by the LBNL Electrical Equipment Acceptance Program.</p>	<p>5-2. What are our opportunities for improvement?</p> <p>6-1. Have we documented our non-NRTL electrical equipment in the equipment inspection database? If not, why?</p>	<p>forms (Equipment Movement Tags, Universal Waste Labels, etc.) are provided in the Excess Room. Transportation and Waste Management make regular pickups.</p> <p>D5-2) In Bldg. 90, planning was begun last year to make paper recycling easier and to reduce the number of cans that custodians have to empty. A meeting was held with Joe Griffin, the custodial Group Leader, and several options were discussed to achieve the above result. Possibly budget considerations have slowed this project, since there has been no word from Joe in some time about this project.</p> <p>D6-1) EETD hired a 2-person team from Bay Systems Consulting to conduct the electrical equipment survey. This team had been used for the same purpose by other divisions, and thus had the skills and experience to conduct the survey efficiently and safely. Based on the team's productivity performance in other divisions, they were hired to work in EETD for 7 days in late August through September. However, in this time, they only completed a little more than half of the Division's labs. The team has been booked by other divisions since then, and EETD has them scheduled for 4 more days starting 10/28/09. To date, equipment has been surveyed in 39 of the Division's approximately 68 labs, and 905 pieces of electrical equipment has been entered into the database.</p>
<p>What noteworthy accomplishments in the ISM core function #2, <i>Identify Hazards</i> did we achieve?</p>		<ul style="list-style-type: none"> <li>• Major: EETD has a multi-faceted process to identify and inventory hazards. All workspaces are inspected to identify hazards, generally quarterly, by means of DSC walkthroughs, PI and senior management self-assessments, EH&amp;S technical reviews, and other special inspections. Hazards are inventoried by use of the DSC's master facility overview spreadsheet, HMS, PSRs, NEPA/CEQA, formal authorizations, and the Chemical Inventory. A separate Offsite Safety Review Form is used to meet the more challenging task of identifying hazards and controls in offsite work situations.</li> <li>• Minor: An environmental impact reduction reminder question is included in the annual Self-Assessment process. The Division participates in "Green Purchasing" and mandated the use of recycled paper on a Division-wide basis. The Division's two largest buildings, 90 &amp; 70, now have specific excess collection areas to promote and ease the task of recycling and disposing of materials properly.</li> </ul>
<p>What opportunities for improvement in the ISM core function #2, <i>Identify Hazards</i> exist?</p>		<ul style="list-style-type: none"> <li>• Minor: Complete the NRTL electrical equipment survey. (Currently, over half of EETD's technical areas have been surveyed, and all should be completed by early November 2009.)</li> <li>• Minor: Continue implementation of the new more robust Offsite Work Review form for new offsite projects and for re-reviews of ongoing offsite projects.</li> </ul>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<b>3. CONTROL HAZARDS</b>		
<p>E7. Division is using appropriate and required engineering controls in performing work.</p>	<p>7-1. Do we have a process for determining whether existing engineering and other safety/environmental controls are properly utilized and effective? If not, why?</p> <p>7-2. Do we have a process that identifies opportunities for utilizing engineering and other safety/environmental controls?</p> <p>7-3. Do we have a process for determining the feasibility of installing engineering and other safety/environmental controls?</p> <p>7-4. What actions(s) did we take to resolve deficiencies in this area, as applicable?</p> <p>General:</p>	<p>D7-1, 7-2, &amp; 7-3) Engineering and other safety/environmental controls are mostly common knowledge. Examples of engineering controls used in EETD include machine tool guarding, laser interlocks, fume hoods, glove boxes, secondary containment, and PPE. This need for engineering controls is reinforced by numerous communications and reviews. Project Safety Reviews for new projects are very effective with determining the need for engineering and other controls. Other examples of systems to capture the need for these controls are the inspection checklists, AHDs, policy statements, and the JHAs.</p> <p>D7-2) Engineering and other safety/environmental controls have been successfully and thoroughly identified. Here is an example of EETD staff awareness of this issue: EH&amp;S periodically falls behind with their quarterly reviews and tests of the Bldg. 70 eyewash and safety shower stations. The out of date inspections are regularly spotted and reported by our PIs and Work Leads in the building.</p> <p>Other examples of systems that effectively identify the need for these controls include Laser AHDs which identify the need for interlocks, IH hazard exposure checks which have identified the need for local ventilation, a Division-wide LOTO review that identified the need for equipment specific procedures (before any maintenance or repair work is done), and Remedy Interactive that identifies the need for ergonomic workstation modifications.</p> <p>D7-4) Deficiencies were analyzed with help from EH&amp;S Subject Matter Experts and corrected. (See discussions above.)</p>
<p>E8. Division is using appropriate and required administrative controls in performing work. Examples of administrative controls</p>	<p>8-1. Did we review formally authorized work on schedule?</p>	<p>D8-1) All EETD formal authorizations (13 AHDs, 1 RWA, 1 SSA, 7 GLAs, 1 BUA, and 2 X-Ray) were reviewed on schedule. EETD's AHDs, GLAs, and BUAs are reviewed annually; RWAs, SSAs and X-Ray authorizations every 18 months. Formal authorizations are also reviewed whenever there are significant changes to procedures or hazards. AHD expiration dates are tracked by the online AHD system and by the DSC, and renewal notifications are sent as appropriate.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>include: work authorizations (including but not limited to JHAs, AHDs, BUAs and RWAs), work permits (including but not limited to confined space, and energized electrical work), environmental regulations and permits (including recordkeeping), work procedures, and project safety reviews.</p>	<p>8-2. How did we address changes in work scope?</p> <p>8-3. Are our processes to ensure administrative controls are in place and maintained consistent with our division ISM Plan?</p> <p>RPG authorizations:</p> <p>8-4. Is the work scope accurately captured in the RPG authorization?</p> <p>8-5. Is Division line management sufficiently involved in developing and approving appropriate RPG authorizations?</p> <p>8-6. Does the authorization lead possess line management authority over workers listed on the authorization?</p>	<p>D8-2) Our ISM Plan specifies that line managers are held accountable for hazard controls. They are reminded through regular communications that they must have the authorization reevaluated by EH&amp;S staff whenever there are significant changes to hazards or work scope. All staff know they have the authority to stop work if unsafe conditions exist, including improper controls. Line management authority to suspend operations has been utilized from time to time when authorizations are not complete for new projects, or not renewed for continuing projects.</p> <p>D8-3) The EETD ISM Plan, Sect. 6a, Scope of Work Authorized – General, addresses the JHA and the HMS. And Sect. 6c, Work Requiring Specific Approval, addresses formal authorizations. The procedures for developing and implementing hazard controls vary depending on the category of the hazard. Controls for hazards categorized as moderate and higher are implemented by way of formal authorizations, such as AHDs, RWAs, SSAs, GLAs, BUAs, X-Ray authorizations, etc. Formal authorizations are reviewed at regular intervals, depending on the authorization, and upon significant changes. Administrative controls for our low hazard work are implemented by way of internally reviewing at least annually our self-authorized work (work not requiring formal authorizations). In other words, Division approval only is required for self-authorized or low hazard work. As spelled out in the EETD ISM Plan, this Division approval is accomplished by use of the JHA, and by the process of updating and reviewing the HMS database. PUB-3000, Chapter 6 is used as guidance for internal authorizations.</p> <p>D8-4) Yes, the Rad Protection Group is thorough in this regards.</p> <p>D8-5) Review and signatures are required by the appropriate line managers.</p> <p>D8-6) Yes, the authorization lead is responsible for the safety and OJT of the users.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>E9. Division controls ergonomic hazards (computer, laboratory, and material handling). Employees and line management are knowledgeable and engaged in this process, including the early reporting of ergonomic pain or discomfort (before an injury). Ergonomic issues/concerns/discomfort/pain are managed effectively.</p>	<p>AHDs and BUAs:</p>	
	<p>8.7. Is work reviewed to determine if an AHD or BUA is needed?</p>	<p>D8-7) See discussion in D8-2) and D8-3) above.</p>
	<p>8-8. Are hazards and controls adequately described in AHDs or BUA?</p>	<p>D8-8) EETD conducts thorough reviews of our AHDs. Extensive review input from EH&amp;S Subject Matter Experts is utilized for all new AHDs and for all AHD renewals where there are significant changes in scope, processes, or hazards. BUAs are reviewed by EH&amp;S and the PI.</p>
	<p>8-9. Is work conducted only after AHDs and BUAs are approved by the Division?</p>	<p>D8-9) Yes.</p>
	<p>9-1. Did we implement ergonomic safety policies and procedures as described in our ISM Plan?</p> <p>9-1a. What new policies and procedures (eg., advising all employees who use a computer on a regular basis to download RSIGuard) have been put in place this FY?</p> <p>9-2. How do we communicate</p>	<p>D9-1) The EETD ISM Plan, Sect. 5, Divisional Safety Oversight, contains considerable detail on the Division's ergonomic plan and requirements. This includes EHS0059 Remedy Interactive Ergo Self-Assessment being required for personnel who work at a computer for more than an average of 4 hours per day; and the necessity for an ergonomic workstation evaluation whenever there is pain or discomfort, or when computer usage is more than an average of 4 hours per day. (Requiring all staff to take EHS0059 Ergo Self-Assessment is being considered.)</p> <p>EETD had only 1 ergonomic related injury in FY09. Over the last 14 years, EETD has had an average of 3.6 ergonomic injuries per year (52% of all injuries). This drop in ergonomic injury rate, despite the encouragement for early reporting, is a good sign that preventive measures are effective.</p> <p>EETD was the first Division to participate in the cost sharing pilot program for workstation ergonomics upgrades offered in December 2002 by then Deputy Lab Director Sally Benson. The Division contributed 40% of the cost of the upgrades for 51 workstations.</p> <p>D9-1a) No new policies have been put in place this fiscal year.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
	<p>the importance of early reporting of discomfort and workload management as strategies for preventing ergonomic injuries?</p> <p>9-2a. Are Division-specific ergonomics issues (computer, laboratory, and material handling/tool use) included on the Division's website?</p> <p>9-2b. Are One Minute for Safety slides used by supervisors and others in training?</p> <p>9-2c. Are links to One Minute for Safety slides provided on the Division's website and in group e-mails?</p> <p>9-3. What is our completion rate for required ergonomics training? (accessible through the JHA site)</p> <p>9-4. How timely are our ergonomic evaluations?</p>	<p>D9-2) Early reporting and workload management are specifically identified as critical strategies for preventing ergonomic injuries in the EETD ISM Plan, Sect. 5.</p> <p>An EETD Ergonomics Action Plan was drafted in 1999 and has evolved into a Division policy as stated in the ISM Plan. Key elements of the Division ergonomic policy have been communicated in all-hands meetings, and in various other communications such as the DSC's reports and emails to senior management.</p> <p>Specifically, early reporting and workload management have been addressed in All Hands meetings (where ergonomics is a common topic). These concepts are also a common discussion point, and often part of the root cause and corrective actions associated with our ergonomic injury investigations.</p> <p>D9-2a) Other than normal computer usage, there are no remarkable Division-specific ergonomic issues. Posted on the Division's website is an EETD Office Inspection Checklist, which thoroughly covers computer ergonomic issues. Other than this checklist and the Division ISM Plan, there is no further coverage of ergonomic issues on the website. Considering the usage of the website and the use of other communication means for ergonomic issues, it hasn't been a high priority to place more information on the website. However, plans are underway for a major overhaul of the Division ES&amp;H website in the next few months, and improved coverage of ergonomic issues is on the list.</p> <p>D9-2b) Possible but doubtful.</p> <p>D9-2c) Not on the website, and possible but doubtful in group emails.</p> <p>D9-3) 98% completion rate for EHS0059 Ergo Self-Assessment training (an increase from 95% in FY08). 80% completion rate for Ergo Self-Assessment refresher training, EHS0058. 94% completion rate for Worksmart Ergonomics training, EHS0062 (an increase from 76% in FY08).</p> <p>D9-4) Data not compiled.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
	<p>9-5. Review of Ergo Advocate Program</p> <p>9-5a. Number of active Ergo Advocates</p> <p>9-5b. Number of evals performed by Division Ergo Advocates (preventive evals of new hires, moves, etc.)</p> <p>9-6. Did our division participate in the Ergo Advocate Program?</p> <p>9-6a. Did Ergo Advocates attend update sessions (1 live, 1 webinar) re: Remedy Interactive and New Ergo Database Administrative and Reporting Tools?</p> <p>9-6b. What were the results of our participation?</p>	<p>D9-5) EETD participates in the Ergo Advocate Program.</p> <p>D9-5a) 3 active Ergo Advocates. (Had been 4 in the previous two years, and the Division had 11 ergo evaluators prior to implementation of the Ergo Advocate Program in early 2007.) Plans are underway to increase the number of EETD Ergo Advocates, utilizing a November training date.</p> <p>D9-5b) Data not compiled.</p> <p>D9-6) EETD has an in-house Ergo Advocate team of 3 trained evaluators. EH&amp;S evaluators are used for more critical evaluations where there are injuries, discomfort, or other complexities involved. In-house evaluators are primarily used for the routine evaluations and follow-up work. The team is working towards having workstation evaluations completed for all approximately 182 active career or term EETD staff. Requests from staff or EH&amp;S for ergonomic evaluations are given first priority.</p> <p>D9-6a) Data not compiled.</p> <p>D9-6b) 208 Division personnel have had ergo evaluations as per the EHS0068 course statistics. (This is an increase from 195 at the end of FY08.)</p> <p>Due to the cost and person-hours required when the new Ergo Advocate Program was rolled out in early 2007, EETD's team of trained evaluators was reduced from 11 to 4. This slowed down progress significantly with completing non-critical evaluations. There was also a significant delay in conducting evaluations between the time when the new Ergo Advocate Program was enacted and when team members completed their training. Once the ergo training was completed, evaluations continued with the "revised" ergonomic tools. Evaluators were a little unsure about the 1st initial evaluations, so these were conducted with the EH&amp;S Ergo staff. The Ergo</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
	<p>9-6c. Do the Ergo Advocates use any of the Administrative and Reporting Tools in the Remedy Interactive and Ergo databases for Safety Committee meetings or for tracking purposes?</p> <p>9-7. Review ergonomics database.</p> <p>9-7a. Recent ergo evals by Reason for Eval: Discomfort vs. Preventive and by Status: In Progress vs. Completed)</p> <p>9-7b. Did we complete ergonomic corrective actions, per the database?</p> <p>9-7c. How timely is implementation of corrective actions, per the database?</p>	<p>Advocates think highly of the quality and usefulness of the classroom information. Some Ergo Advocates have expressed concern about the additional workload and not being properly qualified to conduct evaluations, and thus they prefer EH&amp;S do more of the evaluations.</p> <p>D9-6c) Not in the Safety Committee meetings. Other data not compiled.</p> <p>D9-7a) Data not compiled.</p> <p>D9-7b) Data not compiled.</p> <p>D9-7c) Data not compiled.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
<p>What noteworthy accomplishments in the ISM core function #3, <i>Control Hazards</i> did we achieve?</p>		<ul style="list-style-type: none"> <li>• Minor: EETD has a well-organized tracking and filing system for all formal authorizations. All formal authorizations were reviewed on time. Capturing changes in work scope that may effect formal authorizations is accomplished by keeping PIs educated on these requirements and by frequent walkthroughs, particularly by the DSC.</li> <li>• Minor: The Division has a proactive ergonomic action plan and policy that dates back to 1999.</li> </ul>
<p>What opportunities for improvement in the ISM core function #3, <i>Control Hazards</i> exist?</p>		<ul style="list-style-type: none"> <li>• Minor: Evaluate resources available to increase the number of EETD Ergo Advocates or explore possible increased use of EH&amp;S ergo evaluator team.</li> <li>• Minor: Include more ergonomic information in the EETD safety website, and promote the use of ergonomic One-Minute-For-Safety slides in communications and on the website.</li> <li>• Institutional: Improve the system of performing ergo evaluations and follow-up for personnel who relocate. (See Sect. II.4. for further discussion.)</li> </ul>
<b>4. PERFORM WORK</b>		
<p>E10. Division performs work safely within ES&amp;H conditions and requirements specified by Lab policies and procedures. Performance criteria include work authorizations (including but not limited to JHAs, AHDs, BUAs, RWAs); work permits (including but not limited to confined space, energized electrical work); waste management criteria (SAAs, waste sampling, NCARs); and environmental permits and management criteria</p>	<p>10-1. Do we effectively document specific authorization to perform LOTO after employees have completed the basic LOTO training class?</p> <p>10-2. Do we effectively document specific authorization to perform any electrical work such as testing, that is done with exposed electrically hazardous parts?</p> <p>10-3. Is work reviewed to ensure that the scope and</p>	<p>D10) EETD has 13 AHDs, 1 RWA, 1 SSA, 7 GLAs, 1 BUA, and 2 X-Ray authorizations. Details on these authorizations are in the DSC's files and summarized in a database kept by the DSC. For the AHDs, this database includes review dates, number of users, total courses needed under the authorization, and number of courses completed. 100% compliance for all of these formal authorizations.</p> <p>D10-1) No LOTO procedures are performed in EETD other than the simplified LOTO procedures on cord and plug equipment.</p> <p>D10-2) There is currently no EETD electrical work being done that requires specific authorization. One electrical AHD is under development for upcoming work.</p> <p>D10-3) EETD conducts thorough scope and hazard reviews during AHD renewals. Considerable review input from EH&amp;S Subject Matter Experts is utilized for all new AHDs and for all AHD</p>

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<p>(resource conservation, pollution prevention, and waste minimization).</p>	<p>hazards have not changed, prior to internal AHD and BUA reauthorization?</p> <p>10-4. Have personnel completed necessary training prescribed by the AHD or BUA?</p> <p>10-5. Review environmental permits and identify ones applicable to our activities (ESG to provide listing by division). Review the requirements of applicable permits and determine if we are meeting them. Environmental permits are available at: <a href="http://www.lbl.gov/ehs/esg/Permit%20for%20Table/operatingpermitstable.html">http://www.lbl.gov/ehs/esg/Permit%20for%20Table/operatingpermitstable.html</a></p> <p>10-6. How often do we (the Division) review SAAs?</p> <p>10-6a. What are the most prevalent issues found in the SAAs?</p>	<p>renewals where there are significant changes in scope, processes, or hazards. BUAs are reviewed by EH&amp;S and the PI.</p> <p>PIs are also well informed that any significant change in hazards or scope of work must be reviewed by EH&amp;S staff. Additionally, regular DSC walkthroughs and PI self-assessments provide a check that no work is being conducted outside of the scope of the authorization.</p> <p>D10-4) As stated in the EETD ISM Plan, until training requirements for the authorization have been established and satisfied, individuals are not allowed to work under the authorization. Percent training completion rate for EETD AHDs is typically in the mid to upper 90's. OJT is required for all formal authorizations. OJT is documented in the Notes section under the Users section of each AHD, in the Sealed Source Journal for SSAs, in the RWA Journal for RWAs, and in the X-Ray Journal for X-Ray authorizations.</p> <p>D10-5) EETD has no environmental permits.</p> <p>D10-6) All SAAs are formally inspected quarterly by the DSC and the EH&amp;S Waste Generator Assistant. They are also inspected during other walkthroughs by the PI and DSC.</p> <p>D10-6a) 83% of EETD's 33 SAAs were in compliance during the quarterly inspections for FY09. Most violations were minor. The issues found, with the number of instances during FY09, were as follows: Improper labeling (13), improper container for flammables and ignitables (5), improper use of multiple containers in one baggie (3), waste incorrectly checked ignitable (typically pump oil and oil soaked wipes) (2), incompatible waste in same secondary containment (2), waste over 9</p>

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	<p>10-6b. How will these issues be prevented in the future?</p> <p>10-6c. Are all the SAA managers aware of their responsibilities?</p> <p>10-7. What is our rate of accurate characterization of waste?</p> <p>10-7a. Are there any commonalities amongst the failures?</p> <p>10-7b. Are there any lessons learned to be shared with others?</p> <p>10-8. Did my Division receive any NCARs this year?</p> <p>10-8a. If yes, are these related to issues identified in the previous years?</p> <p>10-8b. How will they be prevented in the future?</p>	<p>months (1). PI (and SAA Resp Person where different) for the worst performing SAAs in FY09: Kerr, Kostecki, Sam Mao/Zhixun Ma, Maddalena, Sam Mao/Xiaobo Chen, Ted Chang, Battaglia.</p> <p>D10-6b) Continued education of PIs, Waste Generators, and SAA Responsible Persons. Increased inspections by Division safety staff. The Division will continue FY09 discussions with Waste Management regarding the possibility of an institutional web-based system to fill-out chemical waste labels and track the containers. This could easily avoid most of the SAA violations, including missing information on the waste labels, improper containers, and late container pickup.</p> <p>D10-6c) Yes. SAA Responsible Persons are tracked by the DSC, and their names on the SAA signs are kept accurate. This assures that they and the SAA users know who the SAA Responsible Person is. The SAA Responsible Person, along with the Waste Generator, are contacted by the DSC when any issues arise.</p> <p>D10-7) 92.86% of the waste samples tested in the waste QA program were in compliance. This is a yellow score and is a drop from the 100% compliance in FY08. The 3 QA failures were the following labs:  <ul style="list-style-type: none"> <li>• PI: John Kerr. Waste Generator: Yongzhu Fu.</li> <li>• PI: Robert Kostecki. Waste Generator: Susan Amrose.</li> <li>• PI: John Kerr. Waste Generator: Jai Krishnamurthy.</li> </ul> </p> <p>D10-7a) All 3 QA failures were due to hazardous constituents not reported in the waste characterization. (One was a pH issue.)</p> <p>D10-7b) Keep accurate waste log sheets and match sheets to each container. Always measure pH of aqueous wastes. Be aware of solubility of organic solvents in aqueous extraction solutions and report trace contaminants.</p> <p>D10-8) EETD has had no NCARs, environmental, or other external violations issued during this performance period.</p> <p>D10-8a) N/A</p>

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	<p>10-9. Were there any external regulatory inspections (HSS, DTSC, etc.) of our Division? (eliminated HSS-specific and rolled into here)</p> <p>10-9a. Were there any notices of violation/ noted areas of concern?</p> <p>10-9b. If so, what were the corrective actions taken</p> <p>10-9c. How will they be prevented in the future?</p> <p>10-9d. Are there any lessons learned?</p> <p>10-10. Review RPG</p>	<p>D10-8b) N/A</p> <p>D10-9) McCallum-Turner and LBNL EH&amp;S conducted an HSS Emulation Review on 5/12/09. This, combined with the Lab-wide HSS audit preparation activities in late 2008, resulted in significant positive improvements in the EETD safety culture.</p> <p>D10-9a) “Weaknesses” found (quoted from 6/15/09 summary PowerPoint presentation by EH&amp;S to EETD management):</p> <ul style="list-style-type: none"> <li>• OJT, clear and formalized expectations for the “competency expectations” to be demonstrated are not consistently evident.</li> <li>• Moving Heavy Equipment-It was not evident that a consistent approach to moving such equipment and material exists.</li> <li>• Off-site Projects--it is not clear to what extent that a process is being effectively implemented to assure an “equivalent level of safety protection”.</li> <li>• Area Safety Leader vs. the Work Lead was described with varying degrees of accuracy and confidence.</li> <li>• Housekeeping and/or potential local hazards that were not effectively managed-extension cords, sharp points, etc...</li> </ul> <p>D10-9b) OJT is an institutional issue and an institutional plan of action is not yet developed. EETD has developed a plan for increased OJT education and enforcement. Moving heavy equipment is a relatively minor issue in EETD, and no corrective action has been taken yet. Offsite Safety Review form and procedures have been bolstered. Generally, lab users are now more familiar with the Area Safety Leader terms and responsibilities. Housekeeping and other low level hazards are managed on an ongoing basis.</p> <p>D10-9c) See D10-9b) above. Emphasis on OJT in JHAs will be more thoroughly enforced. The few people who move heavy equipment will be targeted for JHA review, discussion, and education on the topic with assistance from an EH&amp;S Subject Matter Expert.</p> <p>D10-9d) No traditional lessons learned published. However, the Division learned that the various HSS preparation activities, including lab stand-downs, mock interviews, red-team inspections, etc., induced significant positive improvements in the EETD safety culture. Some of these safety review and preparation techniques are being continued as part of the Division’s efforts to maintain the momentum.</p>



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<p>E11. Staff (including employees, participating guests, students and visitors) is effectively trained to properly perform work. Required training is based on JHA and on-the-job training identified by the division.</p>	<p>authorizations and identify ones applicable to our activities (RPG to provide listing by division). Review the requirements of applicable authorizations and determine if we are meeting them.</p> <p>10-11. Review violations received from RPG. Determine effectiveness of developed corrective actions to prevent recurrence.</p> <p>11-1. What percentage of our staff completed the JHQ in the past 12 months (in cases where the JHA process is not implemented)?</p> <p>11-2. What is our required training completion rate?</p> <p>11-3. Observe sampling of staff performing work.</p> <p>11-3a. Are they following applicable policies and procedures?</p> <p>11-3b. If not, have they been trained?</p> <p>11-3c. If trained, why not following policies and procedures?</p>	<p>D10-10) As stated in D10) above, all requirements of RPG authorizations have been met.</p> <p>D10-11) EETD has received no RPG violations.</p> <p>D11-1) The JHA is fully implemented in EETD. JHQ statistics are no longer relevant. (See D2-2) for JHA completion rates.)</p> <p>D11-2) The EETD required training completion rate was 94% at the end of FY09. (For comparison, the EETD required training completion rate was 89% at the end of FY08, and the Lab-wide JHA completion rate was approximately 95% at the end of FY09.)</p> <p>D11-3a) Yes, with a few exceptions.</p> <p>D11-3b) Yes.</p> <p>D11-3c) Usually due to inattention. In most cases, there was a discussion with the individual, safety</p>

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	11-3d. If not trained, why not?	<p>staff, and usually their Supervisor or Facility Work Lead; and this was enough to correct the problem.</p> <p>D11-3d) N/A</p>
What noteworthy accomplishments in the ISM core function #4, <i>Perform Work</i> did we achieve?		<ul style="list-style-type: none"> <li>• Minor: All formal authorizations were in compliance. EETD received no NCARs or other external violations.</li> <li>• Minor: Required training completion rate increased from 89 to 94% in FY09.</li> </ul>
What opportunities for improvement in the ISM core function #4, <i>Perform Work</i> exist?		<ul style="list-style-type: none"> <li>• Major: Division SAA and waste Quality Assurance compliance was only fair during FY09 and improvement is needed. Continue education of PIs, Waste Generators, and SAA Responsible Persons. Increase inspections by Division safety staff.</li> <li>• Institutional: Consider the possibility of an institutional web-based system to fill-out and print chemical waste labels, and track the containers. This could easily avoid most of the SAA violations, including missing information on the waste labels, improper containers, and late container pickup.</li> <li>• Institutional: (Quoted from the McCallum-Turner and EH&amp;S report on the 5/12/09 HSS Emulation Review of EETD.) “Although the concept of OJT and/or mentoring was effectively described by most all personnel engaged, the notion that this activity is, in fact, another level of work authorization was not consistently appreciated. Notwithstanding the widespread use of OJT, 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. (This element (rigor/formality of OJT) is an institutional weakness and will be communicated to the Laboratory as part of an expected summary report documenting the overarching results of the walk-arounds.)”</li> <li>• Minor: Assure relevant Division personnel who move heavy objects have the knowledge and tools to do this task safely.</li> </ul>
<b>5. FEEDBACK AND IMPROVEMENT</b>		
E12. Division implements an effective safety walkaround program per the requirements of the Division ISM Plan. Division staff conducts safety walkarounds as	<p>12-1. Did we document walkaround requirements in our Division ISM Plan?</p> <p>12-2. Have all personnel required to perform</p>	<p>D12-1) The EETD ISM Plan specifies walkaround requirements for PIs (quarterly), senior management (revised to annually), and the DSC (a graded approach, averaging quarterly or more frequently).</p> <p>D12-2) Data not available.</p>

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<p>assigned. Safety walkaround results are effectively integrated into division self-assessments as a component of the division's feedback and continuous improvement process.</p>	<p>safety walkarounds, as defined in the Division ISM Plan, completed EHS 27, "Performing Effective Safety Walkarounds"?</p> <p>12-3. Did personnel perform assigned walkarounds as scheduled? How were results recorded? Are results recorded consistent with the Division ISM Plan?</p> <p>12-4. Were all safety deficiencies not corrected on the spot documented? How?</p> <p>12-5. How did we evaluate/analyze walkaround results to determine systematic weaknesses and/or opportunities for improvement?</p>	<p>D12-3) Walkthroughs were performed generally on schedule. See D4-2) for a discussion of EETD's walkthrough program, including schedule and record keeping. Walkthroughs are in accordance with the Division ISM Plan (except for a Division policy change to annual walkthroughs for senior Division management).</p> <p>D12-4) It is Division policy that deficiencies that are not fixed on the spot should be tracked in CATS. Although all issues are tracked either in CATS, walkaround records, and/or the DSC's master facility spreadsheet, a minority of issues are not entered into CATS in a timely manner or at all. This is due to competing demands on the Division's ES&amp;H resources and the cumbersome nature of the CATS system.</p> <p>D12-5) This is accomplished by way of the DSC's familiarity with the walkaround results and through discussions with the Safety Committee members.</p>
<p>E13. Division performs a thorough review of all accidents, injuries, incidents, near misses and concerns according to Lab policy and the division's ISM plan. Corrective actions to prevent recurrence are identified and</p>	<p>13-1. Is our process for investigating staff injuries and accidents detailed in our ISM Plan?</p>	<p>D13-1) The EETD ISM Plan specifies the process for investigating injuries and accidents in Sect. 5. It is Division policy to have an accident investigation meeting with each injured person, their supervisor, the DSC, and the EH&amp;S Division Liaison. For DOE recordable injuries, the ADD will also be involved in these meetings and a summary is presented to the Division Safety Committee. The DSC and EH&amp;S Division Liaison review all SAARs to assure that accident causes and corrective actions are adequately defined. Identification of accident causes and corrective actions entered on the SAARs report are often revised and improved during the investigation and follow-up meetings. Each accident and injury file is kept active by the DSC until corrective actions are implemented.</p>

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effectively implemented.	13-2. Did we follow this process?	<p>All meetings with accident and injury discussions include active promotion of early reporting, with a particular emphasis on ergonomic issues.</p> <p>The Division keeps a <a href="#">near-miss database</a> and publishes this on the Division website.</p> <p>D13-2) Yes, the process was followed and documented in a spreadsheet maintained by the DSC.</p>
	13-3. Review injury and accident reports (SAARs).	<p>D13-3) The DSC and EH&amp;S Division Liaison review all SAARs to assure that accident causes and corrective actions are adequately defined.</p>
	13-3a. Did we complete a thorough investigation of each first aid case reported?	<p>D13-3a) Yes. See discussion in D13-1) above.</p>
	13-3b. Did the supervisor complete a Supervisor's Accident Analysis Report (SAAR) for each case?	<p>D13-3b) Yes. See discussion in D13-1) above.</p>
	13-3c. Did the Division Safety Coordinator critically review each SAAR and return to the supervisor for revision or approve?	<p>D13-3c) Yes. See discussion in D13-1) above. There was one case during FY09 where the SAAR report was not adequately completed during the review meeting and before the report was submitted. In this case, the DSC requested a revision by the Supervisor through the SAAR system.</p>
	13-3d. Was each SAAR release within the required 7 day period from report of injury?	<p>D13-3d) No. Due to scheduling difficulties (many of our Supervisors travel extensively) and due to competing demands on the Division's ES&amp;H resources, most SAARs were late.</p>
	13-4. How effective were our corrective actions?	<p>D13-4) Each accident and injury file is kept active by the DSC until corrective actions are implemented.</p>
	13-4a. Was a weakness or deficiency in the application of the	<p>D13-4a) Sometimes yes, but often not applicable with the nature of the injuries that occurred.</p>

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<p>E14. Division shares lessons learned from accidents, injuries, incidents and near misses with Lab staff via the institutional Lessons Learned and Best Practices database, as appropriate. Division incorporates applicable lessons learned into work planning and</p>	<p>division's ISM identified (where appropriate) as a root cause for the occurrence of each preventable injury?</p>	<p>D13-4b) Sometimes yes, but often not applicable with the nature of the injuries that occurred.</p> <p>D13-4c) Some yes, but most no. Each accident and injury file is kept active by the DSC until corrective actions are implemented. Due to competing demands on the Division's ES&amp;H resources, CATS is not always used.</p> <p>D13-5) From time to time EETD produces lessons learned that are disseminated by way of the Lab's Lessons Learned database, but often this is not applicable. The possibility is explored in every accident and injury review meeting.</p> <p>Unknown whether any lessons learned were applied in a manner that helped reduce injuries.</p> <p>D14-1) The Division maintains a <a href="#">near-miss database</a> and publishes this on the Division website.</p> <p>D14-1a) See D13-5) above.</p> <p>D14-1b) None during FY09. See D13-5) above.</p>
	<p>13-4b. Was one or more corrective actions identified for each identified deficiency?</p>	
	<p>13-4c. Was the corrective action tracked to completion in the LBNL CATS system?</p>	
	<p>13-5. Did we share lessons learned with others via the Lab's Lessons Learned and Best Practices database? Did we apply any lessons learned from the Lessons Learned and Best Practices database that may help reduce injuries?</p>	
	<p>14-1. Review our accidents, injuries, incidents, and near misses.</p>	
	<p>14-1a. How did we decide which lessons learned to share?</p>	
<p>14-1b. Which lessons learned did we share with others via the Lab's Lessons Learned and Best Practices database?</p>		



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<p>performance processes.</p>	<p>14-1c. Do we have any other lessons learned that Lab staff would benefit from?</p> <p>14-2. Review recent lessons learned from the Lessons Learned and Best Practices database. Select three or four of significant relevance to our division.</p> <p>14-2a. Did we apply lessons learned and recommendations from the selected Lessons Learned and Best Practices in our divisional work practices? How?</p> <p>14-2b. Observe staff performing work. Has staff incorporated lessons learned and recommendations from the selected Lessons Learned and Best Practices? How? If they haven't, why not?</p>	<p>D14-1c) No. See D13-5) above.</p> <p>D14-2a) This is not tracked on a Division level. Application of lessons learned on an individual or research group level is likely.</p> <p>D14-2b) This is not tracked on a Division level. Application of lessons learned on an individual or research group level is likely.</p>
<p>E15. ES&amp;H deficiencies that cannot be resolved upon discovery are entered in the LBNL Corrective Action Tracking System in a timely manner and tracked to resolution. Deficiencies include</p>	<p>15-1. Review a sampling of the issues identified from workspace inspections, self-assessment activities, SAARs, Occurrence Reports, Non-compliance Tracking System (NTS) Reports, environmental inspections, Division</p>	

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<p>those from workspace inspections, self-assessment activities, SAARs, Occurrence Reports, Non-compliance Tracking System Reports, environmental inspections, Division Self-Assessment, EH&amp;S technical reviews, Management of ES&amp;H (MESH) Reviews, and external appraisals and inspections.</p>	<p>Self-Assessment, EH&amp;S technical reviews, Management of ES&amp;H (MESH) Reviews, and external appraisals and inspections, etc.</p> <p>15-1a. Have we appropriately categorized issues from assessments (issue/finding vs. observation)?</p> <p>15-1b. Were these issues entered in CATS in a timely manner?</p> <p>15-2. Review a sampling of corrective actions that were generated as a result of issues identified through various forms of assessment, events, incidents and/or injuries.</p> <p>15-2a. Are corrective actions completed in a timely manner (i.e. are we</p>	<p>D15-1a) Yes.</p> <p>D15-1b) It is Division policy that deficiencies that are not fixed on the spot should be tracked in CATS. This includes deficiencies from walkthroughs, Occurrence Reports, SAAR reports, environmental inspections, and MESH reviews. However, due to competing demands on Division ES&amp;H resources, some low hazard deficiencies are tracked (and closed) outside of CATS, including some SAAR corrective actions.</p> <p>The Division has made significant improvements with getting issues and corrective actions entered into CATS. However, the complexity of the CATS system continues to be an impediment to full implementation. Although each institutional upgrade to CATS has made the system more encompassing and powerful with its new data entry and analysis features, the Division is concerned that the time it takes to enter each deficiency into the system also increases with each upgrade, further straining division resources. This year, with the increased number of audits, reviews, and lab stand-downs, most of the burden of entering issues into CATS had to be passed on from the DSC to the users. Initially, about 80% of the user CATS entries were incomplete or improperly entered to the point where the issue failed to progress through the system. The DSC wrote a <a href="#">CATS Primer</a> document that was distributed to PIs and Work Leads, and posted on the EETD ES&amp;H website. This resulted in entry errors dropping to low numbers and improved compliance with getting CATS entries in a timely manner.</p>

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	<p>completing our corrective actions by their established due date?) If not, why not?</p> <p>15-2b. Have we requested extensions for corrective actions' due dates? Are these extension requests valid?</p> <p>15-2c. Have the corrective actions been effective in preventing similar issues? If not, why?</p> <p>15-2d. What is our CATS completion rate (regardless of schedule)?</p> <p>15-2e. What is our CATS on-time completion rate (excluding entries sent to the Work Request Center)?</p> <p>15-3. How did we address issues and other opportunities for improvement identified in FY08 self-assessment (division self-assessment, MESH, ESH Technical Assurance)?</p>	<p>D15-2a) Overall, current: 328 total corrective actions, 86% closed, 3% open, 11% overdue. Corrective actions with FY09 due date: 148 corrective actions, 75% closed, 0% open, 25% overdue. A significant proportion of the corrective actions are not completed on time, due to competing demands on resources – sometimes in EETD and sometimes in other Divisions.</p> <p>D15-2b) Yes, extensions have been requested in many cases. A few extension requests have been denied even though EETD has no control over the reasons for the delays, which are typically due to competing demands on resources in the Facilities or EH&amp;S Divisions.</p> <p>D15-2c) Corrective actions always result in a learning process that usually helps prevent similar issues.</p> <p>D15-2d) 86% Closure rate for all CATS findings to date. 75% Closure rate for all CATS findings with a FY09 due date.</p> <p>D15-2e) Data not compiled.</p> <p>D15-3) Thorough details on how issues and opportunities for improvement identified in FY08 self-assessments are in Sect. II.2 of this report.</p>

PERF. MEASURE	LINES OF INQUIRY	DIVISION SYSTEMS
What noteworthy accomplishments in the ISM core function #5, <i>Feedback and Improvement</i> did we achieve?		<ul style="list-style-type: none"> <li>• Major: EETD maintains a near-miss database and publishes this on the Division website.</li> <li>• Minor: EETD's accident and injury investigation program is thorough and conducted as per the ISM Plan.</li> </ul>
What opportunities for improvement in the ISM core function #5, <i>Feedback and Improvement</i> exist?		<ul style="list-style-type: none"> <li>• Major: Entry of issues into CATS needs improvement. Although all issues are being tracked, some are not being entered into CATS and some are not closed in a timely manner. Satisfying this opportunity for improvement may also entail a look at Division ES&amp;H resources.</li> </ul>

## **IV. Division ES&H Program Implementation Plan for FY10**

### *FY10 Quarter 1 (October - December)*

- Distribute Self-Assessment report to Division Management and discuss with Division Council.
- FY09 SA follow-up: verify corrective actions and follow-up on issues raised.
- Submit quarterly Training Report to Division Supervisors.
- Conduct SAA assessment, in conjunction with EH&S.

### *FY10, Quarter 2 (January - March)*

- Submit FY10 1<sup>st</sup> Quarter Division Safety Report to the Safety Committee and Division Management, and discuss with Division Council. (May be superseded by other reports.)
- Submit quarterly Training Report to Division Supervisors.
- Conduct SAA assessment, in conjunction with EH&S.

### *FY10, Quarter 3 (April - June)*

- Submit FY10 2<sup>nd</sup> Quarter Division Safety Report to the Safety Committee and Division Management, and discuss with Division Council. (May be superseded by other reports.)
- Submit quarterly Training Report to Division Supervisors.
- Conduct SAA assessment in conjunction with EH&S.

### *FY10, Quarter 4 (July - September)*

- Submit FY10 3<sup>rd</sup> Quarter Division Safety Report to the Safety Committee and Division Management, and discuss with Division Council. (May be superseded by other reports.)
- Submit quarterly Training Report to Division Supervisors.
- Evaluate JHA compliance, and review training completion for all employees and guests as part of the PRD process.
- Conduct annual Self-Assessment of division research facilities, including update of the HMS and chemical inventory databases as a review of hazards.
- Confirm Authorization reviews are current.
- Prepare annual SA report on Division ES&H activities.
- Conduct SAA assessment in conjunction with EH&S.

## **V. Appendices**

## *Appendix 1. Documents Available Online*

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Acronyms used in EETD

<http://eetd.lbl.gov/EHS/safety/eetd-ehs-acronyms.html>

Corrective Action Tracking System (CATS) Primer

<http://eetd.lbl.gov/EHS/docs/cats-primer-eetd.pdf>

DOE HSS audit preparation documents

<http://eetd.lbl.gov/EHS/stand-down.html>

DOE HSS audit preparation EETD mock interview videos

<http://puff.lbl.gov/safety/>

EETD ES&H Website

<http://eetd.lbl.gov/EHS/EHS.html>

EETD Integrated Safety Management (ISM) Plan

<http://eetd.lbl.gov/EHS/safety/eetd-ism-plan.html>

EETD Lab Safety Inspection Checklist

<http://eetd.lbl.gov/EHS/docs/eetd-lab-insp-checklist.xls>

EETD Non-Construction Subcontractor Safety Information

<http://eetd.lbl.gov/EHS/training.html>

Environmental Review and Self-Assessment Checklist

<http://www.lbl.gov/ehs/esg/Reports/assets/EnvironmentalChecklist2007.pdf>

Near Miss Database

<http://eetd.lbl.gov/EHS/docs/a5-near-hits-summary.pdf>

Project Safety Review (PSR) form

<http://eetd.lbl.gov/EHS/chem-hazards/docs/psr.rtf>

Synopsis of PPE and food policy

<http://eetd.lbl.gov/EHS/docs/ppe-food-policy-synopsis.pdf>

What's New in EETD newsletters

<http://eetd.lbl.gov/LabOnlyWS/Intranet/Subpages/News/WhatsNew/index.html>

## Appendix 2. Sample Safety Communications & Other Supporting Documents

### A2.1. "EETD Quarterly SAA & Waste Management Newsletter" - Sample

Date: January 22, 2009

To: EETD PIs, Area Safety Leaders, Work Leads, and Satellite Accumulation Area (SAA) Responsible Persons

CC: Other Interested Parties (Key EH&S personnel, Key Senior Division Management)

This is my quarterly reminder to you to please **check your SAA's** to make sure they are compliant.

(<http://eetd.lbl.gov/EHS/chem-waste-mgt.html>)

#### **Results from our last quarterly SAA inspections in July were fair, and compliance needs improvement.**

- One lab had a waste container collecting effluent from HPLCs that was not in an SAA.
- Two SAAs had waste containers without start dates.
- An SAA had small containers of waste in the same baggie that needed to be separated, and an incomplete label on another container.
- One SAA had NAOH without the concentration indicated, and fuel and oxidizer wastes were not in separate secondary containment.

**Waste Quality Assurance (QA) performance improved greatly:** In FY06 and FY07, EETD had red scores for our waste QA performance. But for FY08, we had a 100% pass rate for Waste Management's random sampling of our waste containers. This means that our waste generators are doing a much better job with accurately identifying the contents of their waste containers. Congratulations!

#### **DOE HSS auditors will be onsite starting next Monday 1/26 through Thursday 2/5/09. Following are some last-minute things you can do to help assure a successful review:**

- Be sure any outstanding safety findings from any quarterly walkthrough checklists, annual self-assessment checklists, lab stand-downs, ISM feedback team reviews, etc. are entered into the Corrective Action Tracking System (CATS). (For help, see the CATS Primer at <http://eetd.lbl.gov/EHS/docs/cats-primer-eetd.pdf>.)
- Review EETD HSS audit preparation presentations, mock audit videos, and other related documents at <http://eetd.lbl.gov/EHS/ehs.html>. The LBNL HSS ISM review website is at <http://www.lbl.gov/ehs/ism/2009/>.
- Make sure your chemical inventory is up to date (including gas cylinders). (<https://cms.lbl.gov/jsp/login.jsp>)
- Make sure everyone entering your technical areas follow your posted PPE requirements (including the auditors). (<http://eetd.lbl.gov/EHS/docs/ppe-food-policy-synopsis.pdf>)
- Remove old signage and hazard decals that are redundant with the new door placards. (<http://eetd.lbl.gov/EHS/hazards-control.html>)
- Make sure local information contained in the red flip chart Emergency Response Guides (ERGs) is entered for your locations. For questions, ask your Building Manager.
  - Assembly area, exits, and fire extinguisher locations: See your building Emergency Evacuation Plan posted near each exit and stairway.
  - Radiological Control Technician: See [http://ehswprod2.lbl.gov/rpg/who\\_to\\_call.shtml](http://ehswprod2.lbl.gov/rpg/who_to_call.shtml).
  - Bio Safety Officer: Bruce King, x2768, pager 840-5073.

**The next quarterly SAA inspections will be tomorrow (Friday) morning.** If you have any questions about your SAA or waste, check the resources listed at the bottom of this email, or catch Howard Hansen or me during our walkthroughs.

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**For more information about SAA's and hazardous waste:**

An excellent reference is PUB-3092, Waste Generator

Guidelines, [http://www.lbl.gov/ehs/waste/wm\\_pub\\_3092.shtml](http://www.lbl.gov/ehs/waste/wm_pub_3092.shtml).

The LBNL Waste Management Group website at <http://www.lbl.gov/ehs/waste/index.shtml>.

The LBNL EH&S website at <http://www.lbl.gov/ehs/>, click on the "SAA" Quick Link in the lower left corner.

The [SAA Reminder Poster](#), which should be posted at each SAA.

For questions, call myself or [Howard Hansen](#), our Waste Generator Assistant, at x5867.

❖ *Guy Kelley*

*EETD Safety Coordinator*

*90-2056B, MS 90R3027D*

*x4703*

**A2.2. "EETD Offsite Safety Review" Form**

<b>EETD Offsite Safety Review</b>
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Date form filled out: _____ PI #1: _____ PI #2: _____ EETD Offsite Work Lead or Person Most Responsible for the Hands-on Offsite Work: Name: _____ Office Location: _____ Phone Nos.: _____ Offsite Company/Institution: _____ Offsite Location(s): _____ Date Work Expected Start: _____ Expected End Date: _____ Offsite Work Description/Summary: _____ _____ _____	<i>Shaded Section Official Use Only</i> Review By: _____ Offsite Project No.: _____ Review Date: _____ EETD Facility No. : _____ Dept.: _____ Facility Work Lead: _____
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**Authorizations** -- Does this offsite work need/have the following:

Unusual Tasks/Hazards/Controls specified in individual's JHA?	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Activity Hazard Document (AHD)?	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Radiological Work Authorization (RWA)?	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Sealed Source Authorization (SSA or GLA)?	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know
Other safety documents or environmental permits?	<input type="checkbox"/> yes	<input type="checkbox"/> no	<input type="checkbox"/> don't know

Specify: \_\_\_\_\_

**HAZARD SUMMARY.** In the table below, indicate the primary hazard(s) and any secondary hazard(s). Secondary hazards are those arising from "incidental" or very occasional use (e.g., small bottles of compressed gas used for a GC, occasional use of hand tools, use of sealed radioactive sources as part of an instrument, etc.).

Hazard Category	Date if New	Primary (check one or more) (circle single most significant)	Secondary (check all that apply)
Bio-hazards			
Compressed gases (use of cylinders, regulators, etc.)			
Confined space/possible oxygen deficiency			
Electrical (hazardous voltage/current, stored energy)			
Ergonomics (computer use, repetitive motion)			
Fire – flammable gas/liquid			
Hand tools			
Hazardous chemicals (e.g. toxic, carcinogenic, flam.)			
Hazardous, mixed, or radioactive waste			
Heavy objects (heavy manual lifting, use of crane, etc.)			
High pressure (>150 psi gas (not incl. std. cylinders with regulators adjusted to <150 psi), or >1500 psi liq)			
High or low temperatures (>100 C or cryogenic fluids)			
Laser (class 3b or 4)			
Machine tools (drill press, lathe, etc.)			

Noise			
Radiation (sealed sources, isotopes, UV, X-Ray, etc.)			
Stored Energy (e.g. fans, moving equip., capacitors)			
Work from heights (incl. use of ladders, elevated surfaces)			
Other (specify):			

**WORK SCOPE DESCRIPTION.**

At least for each of the hazards checked in the above Hazard Summary, complete a more detailed analysis of the offsite work task(s), hazard(s), and control(s) in the following table. Some examples of controls that should be considered for any offsite experimental work may include:

- Use of portable GFCI device for any electrical research equipment not using a permanent GFCI outlet. (Lab policy requires GFCI protection for any cord-powered portable tools.)
- Use of an outlet tester to assure proper ground and polarity for any outlet used for research equipment.

Task #	Description	Hazard(s)	Control(s)

**Required Personal Protective Equipment** (summary from controls):

1. Safety glasses with side shields, long pants, and closed toed shoes are required when performing any hazardous tasks.
2. .
3. .

**Other Work Conditions:**

1. Stop work if there is a question regarding the safety of a procedure or an indication of a safety problem.
2. Division and LBNL safety personnel will be promptly contacted to help resolve safety concerns.
3. For any significant safety incidents, notifications will be made up the Division chain of command, including the Work Lead, PI, Safety Coordinator, Department Head, and senior Division management as appropriate.
4. .
5. .

### Authorized Offsite Workers and Training

Only the LBNL users listed below are authorized to work offsite on this project. User's signature below indicates that the user

1. has read this Offsite Safety Review document and understands the hazards and controls;
2. has received any necessary site or job specific training by the PI, EETD Offsite Work Lead, and/or local institution safety rep, including the permitted tasks, and identification of hazards and controls;
3. has completed required training as per their LBNL JHA or will work only under direct supervision of a trained employee until training has been completed;
4. has the necessary personal protective equipment (PPE) (such as safety glasses, safety shoes, gloves, hard hat, lab coat, etc.) to conduct their work safely; and
5. if actively working offsite, agrees to attend periodic safety meetings as per the schedule below.

Offsite work start-to-finish time	Recommended minimum safety meeting and document review frequency
< 1 Month	Daily
1 to 3 Months	Weekly
> 3 Months	Monthly

The periodic safety meetings will be conducted by either the PI, the EETD Offsite Work Lead, the local institution safety representative, or their designate. The agenda will include at least the following:

- Review this document for accuracy, paying particular attention to the identification of any new hazards and updating the list of offsite workers.
- Review control measures for all hazards.
- Review any critical procedures for the offsite operations.
- Assure all offsite personnel have the proper PPE.
- The work will not significantly increase risk to the environment, public or other personnel.

Name	Initial Signature & Date	Periodic Safety Meetings and Document Reviews (Date & Initial)						
		Date:	Date:	Date:	Date:	Date:	Date:	Date:
P.I. #1:								

<i>P.I. #2:</i>								
<i>EETD Offsite Work Lead:</i>								
<i>Other offsite personnel:</i>								

**Retain the original and send one copy to: Guy Kelley, 90R3027D, x4703, GOKelley@lbl.gov**

### *Appendix 3. Acronyms and Glossary of Terms*

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(See also <http://eetd.lbl.gov/EHS/safety/eetd-ehs-acronyms.html>)

- ADD:** Assistant Division Director for ES&H and Space – Robert Kostecki.
- AHD:** Activity Hazard Document. Used to document hazards and procedures for projects that involve medium and higher hazards.
- CATS:** LBNL Corrective Action Tracking System.
- CMS:** Chemical Management System. (<http://cms.lbl.gov>)
- DART:** Days Away, Restricted or Transferred case rate.
- DSC:** Division Safety Coordinator -- Guy Kelley.
- EETD:** Environmental Energy Technologies Division.
- EH&S:** Environment, Health, and Safety (Department or Division)
- ES&H:** Environment, Safety, and Health (Program)
- GLA:** Generally Licensed Authorization. Covers low hazard radioactive sources.
- HMS:** Hazard Management System. (Formerly HEAR.) Inventory of hazards and special equipment.
- IH:** Industrial Hygiene. Typically refers to the Industrial Hygiene group of the EH&S Division.
- ISM:** Integrated Safety Management. The EETD Division ISM Plan is available on the web at <http://eetd.lbl.gov/EHS/safety/eetd-ism-plan.html>.
- JHA:** Job Hazards Analysis system. Required for every employee. Forms Work Authorization.
- JHQ:** Job Hazard Questionnaire. Superseded by the JHA.
- NCAR:** Nonconformance and Corrective Action Report. Commonly used for serious violations of SAA and waste handling guidelines.
- OCA:** Office of Contract Assurance.
- OSR:** Offsite Safety Review. Process and form used to evaluate offsite work safety.
- ORPS:** Occurrence Reporting and Processing System.
- PSR:** Project Safety Review. All continuing and proposed projects fill out the PSR form as part of the project renewal or proposal process (in addition to the NEPA/CEQA forms). See the PSR FAQ on the EETD ES&H webpage for further information.
- QA:** Quality Assurance. In this report, primarily refers to proper chemical waste characterization.
- RWA:** Radiation Work Authorization.
- SA:** Self-Assessment. Typically refers to the EETD ES&H Self-Assessment process, consisting of both ongoing periodic inspections and evaluations, and a more comprehensive annual checklist and process.
- SAA:** Satellite Accumulation Area.
- SAC:** LBNL Safety Advisory Committee. (Formerly the Safety Review Committee.)
- SSA:** Sealed Source Authorization.
- TRC:** Total Recordable Case rate.