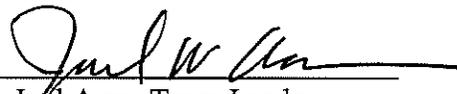


**LBNL SAFETY REVIEW COMMITTEE**

**Review of the  
Management of Environment, Safety, and Health for the  
Facilities Division**

**September 2006**



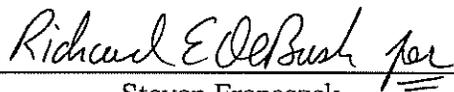
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Joel Ager, Team Leader  
Material Sciences Division



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Daniela Leitner  
Nuclear Sciences Division



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Steven Franaszek  
Genomics Division



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Richard DeBusk, Facilitator  
Environment, Health and Safety Division

## **LBNL Safety Review Committee**

### **Review of the Facilities Division Management of Environment, Safety, and Health (MESH)**

**September 2006**

#### **A. Executive Summary**

The Facilities Division has an impressive commitment to safety and is proactive in identifying and controlling hazards. The division is faced with a daunting challenge of performing a wide scope of work across the entire laboratory under significant work volume and funding pressure. Despite these pressures, which included a layoff in 2006, the division continues to make progress in performing work safely and involving the entire staff in the safety program.

The division adequately addressed most of the concerns and observations raised in the 2004 MESH review. Seven of the nine concerns were addressed and should be considered closed. All 5 of the observations were addressed and should be considered closed.

This MESH review identified 4 noteworthy practices, 3 concerns, and 6 observations during its evaluation of the management of environment safety and health in the Facilities Division. Facilities continues to improve safety communications and worker involvement through the Workers-Observing-Workers (WOW) program, their own new hire orientation, their monthly safety newsletter, safety awards, and special activities. The Division Director sets a good example and conducts semi-monthly safety walkthroughs that focus on safety communication. The division sets high expectations for supervisors and holds management accountable for safety performance. The number of other walkthroughs and inspections is impressive, but this report recommends that Facilities should improve the effectiveness of inspections and walkthroughs as safety non-compliance continues to be a problem. For example, as in 2004, the division has a large number of outstanding CATS non-compliances.

With over 25,000 work requests annually and a number of important construction projects, hazard identification and control require special effort by the division. The need to provide safety orientation to construction subcontractors, the need to address the needs of non-English speaking employees and subcontractors and potential improvements in hazard identification through the broader use of the safety task analysis process all have the potential to improve the identification and control of hazards. The MESH team noted with concern the number of Dig Permit violations that occurred recently and suggests that Facilities management determine and correct the root causes for these issues.

Overall, the Facilities Division continues to improve the safe performance of work in continuance of their mission. Given the significant challenges facing this division, the MESH team recommends another MESH review in two years time. This is not based on concern that the division is failing to improve its management of ES&H issues, but that the MESH process is

providing peer-level input to division management to help them continue their improvement efforts.

## **B. Description of Division**

The Facilities Division Mission Statement is:

*To support the Laboratory Mission of providing national scientific leadership and technological innovation by delivering reliable services and cost effective stewardship of the Laboratory's natural and built environment through cooperative teamwork and commitment to professionalism, quality and safety.*

The Facilities Division provides Berkeley Lab with a full range of architectural and engineering, construction, and maintenance services for new facilities and for the modification and support of existing facilities. Facilities Division is also responsible for a number of the Lab's logistical support activities.

Architectural and engineering services include facility planning, programming, design, engineering, project management, and construction management. Maintenance and construction functions include custodial, gardening, and lighting; electronics repair; operation, service, and repair or replacement of equipment and utility systems; and construction of modifications, alterations, and additions to buildings, equipment, facilities and utilities. Logistical support services include bus and fleet management, mail distribution, material and stores distribution, property disposal, and cafeteria operations.

Ongoing Facilities activities include renewal and upgrade of site utility systems and building equipment; preparation of environmental planning studies; in-house energy management; space planning; and assurance of Laboratory compliance with appropriate facilities-related regulations and with University and DOE policies and procedures.

The Work Request Center expedites facility-related work requests, answers questions, and provides support for facility-related needs.

Approximately 250 full-time employees are in the Facilities Division. Due to the nature of the work, the staff is exposed to a wide range of hazards. The most frequent hazards are musculoskeletal injuries resulting from physical labor, sprains, strains, lacerations, and fall hazards. Facilities employees also encounter radiological, chemical, and electrical hazards in their work environments. Construction projects present many hazards and include the addition of a large group of subcontractor employees.

The Facilities Division has three active safety committees that form the basis for their safety program: The Executive Safety Committee, the Division Safety Committee, and the Workers-Observing –Workers (WOW) Steering Committee.

The Executive Safety Committee is chaired by the Division Director and includes all of his direct reports, the Division Safety Coordinator, and the Chair of the WOW Steering Committee (a union member). Meeting monthly, the Executive Safety Committee sets policy for the Division.

The Division Safety Committee, chaired by the Division Safety Coordinator, includes representatives from all major groups in the division and includes union members. The Division Safety Committee ensures safety is integrated into all division work.

The WOW Steering Committee is predominantly made up of union workers and coordinates the WOW behavior based safety program for the division.

### **C. Introduction: Description of the Appraisal Process**

The MESH review is designed to ensure that Facilities Division management systems are consistent with the Labs Integrated Safety Management System and that these systems are effective in the identification and control of hazards. A peer review performed by the Lab's Safety Review Committee, the MESH provides the Facilities Division with feedback from the Lab's research and operations community.

The appraisal process included a review of the documentation provided by the Facilities Division, an opening meeting with representatives from Facilities, interviews of staff, and a walkthrough of staff workspace. The MESH appraisal team consisted of Joel Ager, team leader from Material Sciences Division; Daniela Leitner, Nuclear Sciences Division; Steven Franaszek, Genomics Division; and Richard DeBusk, facilitator from the Environment, Health and Safety Division.

An opening meeting was held on August 14 with George Reyes, Division Director and Janice Sexson, Division Safety Coordinator. Following the opening meeting, the MESH team attended an all-management meeting chaired by George Reyes. The meeting was well attended, interactive, and predominately focused on safety. Later on August 14, the MESH Team conducted walkthroughs of the carpenters shop, HVAC work area, key shop, painters shop and other areas in Building 76. Brief interviews were conducted with approximately 15 employees during the walkthrough. The MESH Team also conducted a walkthrough of the Cafeteria and Building 31 Laborers Shop. Five employees were interviewed. The Team also walked through Building 86 (Animal House) construction site and interviewed the subcontractor job superintendent. The focus of the Building 86 interview was compliance and understanding of the Dig Permit process, as there had been several Dig Permit violations on this project. On August 21, MESH Team members attended the monthly meeting of the Executive Safety committee. Before the MESH was formally initiated, on August 10, members of the MESH Team attended the monthly meeting of the WOW Steering Committee.

### **D. Results of the MESH Appraisal**

The appraisal results are organized by areas of inquiry from the MESH questionnaire, which follows the core functions of Integrated Safety Management. Findings are broken into three categories:

- **Concerns** addressing violations of regulatory or Berkeley Lab policies, insufficient systems, potential problems, or unsatisfactory trends that may result in regulatory violations;

- **Observations** indicating areas where improvement is warranted but not in violation of regulations or Berkeley Lab policy; and
- **Noteworthy practices** recognizing excellent procedures and systems.

All findings are based on review of documentation provided, answers to various inquiries, staff interviews, and workspace inspections.

## 1. Work Planning

Facilities Division work includes planning, construction, and maintenance for the physical plant at Berkeley Lab; and logical services such as mail services, transportation services, and cafeteria operations. The Division Integrated Safety Management (ISM) Plan was last updated on March 20, 2006, and details responsibilities for safety within the division. The plan defines the assignment of responsibilities and expectations for safety.

The previous MESH, conducted in May 2004, included one concern and one observation in this section.

- **Observation:** Journeyman craft employees are not being provided equipment specific safety training. **Status:** closed. The training process of journeyman craft employees combined with the new hire safety training addresses this issue.
- **Concern:** There was a lack of formalization on how contractors' safety performance is evaluated in awarding contracts. **Status:** closed. The best value contractor selection process, developed since the previous MESH, includes safety as a key variable in selecting a contractor and addresses the observation.

The following new findings are documented

**Noteworthy Practice:** In addition to the Lab requirement for new hire orientation, the Facilities Division Safety Coordinator conducts a division-specific new hire orientation with new employees and for some contractors to review division safety policies and answer any questions the new employees may have. The training is comprehensive and detailed with over 45 slides.

**Noteworthy Practice:** The Facilities Division has a well developed system of EH&S communications that employs a variety of tools to engage staff. The use of safety committees is effective and all employees have the opportunity to participate if they desire. The division uses safety awards, newsletters, and special activities (e.g., Safety Carnival and Material Handling Safety Fair) to engage staff in a meaningful, hands-on and fun way.

**Observation:** The Facilities Division may not provide construction employees adequate safety training prior to starting work. Constructing projects sometimes include a pre-start meeting where safety practices are discussed, but not all contractor employees are included, only supervision. The LBNL Construction Safety Engineer has developed a Construction Safety Orientation, but it has not yet been implemented.

**Recommendation:** The Facilities Division should implement the Construction Safety Orientation as soon as possible and should expand the pre-start meeting to include all projects.

**Observation:** English is not the primary language of some Facilities division staff and some construction subcontractors, yet LBNL does not provide safety training or safety materials, including procedures and permits, in any language other than English. The ability of these employees and subcontractors to understand English, when it is not their first language, is a potential issue.

**Recommendation:** Facilities and EH&S should partner on an evaluation of the safety communication methods used for non-English speaking employees and subcontractors. Some urgency should be given to this evaluation. A preliminary report is recommended by January 1, 2007.

**Observation:** Not all facilities division employees have access to the internet or email. For safety communication, this fact is mitigated by communicating through flyers and postings. After discussion with Facilities Division management, we agreed that for now, there is a greater benefit to face-to-face safety communications with employees who do not regularly use computers.

**Recommendation:** For the longer-term, Facilities should continually evaluate the need for more use of email for communication of safety information.

## **2. Hazard Identification and Risk Analysis**

Facilities Division staff contend with a broad range of hazards. For this reason, diligent hazard analysis is imperative. The division has four levels of hazard analysis, depending upon the scope of the job.

1. Large projects with an estimated cost of greater than \$250,000 are reviewed by a team of EHS professionals led by the EHS Liaison.
2. Small projects with an estimated cost of less than \$250,000 are reviewed by the EHS Liaison.
3. Projects involving multiple crafts and new work tasks require that a hazard review form be completed by line management and reviewed by the Division Safety Coordinator and EHS Liaison.
4. Finally, work orders generated through the MAXIMO system use the hazard information in the HEAR database and a Job Safety Analysis (JSA) sometimes conducted by the work crew for new work before beginning work. Repetitive work generated by the MAXIMO work order does not generate the requirement to complete the JSA. The JSA is also called the Task Hazard Analysis and the Safety Task Analysis. The supervisor responsible for the work is responsible to review all

work orders and their associated hazards with employees to distributing the tasks. Some construction work requires the completion of an Activity Hazard Analysis (AHA).

The 2004 MESH identified 3 concerns and 1 observation for hazard identification and risk analysis; each of these is addressed below:

- **Concern:** Small work orders in MAXIMO do not have a design review and may not include an evaluation of building codes and OSHA standards.  
**Status:** closed. The design review is not the best method to review a small project for hazard analysis. The requirement for a JSA as a component of work planning and execution is industry standard and adequate. The Facilities Division requires that all Project Managers complete the OSHA 10-hour course, administered through the EHS Training Program. This training also ensures an adequate understanding of hazards and controls in the workplace.
- **Concern:** Communications of hazards for small jobs initiated through the work request system using MAXIMO are not passed to the workers performing the work.  
**Status:** Open, see below. JSAs are not required for routine and repetitive work. The completion of the JSA is at the discretion of the supervisor.
- **Concern:** Facilities work can create hazards for other lab employees, there does not seem to be a system to coordinate facilities work with other research and operating divisions.  
**Status:** closed. Facilities Division coordinates their work in specific buildings with the Building Manager and through compliant jobsite postings.
- **Observation:** Division management states that OSHA compliance is considered in work planning, but staff does not receive OSHA training.  
**Status:** closed. Project Managers have received 10-hours of OSHA training and all managers have taken EHS-20, "ESH for Managers and Supervisors". In addition, the Facilities Division Safety Coordinator has an adequate background in OSHA compliance and the EHS Liaison is a Certified Industrial Hygienist. A Construction Safety Engineer, a Certified Health and Safety Construction Technologist (CHST), inspects all construction jobs daily, reviews work submittals by potential contractors, and participates in pre-job work planning. These resources are adequate to ensure OSHA compliance is concerned in work planning.

The following new findings are documented:

**Concern:** The 2004 MESH identified that routine and repetitive jobs do not receive a hazard analysis. This concern remains for this 2006 MESH review, but is expanded to express concern that the task hazard analysis process is not adequately defined or universally applied. The division is relying too much on the experience of the journeyman craft employees to substitute for hazard analysis processes.

**Recommendation:** A formal task hazard analysis process should be established. The written program, combined with some form of training for employees on how to conduct a hazard analysis, would offer a formal method for hazard analysis. This concern should be addressed promptly!

**Observation:** The division now processes 25,000 work requests per year or 500 per week. The ability of the division to understand the work scope involved and to evaluate and control the hazards of work at such a volume presents a serious management challenge.

**Recommendation:** The EH&S Division should partner with the Facilities Division and evaluate the work request system more carefully and determine if the process can or should be strengthened with respect to properly defining work scope, identifying hazards, and controlling hazards.

### 3. Establishment of Controls

Division managers and supervisors are responsible for evaluating hazards and proscribing controls for all work. Facilities work includes line management authorized and work formally authorized.

At the lowest or least hazardous level, work orders are reviewed by the supervisor with craft employee prior to the job. The degree of effort put forth on this review depends upon the uniqueness of the job or the request of employees. Craft employees occasionally complete the Safety Task Analysis in the routine work request system, but this is not standardized or contained in any procedure. Furthermore, no training is provided to craft employees on the use of the Safety Task Analysis.

Major construction projects receive a formal design review with the involvement of an EH&S Team, while small construction projects (less than \$250,000) receive a less rigorous review using the EH&S Liaison rather than the team. This appears to be a good use of the graded approach. The purpose of this project activity is to review the scope of work carefully and ensure all hazards are identified and the correct controls required.

During the performance of this MESH review, a number of Dig Permit violations occurred in the Facilities Division. The division is conducting a separate investigation of problems with this system, but a brief review of progress to date indicates that the Dig Permit, a formal work authorization, was not being followed by employees and contractors in the field. This indicates that on some important formal work authorizations, the hazard controls established are not effective or are not being followed.

The 2004 MESH identified 1 noteworthy practice, 2 concerns, and 1 observation in this area. A review of the status from this previous MESH is provided below:

- **Noteworthy Practice:** An EH&S Division safety professional (Certified Construction Safety Engineer) performs daily safety inspections for Design and Construction (D&C) construction projects.  
**Status:** continued good practice.
- **Concern:** A switch on a saw did not complete with LOTO requirements.  
**Status:** closed.
- **Concern:** The building 76 carpenters shop lacks appropriate administrative controls.  
**Status:** closed.
- **Observation:** Carpenters in building 76 were modifying recycled cabinetry for future use presenting a potential hazard.  
**Status:** closed.

**Observation:** Given the reliance by the division on individual performance in hazard identification and control, the division attained a 94% completion rate for required safety training. While this met the minimum requirement, it is possible that employees are performing work without the required safety training. Some employees were also identified as not have a current Job Hazards Questionnaire.

**Recommendation:** Place greater emphasis on completion of safety required training and on completing the JHQ.

#### 4. Work Performance

Facilities Division employees perform work safely based on the hazard identification and controls as described above. Evidence indicates that most work is performed safely. The injury rates in the division are higher than those in research divisions, but the work of the Facilities Division is more hazardous and varied presenting many safety challenges. The division also experienced an NCAR in FY-06 in the transportation of asbestos to the storage facility. There were also three occurrence reports, indicating improvement needed in safe work performance. The three occurrence reports were based on an employee injury falling over forklift tines, a finger injury during a lift-gate operation on a truck, and improperly described hazardous waste transportation.

The division has numerous programs in place to monitor work activities and these activities provide a defense in depth for safe work performance. The WOW program provides training in hazard identification and on the need for peer-to-peer communication during work so that employees can help each other work safely. Supervisors perform cross shop inspections that encourage communication between groups and getting outside of the “comfort zone”. Senior management performs executive walkarounds that focus on communication and encouragement but also monitor that all components of the system are working effectively. The division partners with EH&S and has an EH&S Liaison and a Construction Safety Engineer that routinely monitor work and provide immediate feedback.

The 2004 MESH identified 1 noteworthy practice, 2 concerns and 1 observation. The status of these is provided below:

- **Noteworthy Practices:** The WOW program is an important component of worker safety, increasing staff awareness and identifying systemic safety issues.  
**Status:** Noted again in the 2006 MESH, see below.
- **Observation:** The WOW program is too broad to capture individuals resistant to change.  
**Status:** Closed. The division has used other means to identify and deal with employees resistant to performing work safely.
- **Concern:** Findings from executive safety walkthroughs and WOW observations are not entered into CATS.  
**Status:** Closed. The division now enters safety non-compliances into CATS as required by Lab policy.
- **Concern:** The MESH team observed a number of OSHA violations during their walkthrough which were obvious and the concern is raised about why these were not detected by the numerous walkthroughs conducted by the division.  
**Status:** Continuing issue, see below.

The following new findings are documented.

**Noteworthy Practice:** The WOW program continues to be a great strength in the division. Employee involvement in safety is encouraged and management commitment to an open and collaborative environment, consistent with LBNL philosophy is encouraged as well. The WOW program observations continue to identify safety issues at the lowest level and provide valuable training to many employees on safe work practices and good communications skills.

**Concern:** A number of safety issues were identified during the walkthrough of Building 76. This continues the concern from the previous MESH that some safety issues are not being corrected, and even through the division has several walkthroughs and inspection programs. Specific issues included: eyewash EW 235-76 was not current in its inspection, poor housekeeping in the air conditioning shop and pump repair shop, several seismic issues (lack of restraints) throughout the shop areas, a large drill press located near the east roll up door of the carpenter shop and a heavy duty sander need anchoring to the floor.

**Recommendation:** Correct specific safety problems identified in MESH walkthrough and evaluate improvements in safety walkthroughs and inspections. Consider the new EHS-27, "Performing an Effective Safety Walkthrough" training course for all supervisors.

**Observation:** The WOW program could benefit from improvement to involve more workers and to better utilize observation data for systemic problem evolution. The current force of observers have been in place for a number of years and greater involvement could benefit the division. A new database is being developed to allow better evaluation of observations, but has been in development for a considerable time.

**Recommendation:** Expand the involvement of workers in WOW beyond the current core and complete the observation database as quickly as possible to evaluate data from observations.

## 5. Feedback and Improvement

Facilities has a number of methods to engage all staff in the safety feedback and improvement process. The division has three active safety committees, with all staff represented in at least one of these. All division workspaces are inspected at least annually and usually much more frequently. The WOW program encourages feedback and is a source of recommendations for continuous improvement from craft employees. The supervisors meeting observed by the MESH team demonstrated leadership by the Division Director in fostering communications to all supervisors and an open environment where safety issues are frequently and openly discussed.

The 2004 MESH identified 1 noteworthy practice, 1 concern, and 1 observation in this area. The status of each is described below:

- **Noteworthy Practice:** Recognizing that their staff perform highly hazardous work, the Facilities Division inspects their workspaces more frequently than other divisions and the Division Director provides a good role model and good leadership in conducting semi-monthly safety walkthroughs.  
**Status:** Continuing, see below.
- **Concern:** Completed work is not regularly inspected for safety compliance.  
**Status:** closed.
- **Observation:** Facilities supervisors do not know the location of their employees at all times.  
**Status:** closed.

The following new findings are documented.

**Noteworthy Practice:** Recognizing that their staff perform highly hazardous work, the Facilities Division inspects their workspaces more frequently than other divisions and the Division Director provides a good role model and good leadership in conducting semi-monthly safety walkthroughs.

**Recommendation:** Evaluate additional training for inspections and consider providing EHS-27, “Performing an Effective Safety Walkaround” for some key staff to improve inspections and walkarounds.

**Concern:** A substantial number of safety non-compliances have been identified in the Facilities Division and the process to actively close these non-compliances may not be adequate.

**Recommendation:** Place greater management emphasis on the closure of open CATS items.

End of Report