Safety Advisory Committee
April 3, 2015
1:30 – 3:00 PM

Minutes

Committee Member	Representing	Present
V. Potapenko, M. O. Leimer, J. Willen	Human Resources Advisors	
Blodgett, Paul M.	Environment, Health and Safety Division	
Bluhm, Hendrik	Chemical Sciences Division	X
Chernowski, John	Facilities Division	
Christensen, John N.	Earth Sciences Division	X
Dickerhoff, Darryl	Energy Technologies Area	
Franaszek, Stephen	Genomics Division	X
Giuntoli, Patricia	Computing Sciences Directorate	
Greiner, Leo	Nuclear Science Division	
Haber, Carl	Physics Division	
Martin, Michael C.	Advanced Light Source Division	
MacGowan, Elizabeth	Computing Sciences & Information Technology	X
Ravani, Shraddha	Life Sciences Division	X
Sauter, Nicholas	Physical Biosciences Division	
Schmid, Andreas	Materials Sciences Division	X
Seidl, Peter	Accelerator Technology and Applied Physics Division; SAC Chair	X
Thomas, Patricia M.	Safety Advisory Committee Secretary	X
von der Lippe, Henrik	Engineering Division	

Others Present: Julie Drotz, Jim Floyd, David Kestell, Mike Kritscher, Glenn Kubiak, Sam Pherwami, Jack Salazar, Scott Taylor, Theresa Triplett, Marty White, Jennifer Willen, Mike Wisherop

Comments from the Chair – Peter Seidl

Two ESH Peer Reviews have been proposed for this year:

- Life Sciences Division – Director Gary Karpen has selected communication as the general topic of the review, to be discussed further and defined. The process and methodology will be decided first, and then an appropriate review team will be selected.
- Chemical Sciences Division – Director Ali Belkacem is working on some ideas about the review topics.

SAC will continue to pursue opportunities to do cross-divisional reviews. There are more Divisions at LBNL than in the past, and it will be difficult to cover them all in a timely manner if they are reviewed one at a time.

Electrical Safety – Henrik von der Lippe / Peter Seidl

The final draft of the proposed electrical safety requirements was circulated to SAC members for comment, and no further comments were received. There was serious involvement and many comments during our previous workshops. Henrik von der Lippe is scheduled to present the proposed policies to the Lab Director on April 9. The proof will be in the implementation. It is time to start getting the word out to Divisions. The Division Safety Coordinators, Electrical Safety Committee, and Safety Advisory Committee Representatives should follow up with their Division Directors. There will be a 3-month trial period. Paul Alivisatos will be communicating the policy to Line Management to make sure it is taken seriously. There will be an update at the next SAC meeting.

One of the first implementation steps is to develop the Qualified Electrical Worker (QEW) 2 training and get the workers to complete training. Irv Davis has been hired as the QEW 2 trainer and will be starting May 1.

EHS will be working with researchers to develop the QEW1 training, so that it will be useful and valuable. The training will translate “what to do” policies into “how to do it”. Sam Pherwami was introduced. He will be the QEW 1 trainer. Sam is originally from Canada. His experience includes being a research engineer at several high-technology companies. He has been a free-lance trainer, working with the water/wastewater, semiconductor/electronics, petroleum, and green energy sectors. His approach to training involves students as active participants. Sam has started getting out to talk to our research community and getting a sense of the types of work we do here.

EHS is working on models of how to integrate the new electrical safety hazard controls into Work Planning and Control. Support for non-QEWs will be needed. There will be updates in Today at Berkeley Lab and more opportunities for engagement during June/July 2015.

Incident Investigation – Theresa Triplett

Theresa Triplett is the Issues Management Program Manager for the LBNL Office of Institutional Assurance. Incident investigation is one part of the Issues Management Program. Theresa Triplett would like to come back again and talk more about the whole system, which involves identifying issues, analyzing causes, developing and implementing mitigation measures, and evaluating the effectiveness of the measures. The values that guide the process include being a learning organization, collaboration, continuous improvement, and transparency.

The investigation and root cause analysis process includes a Division Director kick-off meeting, data collection and fact-finding to determine the sequence of events, factual accuracy review, developing a draft report, a Division Director briefing on the draft report, corrective action development, and a final root cause analysis report and out-briefing. The level of analysis needed and involvement of experts is tailored to the nature of the event.

A process improvement effort was conducted in 2011. The goals included producing timely results with Line Management buy-in and ownership of the corrective actions. The Division Director kick-off meeting was added. There is a factual accuracy review of the description of the sequence of events before the causal analysis to determine the causal factors (primary failures that led to the event). The investigations can cut across Division lines. When a draft report has been developed, there is a briefing including the Division Director(s) and stakeholders to provide an opportunity for asking questions and understanding the conclusions. Success comes from good dialogue and buy-in. There is continual communication between the investigation team and Division management so there are no surprises in the report. There is a hand-off from the causal analysis team to Line Management to develop the corrective actions. It is more effective when the "fix" is developed by the people who will be responsible for implementing it.

In 2013, the approach to causal analysis changed to meet LBNL and Division needs. A customized approach improved quality and ownership, and helps prevent recurrence, but it may take more time to complete the analysis. The process is continuing to evolve as we learn from experiences.

Recent major root cause analysis efforts have included:

- General Purpose Lab electrical shock incident – The investigation included an external root cause analysis team and an internal extent of condition team. Some broader concerns beyond the incident were identified. A comprehensive corrective action plan was developed, including improvements to the Authority Having Jurisdiction (AHJ) structure and the electrical safety program.
- Bldg. 88 electrical shock incident – The investigation followed the standard process. The Work Lead was involved in corrective action development.
- SERC subcontractor electrical shock incident – The investigation was complex because it involved a General Contractor and Subcontractor. There were differences in the DOE/LBNL and contractor/subcontractor philosophies, so buy-in on the corrective actions was problematic.
- Bldg. 88 PCB waste incident -- The investigation followed the standard process. Three Divisions are involved. Corrective action plan development is underway.

- Recent radiation protection incidents – There have been 10 incidents, with varying circumstances, conditions, and causes. A customized investigation and analysis approach is being used to identify common causes.

Scott Taylor raised a concern that we might not be identifying the right causes, because there have been recurrences of similar events over the last 30 years. Theresa Triplett explained that most of the recurrences result from failures to fully implement corrective actions. The report briefings with Division management are helping to validate conclusions. Glenn Kubiak added that implementation requires changes in behavior, which requires management buy-in and performance management. Where there have been failures, either the corrective actions were not hard-hitting, or people did not follow through and implement the new procedures. Jim Floyd added that investigations require us to keep digging until the answer hurts.

The investigation principles that SAC helped to develop are helping to set the right tone for investigations up-front. The principles are embedded in training and the process. Participation and collaboration have improved.

The challenges in conducting an investigation include:

- Determining the right investigation process for the incident;
- The balance between timeliness of completion and getting the results right;
- Selecting the right team, considering their expertise, investigation experience, and ability to remain unbiased;
- Maintaining sufficient time commitment from the team, which can be difficult to balance with their other commitments;
- Applying analytical methodologies rigorously to distinguish apparent causes from the actual root causes.

We have guidelines for analyzing the severity of risks, including the impact of incidents on multiple divisions or critical missions, political sensitivities, the likelihood of injuries, and whether there have been recurrent similar incidents.

Andreas asked whether the incident investigation reports are available. The completed reports belong to the responsible Division Directors. There are usually Lessons Learned that are available. SAC can request reports or presentations from the owning Divisions. There can be Human Resources sensitivities if performance issues are involved.

Recent Chemical Safety Events – Jim Floyd

There has been a series of chemical safety incidents recently that are of concern. Fact-finding and investigations are still underway. The preliminary descriptions are:

- UC campus event – A researcher conducted a synthesis reaction that produced an intermediate perchlorate product, which was concentrated in a ceramic filter. The researcher used a metal spatula, which is believed to have sparked an explosion. The researcher was wearing prescription glasses, but did not wear safety glasses or goggles. His glasses shattered into his eyes, requiring surgery. The outcome is better than expected. He was not following the procedures for the experiment. UC police responded and secured the accident scene. Cal OSHA is investigating.

There were 3 incidents in Materials Sciences Division on April 1:

- The residue in a waste container was identified as possibly shock sensitive. The liquid had evaporated and salts were left. The bomb squad was called to safely remove the container and detonate it off-site.
- A small explosion occurred in a fume hood in Bldg. 62. Molecular Foundry users were performing a synthesis. We don't know exactly what went wrong. The jacket around a liquid nitrogen dewar failed. First aid was required. The hood sash was open, so the injury could have been worse, but most of the force was directed upward.
- In the afternoon, on the top floor of the Molecular Foundry, a researcher planned to conduct an experiment with sodium borohydride, but he couldn't find it, so he substituted aluminum hydride. A fire resulted, which was extinguished with a Class D extinguisher.

Another incident occurred April 2. A researcher was pipetting a solution of hydrogen fluoride and ammonia in methanol, and touched the tip of the pipette with a nitrile-gloved finger. The solution went through the glove and the researcher felt a burning sensation, which continued after hand-washing and glove-changing. The researcher sought assistance and calcium gluconate was applied. There was no lasting injury.

Work Planning and Control Update – Jack Salazar / Andrew Peterson

We are at a crossroads in the implementation process. About 1000 Activities have been entered into the Activity Manager system with about 200 of them progressing to Active status. Most of the Activities are still in the "Developing" phase. Supervisors and workers need to be engaged to complete the process. Division Directors have been told by the Lab Director that Work Planning and Control is a priority. The message was copied to the Division Safety Coordinators. SAC Representatives can also help engage their Divisions.

Andrew Peterson is leading the implementation effort. EHS can provide special training sessions for supervisors. Implementation will never be "completed" because it is a dynamic process and Activities will be continually added and changed. The success of the initial implementation will be measured by closure of Activity Hazard Documents. The goal is 90% of AHDs to be transitioned by the end of the fiscal year. Job Hazards Analyses will be closed as workers transition into Activities. People are thinking more about their work processes as they develop Activities.

The controls for electrical hazards will be revised by the end of April to incorporate the new electrical safety requirements. The expiration date for many existing AHDs were extended to April 30. The status of these work authorizations will be discussed by EHS and the affected Divisions.

The meeting was adjourned at 2:30 PM
Respectfully submitted, Patricia M. Thomas, SAC Secretary