

Safety Advisory Committee

November 20, 2009

10:00 AM – 12:00 PM

Minutes

Committee Member	Representing	Present
Anderson, Erik	Materials Sciences Division	X
Banda, Michael J.	Computing Sciences Directorate	X
Bello, Madelyn	Human Resources Advisor	
Blodgett, Paul M.	Environment, Health and Safety Division	X
Christensen, John N.	Earth Sciences Division	X
Floyd, Jim	Safety Advisory Committee Chair	X
Fujikawa, Brian	Nuclear Science Division	X
Ji, Qing	Accelerator & Fusion Research Division	*
Kostecki, Robert	Environmental Energy Technologies Division	
Lowden, Rosemary	Information Technology Division	X
Lukens Jr., Wayne W.	Chemical Sciences Division	X
Madaras, Ron	Physics Division	X
Martin, Michael C.	Advanced Light Source Division	X
More, Anil V.	Office of the CFO Advisor	
Patterson, Pam	Public Affairs Advisor	
Petzold, Christopher J.	Physical Biosciences Division	
Pollard, Martin	Genomics Division	
Taylor, Scott E.	Life Sciences Division	X
*Thomas, Patricia M.	Safety Review Committee Secretary	X
Wong, Weyland	Engineering Division	X

Others Present: Kim Abbott, Ken Barat, John Chernowski, Richard DeBusk, Joe Dionne, Howard Hatayama, Michael Kritscher, Don Lucas, Scott Robinson, Mike Ruggieri, Bill Wells

Chairman's Comments – Jim Floyd

- John Christensen will represent the Safety Advisory Committee (SAC) on the Radiation Safety Committee. There are some issues, such as access control and training, which need to be integrated.
- Thomas Earnest will be joining the Committee as the Physical Biosciences Division representative. Melissa Lunden will be replacing Robert Kostecki as the Environmental Energy Technologies Division representative.
- Jim Floyd is checking the language of the SAC Charter to ensure it is consistent with changes to PUB-3000, Chapter 1.
- The interim EHS policy change management system will be posted in PUB-3000 today.

- There are several benchmarking studies underway on issues identified by the Health Safety and Security (HSS) audit Corrective Action Plan. We expect proposed systems changes to be coming to the SAC soon.
- The minutes of the October meeting were approved.

Environmental Health and Safety (EHS) News – Howard Hatayama

- **H1N1** -- Everyone is encouraged to use hand sanitizer to help prevent the spread of H1N1 flu virus. The custodians are distributing hand sanitizer to offices. The Emergency Operations Center (EOC) has been activated for H1N1 response. Howard Hatayama is the EOC Manager. LBNL has ordered vaccine. Clinics will be scheduled as the vaccine becomes available. LBNL will use the Center for Disease Control guidelines for distribution.
- **New EHS Division Director** – Howard Hatayama will be transitioning out of the EHS Director role by January 12. Doug Fleming, the EHS Director of Raytheon in Southern California, has been selected as the new director. Don Lucas will lead the transition.

SLAC Laser Accident – Ken Barat

On September 24, a student researcher experienced a retinal injury while working with a near-infrared laser in the Pulse Lab at the Stanford Linear Accelerator Lab (SLAC). All Class 3B and 4 laser work was shut down by the next day. 19 labs were affected. A restart plan was announced immediately. Most researchers accepted the response because they understood what they needed to do to gain permission to restart.

The investigation was organized by SLAC. Bob Crowley from McCallum-Turner was selected to lead the investigation. Ken Barat was asked to serve on the root cause analysis team. The Department of Energy (DOE) Site Office was very active in observing the investigation. The HSS office provided advise by conference calls. Following the investigation of the causes of the accident, there will be a separate corrective action development phase.

The accident occurred while the student was adjusting a polarizer with a prism inside. There is a side port in the polarizer. He was using an 800 nanometer, near-infrared laser. The laser did not need to be on while the adjustment was being made.

The investigation found some deficiencies in roles and responsibilities, training, and supervision that may provide valuable Lessons Learned for other Labs.

Each lab had a designated “laser supervisor” who was supposed to oversee laser safety practices and ensure proper on-the-job training (OJT) was conducted. In this case, the task of providing OJT was informally delegated to a graduate student who had the most time available, and the content of the training was not discussed with the Laser Supervisor/Principal Investigator (PI). The OJT consisted of about 15 minutes explaining the procedure for entering the lab and how to turn off the lasers.

The official policy required non-SLAC researchers to be supervised for at least 30 days, but this policy was not widely known or followed. The student was working alone about 2:30 in the afternoon. There were other graduate students working in labs nearby. The Director of LCLS was assigned as the official supervisor of the student researcher. He did not have laser experience and did not visit the lab. There was no follow-up by the Principal Investigator to ensure the training was adequate. The PI expected the graduate student “laser supervisor” to take over responsibility. There had been a research associate in the lab, but he had left to take another position before he could train the new student. The PULSE lab provided the research facility, but the student doing the research was not a part of their group, so they did not feel responsible for his safety.

There were also some problems identified with the hazards analysis and work authorization processes, and with following and enforcing work procedures. There had been no updates on the work and hazards description in the work authorization since 2006 other than signatures. They use Standard Operating Procedures, similar to our Activity Hazards Documents (AHDs). Users were under the impression that it would be difficult to update the SOPs, although the update process is actually simpler than LBNL’s AHD review process. There was a policy to wear laser eyewear whenever there are open class 3B or 4 beams. Users indicated that laser eyewear was often removed for various reasons.

The problems at SLAC were not universal. There were some groups with good work practices. SLAC had recognized that laser use had been increasing and they had been making progress in improving laser safety. SLAC had recently (18 months ago) hired a new Laser Safety Officer (LSO) who has strong support from the research community. Two new courses, a laser lessons learned course and hands-on alignment, had been started in August. They were just starting a new pre-work planning process. The SLAC LSO visits each laser lab at least annually, and they had improved their selection of eyewear.

Some of the lessons LBNL can learn from the accident investigation include:

- LBNL should work with Berkeley Site Office to develop a planned approach to responding to laser accidents. If a shutdown is required, communicate a start-up plan at the same time.
- On-the-Job training is important. We should review our approach.
- The process for making minor changes to work authorizations (AHDs) should not be so difficult that it discourages changes.
- Supervision of students by absentee PIs may not be adequate. The chain of command from PIs to Work Leads must be clear. Ensure that Work Leads who have been delegated responsibility understand the importance of their role, and receive support and training.

Ken Barat sent out suggestions to our laser labs for conducting internal self-assessments. He has been giving presentations at group meetings. He is working with users to develop an optics awareness chart with pictures of the types of devices and information about their hazards and controls. Newport optics has been invited to give a presentation about

how to use their products safely. There was some discussion about whether this should be required training, as the people who are less safety-aware may be the least likely to attend. The information is being communicated in several ways. A Lessons Learned bulletin was sent to laser users.

Division Directors should look at their OJT processes for students. Trainers should not rush into signing off on the OJT until each step has been completed. The training should include a demonstration that the person can do the work safely before they are authorized to work without supervision. Everyone in a lab needs to understand that they have a shared responsibility to stop unsafe work. The OJT issue is scheduled to be looked at in detail during the summer of 2010, as part of the HSS Corrective Action Plan.

Cryogenics – Joe Dionne

The draft chapter will be posted in e-room soon. The Beta test of the on-line training is complete. The catastrophic release test will be conducted in December. A risk-assessment tool has been developed. Personal Protective Equipment (PPE), oxygen deficiency controls, and operational concerns for different risk levels have been defined. The PPE table was adapted from a tool used by Brookhaven.

There is a question about whether crystallographers should wear gloves. There was an incident where a bad burn was caused when cryogen was trapped under a glove with a pinhole leak. Crystallographers cannot wear loose gloves because they need fine motor control. Gloves should be inspected for leaks before relying on them. There are also questions about when lab coats and/or long-sleeved shirts are necessary. Lab coats are needed when working with pressurized systems. The HSS auditors advised that researchers should be able to explain what PPE they are using and why it was selected.

Wayne Lukens developed the oxygen deficiency hazard calculator from a Fermilab tool. The estimates are conservative. If the calculator shows an area as having a level 1 or 2 hazard, more detailed analysis by an industrial hygienist will be needed. The hazard level is based on the probability of death (fatalities/hour) if people are trapped in the lab. It assumes <1 air exchange per hour. Hazards are rated by activity and event. The calculator is an Excel spreadsheet, and it is available for testing.

There were questions about who would be responsible for checking and calibrating oxygen monitors. The researcher would “own” the equipment. Could testing and maintenance be a site-wide service provided by a vendor? Could it be a service provided by EHS or Facilities (similar to fume hoods, radiation monitors, or safety showers/eyewashes)? There have been some problems getting the eyewashes and safety showers tested and flushed as frequently as required, so that might not be a good model. We need to look at cost and reliability, and whether any special training or certification is required. Advanced Light Source (ALS) found that their old oxygen deficiency alarms were not reliable, so they changed to spectrophotometric units with an auto-calibrate function. They require a quarterly filter change.

There was a question about where the oxygen deficiency hazard information would be stored. It could be recorded on the Hazards Management System or the AHD. The required work authorization and controls would depend on the industrial hygienist's judgment. Superconducting magnets would require AHDs.

There were questions about how to effectively restrain dewars on wheels. ALS started using portable stands, but then they were told that they need fireproof straps. Chains are hard to secure properly, and fireproof straps are very expensive. There have been lots of problems in trying to find a compliant system.

The signs and chains for dewar transport in elevators are in place in most areas. One person should be able to load the dewar onto the elevator, attach the chain, then go up/down the stairs to meet the elevator and unload the dewar. This is a little more difficult in larger buildings, where the elevator may arrive before the person. (You can slow the elevator down by pushing all the buttons.)

The training course is ready to go. The Job Hazards Analysis (JHA) question needs to be changed to trigger the training requirement.

There were questions about the proper response to oxygen deficiency monitor alarms. We need to be sure that the Fire Department and other responders know that they should not to rush into the area.

Peer Review – Jim Floyd

The intended approach to peer review is to work with Division Directors to conduct reviews that will address their priorities and help them improve their ESH systems. The first step will be to conduct a pilot program. Jim Floyd met with Materials Sciences Division Director Miquel Salmeron and he is very interested. He is soliciting ideas from his senior staff on possible topics for the review. After the topics are determined, Jim Floyd will help to identify the right people to conduct the review. The schedule is to develop a plan for the review before the winter break and then conduct the review during January or February.

Roles and Responsibilities – Don Lucas

New accountability standards have been added to Regulations and Procedures Manual section 2.05 Human Resources. It describes the levels of undesirable behavior and the potential consequences for the employee/guest/visitor and his or her Work Lead / Supervisor / Manager. In the case of common sense risks, awareness of the hazard may be assumed. It also describes the responsibilities of sponsors of casual visitors. The Work Lead concept is being re-defined and expanded into a more task-based approach that allows for a person having multiple Work Leads for different tasks. Don Lucas will post the latest version in the PUB-3000 e-room.

Access Control – Don Lucas

There have not been many problems from implementing the access restrictions based on General Employee Radiation Training completion. The next step is to continue working with Information Technology on software selection and capabilities, so that we can try expanding training-based access restrictions to specific areas such as the ALS and Molecular Foundry. We could also try it at X-ray machines and labs with card readers in place. The link between training and work authorizations (JHAs, AHDs) would need to be improved. SAC members asked for more details on the plan. Don Lucas said that he would send out more information. There are still many issues to be worked out. DOE security directives are changing. Both safety and security requirements must be considered.

Chemical Safety Subcommittee – Paul Blodgett

Chemical and nanomaterials safety policy issues are arising more frequently. Paul Blodgett suggested that the SAC consider establishing a chemical safety subcommittee. There has been an ad hoc group addressing HSS corrective action issues. Anyone who would be interested in serving on a chemical safety subcommittee should contact Paul Blodgett or Jim Floyd.

SAC Administration

There was a suggestion that distribution of paper minutes and agendas at SAC meetings be discontinued to reduce paper use. The minutes are sent out electronically, and the agenda can be displayed by projection at the meetings. There was also a request to ensure that new committee members are granted access to the PUB-3000 e-room.

The meeting was adjourned at 12:00 PM

Respectfully submitted, Patricia M. Thomas, SAC Secretary