



Lawrence Berkeley National Laboratory
Work Planning and Control: Activity Leads
Self-Assessment
September 2016

Reviewed by:

[Handwritten signature of Jim Floyd]

Jim Floyd, EHS Division Director

Date

[Handwritten signature of Ellen Ford]

Ellen Ford, Senior Advisor to Chief Operating Officer

Date

[Handwritten signature of Susan Hubbard]

Susan Hubbard, Associate Laboratory Director

Date

[Handwritten signature of Helen Cademartori]

Helen Cademartori, Biosciences Area Operations Deputy

Date

[Handwritten signature of Gita Meckel]

Gita Meckel, IT Division Deputy Director

Date

[Handwritten signature of Jonathan Carter]

Jonathan Carter, Computing Sciences Area Deputy Director

Date

[Handwritten signature of Andrew Peterson]

Andrew Peterson, EHS Assurance Manager

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Date

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Introduction

Over the course of 2016, the Environment, Health and Safety (EHS) Department partnered with multiple divisions to assess activity leads' involvement in work planning and control (WPC) as administered through Activity Manager. Berkeley Lab transitioned to WPC beginning in November 2014 and finalized this transition in March 2016. This effort was initiated by a finding from the 2009 Department of Energy assessment of Integrated Safety Management (ISM) related to the Job Hazard Analysis (JHA) process.

Over 50 activity leads from the Energy Technologies Area, Materials Science Division, Earth & Environmental Sciences Area, Biosciences Area, Computing Sciences Area, Office of the Chief Financial Officer, Public Affairs, Environment, Health & Safety Division, Human Resources, and Information Technology Division were interviewed or surveyed for this assessment. The observations are noted in the text of this report, and recommendations are provided.

Roles and Responsibilities

Activity leads play a critical role in Berkeley Lab's safety program. Their roles and responsibilities are defined in ES&H Manual, Chapter 6, Work Planning and Control (WPC). Activity leads are responsible for performing the first three core functions of ISM; namely, define scopes of work that may occur, perform initial hazard analyses and confirm controls are appropriate. Activity leads also authorize workers to perform work.

Activity leads were asked to describe their roles and responsibilities as activity lead during this self-assessment. Responses spanned a broad spectrum across and within divisions. Many activity leads communicated that the main responsibility of the activity lead is to provide some level of training for new workers. A surprising number of activity leads were either not able or not willing to communicate any specific roles and responsibilities of the activity lead, and some could readily describe their main roles and responsibilities. In general, roles and responsibilities did not seem to be widely known, and activity leads did not seem to recognize or appreciate the link between WPC Activity Manager and their involvement in ISM.

When asked a follow up question about communication of roles and responsibilities, many responded that there was no communication about the roles and responsibilities, and some just viewed their roles and responsibilities as a continuation of those as work lead under the JHA system. In reviewing the training materials that had been prepared for activity leads, it was discovered that none of the training materials discussed the roles and responsibilities of the activity lead; instead the training videos and supporting materials were "how to" guides. The training materials available were also optional, and it was up to the individual to watch the available training videos. Few activity leads indicated that they viewed these videos. If an activity lead did state that roles and responsibilities were communicated to

them, they stated that it was their Division Safety Coordinator that discussed their roles and responsibilities with them.

When activity leads did list roles and responsibilities, the responses of activity leads for administrative work offered a different perspective than activity leads for research work. In most cases, the activity leads for administrative work felt their roles and responsibilities were limited to adding workers to the activity and assigning an authorization level. They did not feel they had any responsibility for safety oversight of that work. This was due in part to the reality that many workers at Berkeley Lab use computers and computer work needs to be authorized in the system, so someone needs to be the activity lead for this work. As a result, some divisions have a single all-encompassing computer use activity that can authorize 100 or more workers to use a computer (e.g., EG-0004) with a single activity lead. From a practical standpoint, an activity lead on an activity with hundreds of workers is not able to meet all of the roles and responsibilities of an activity lead.

When asked about qualifications to become an activity lead, activity leads indicated that they were the obvious choice being group leads, supervisors, previous work leads or the more experienced workers in the work space. At least one activity lead did mention that they are not always the most qualified or knowledgeable person for a given task within the activity and that they need to rely on others to provide any needed training for workers or oversight of the task. This was done by delegating training/oversight responsibilities to other persons both within Activity Manager (i.e., assigning activity lead designees) and outside of the system.

Qualifying and Authorizing Workers

Activity leads are responsible for assigning workers to activities, assuring they are qualified to work safely, and authorizing workers at one of three levels in Activity Manager (Work Supervised, Work Unsupervised but Not Alone and Work Alone). This is a critical step in the WPC process as it is the last required step that formally allows workers to perform work.

Activity leads communicated several methods they use to qualify workers before they authorize a worker to work. Some activity leads rely solely on institutional training. Once a worker completes this training, the activity lead will authorize the worker to work. This approach seems to be used mainly for lower hazard work such as computer use and ladder use.

For higher hazard work involving lasers or chemicals for example, most activity leads use some form of on-the-job training (OJT) to ensure workers are qualified to perform work. OJT provided to workers usually breaks down into general orientation covering things like location of emergency response equipment and specific training covering an experiment or a particular piece of equipment. The more specific OJT often includes showing a new worker how to perform an experiment or use a piece of equipment with an explanation of hazards and controls, and then observing the worker to make sure they are competent to perform the experiment or use the equipment.

Many activity leads discussed other processes and techniques beyond OJT they use to qualify workers. OJT is sometimes coupled with general observations of the worker's performance in the lab to see how comfortable and skilled he or she is working in the lab. In some cases, activity leads will assign a mentor for a new worker who will work with the new worker for a period of time before the new worker is authorized to work unsupervised. Other techniques include one-on-one discussions, daily, weekly or

monthly group meetings, and pre-job or pre-task safety discussions. Activity leads communicated that they rely more on these types of tools and techniques to implement ISM, communicate hazards and controls to workers and ensure workers were qualified. Activity leads communicated that they used activities in Activity Manager more to document the work, document authorization and identify what training a worker is required to complete.

Activity leads indicate that when they are comfortable and feel the worker is qualified to perform the work safely, they will raise the authorization status to “work unsupervised but not alone” or “work alone.” In some cases, workers will be authorized only at the “work supervised” level if the activity lead is not comfortable with the worker’s knowledge and skills.

Related to authorization levels, activity leads expressed some confusion about the differences between the authorization levels, particularly as this relates to the Work Alone Policy. This was also highlighted in both the December 2015 and May 2016 Department of Energy (DOE) *Chemical Safety Program Assessment of the Lawrence Berkeley National Laboratory* reports.

Activity leads did note that qualifying and authorizing workers can be challenging. This is due in part to the time required to perform the duties of activity lead. Many activity leads are researchers performing their own research in the labs and have only limited time to provide OJT or provide safety oversight of others. Other activity leads oversee activities that happen in multiple labs making it difficult for them to oversee the work in other locations. To minimize the impact of these types of issues, some activity leads arrange work schedules so that new workers start in the lab on the days the activity lead will be in the lab. Others delegate authority to provide OJT and oversight of workers to other trusted staff in the lab. (Related to the last point, a desire was expressed to allow the ALD function to have all the functionality of the activity lead in Activity Manager.)

Some activity leads did note challenges with training. Activity leads are not able to add training courses for “awareness” purposes in Activity Manager and perceive this as a negative. Workers who may need to go into an area under construction with various systems under hazardous energy control processes for example. The activity lead may want them to have an awareness of LOTO but cannot add this training to an activity in Activity Manager without adding the hazard and all of its controls.

In addition, activity leads are trying to indoctrinate new workers as expeditiously as possible. Several activity leads express frustration that workers cannot readily see risk level 3 activities they have been added to and the associated training until after their supervisors have approved, which in some cases, can take some time if the supervisor is not responsive. Because of this delay, some groups have implemented workarounds such as providing handouts with a list of commonly required training courses directing workers to BLT so they can start their training when they first arrive, which causes groups to rely on the workaround to start work in the lab and then update Activity Manager afterward.

In addition, accepting an activity in Activity Manager does not update Berkeley Lab Training with required training courses in real time. There is an overnight delay, and some activity leads are finding that this slows down their efforts to bring new workers up to speed.

Establishing Activities

During the initial implementation of WPC, activity leads, or the division safety coordinators acting as activity leads, set up and organized activities they believed were appropriate for the work that was

occurring and in a way that made sense to them. A lot of thought was put into establishing these activities. Some activities were more general covering a broad scope of work, and some were very specific to a task or operation. Some activities were established to qualify a worker to do some scope of work while others were established to communicate work boundaries or limitations.

The Molecular Foundry for example has an activity for every floor that essentially allows workers access to work on the floor but does not authorize any work. This allows the Foundry to control who can enter and perform work on the floor, and it standardizes the minimum training set for each Foundry floor. JCAP on the other hand set up single activities that cover all work in a given lab. In this case it allows the activity lead greater ownership of safety in the space and a stronger ability to manage workers in the space. As time and experience with Activity Manager has grown, new activities have been created and existing activities have been refined.

The free form or “blank slate” approach has worked well for some activity leads allowing them the flexibility to structure their work in a meaningful way for them, but others have expressed interest in a more structured, prescribed model. For some, the absence of a single model has failed to give necessary guidance or structure leading to uncertainty and frustration. Some activity leads want a single model to follow and identified this as one of the strengths of the JHA system. Other activity leads suggested developing activity templates that cover common types of works with work descriptions and hazards pre-selected. This would help ensure that all hazards are properly identified and the work is adequately described. These templates would then be available for copying and customizing for the particular work being done.

The flexibility of WPC has also led to some quality control concerns. Some descriptions of work have better descriptions of the authorized work. Independent of this self-assessment, the DOE’s *Chemical Safety Program Assessment of the Lawrence Berkeley National Laboratory* report from December 2015 noted the following, “*The team saw several good examples of AMs that were written for specific activities... However, there were many others that were broad and did not cover hazardous activity-level work, thereby foregoing appropriate hazard analysis and control selection.*” In other words, DOE found that some activity leads do a better job than others in describing what work is authorized under an activity. DOE did note that quality had improved significantly during their May 2016 assessment.

When asked what would trigger a new activity, activity leads discussed work that is “significantly different” or involved new hazards. New activities can also be triggered by new equipment or possibly by new experiments occurring within the space. Identifying the need for a new activity was noted as a challenge by activity leads. An experiment can quickly morph and change into something beyond the boundaries of an existing activity, and it is difficult for an activity lead to be aware of this in all cases. They need to rely on workers on the activity to bring this to their attention in most cases.

Resources, Authority and Support

In most cases, activity leads acknowledged they have the resources, authority and support to perform their duties. Some activity leads did however raise concerns and highlighted potential problems with the execution of their duties as activity lead.

In some cases, this was purely bandwidth-related. A single activity lead can only be in one place at one time. There might be periods when there is an influx of new workers for example. A single activity lead

can only train and oversee so many workers at one time, and an influx of new workers at one time may stretch their ability to provide adequate training and oversight. There might be activities with a high number of workers, or the work may be authorized and occurring in multiple spaces, possibly even in multiple buildings, making it difficult for the activity lead to effectively oversee all of the work. Work may occur off-hours when the activity lead is not in the lab.

There may also be situations where activity leads feel uncomfortable executing their roles and responsibilities as activity leads. An example that was provided was one where an activity lead trained a worker on how to use a particular piece of equipment. After observing the worker, the activity lead felt the worker was still not qualified so additional training was provided. The activity lead was still not confident the worker was qualified but began to feel uncomfortable providing additional training. This type of attention also consumes an activity lead's time leaving less time for oversight of other workers. In addition to the time consumed, there could be cultural differences that influence perceptions of authority and people's comfort in exercising authority.

Related to perception of authority, some activity leads communicated that they did not feel that they had any actual authority as activity lead. They communicated that they have authority as fellow coworkers to raise a safety concern with another worker, but if a behavior or condition persisted, they perceived they had no authority to discipline the worker or take definitive steps to ensure the behavior or condition was corrected.

Some activity leads did mention that Activity Manager requires more time to use. There were several reasons given for this. Activity Manager is not a completely intuitive system, and new workers do not necessarily understand or know how to use Activity Manager. The approval process was noted as particularly challenging. Although it is intended to be intuitive, activity leads report that many new users do not know how to accept a new activity. There is no mandatory on-boarding training that gives new workers an overview of this system, and many activity leads noted that they need to train each new worker on how to use the system. Other activity leads pointed to infrequent users of the system. These persons typically need guidance on how to use the system, particularly supervisors who need to approve workers' participation on risk level 3 activities. Other activity leads pointed to the notifications. In general, activity leads communicated that the notifications do not provide information needed and that there are too many notifications. It takes time to review these, to identify which ones are truly important, and to delete them. On the topic of notifications, activity leads noted there are cases where they feel they are not getting notifications they need such as training expiration notification for workers on their activities.

Activity leads also discussed the importance of clear lines of authority. In some cases, there may be multiple work activities authorized in a single space by multiple activity leads. This raises questions about who is responsible for safety oversight in a multi-use space. The role of the area safety lead was also raised. This role has no function in Activity Manager.

Supervisor vs. Activity lead

A repeated theme raised during the self-assessment related to the role of the activity lead versus the role of the supervisor. This separation seems to have introduced new challenges not present with the previous JHA system.

Approval

For risk level 3 work, supervisors are required to approve their direct reports' participation on those activities. This approach does not work well for some groups such as users and summer interns where an administrative worker at LBNL is assigned as the supervisor mainly for the sake of convenience. These administrative staff must approve these workers' participation on risk level 3 activities, and this can delay the approval process. There were reported cases where administrative staff acting as activity leads were reluctant to approve a user or a summer intern's participation on a risk level 3 activity and sought assurance from the activity leads that the work was appropriate for the users, interns, etc. This added extra time to the orientation process, which can be significant for workers who are only here for a short period of time.

The requirement for supervisor approval on risk level 3 work also hinges on the availability and the willingness of the supervisor to respond. If supervisors are not reachable for a given reason, such as they are on vacation, workers cannot be approved to do work. In some cases, supervisors are from different institutions who never actually visit Berkeley Lab and do not understand Activity Manager or what they are expected to do. The end result is the same; the workers are not authorized to perform work in a timely manner. Activities leads expressed frustration that they do not have more control over the approval process and are limited to "harassing" supervisors with emails and phone calls if they are not approving their direct report's participation.

Assurance

For some supervisors, even though they can see all activities a direct report is assigned to under the "Workers" tab, it is difficult to determine when all work performed by the worker and all hazards a worker may be exposed to are covered in Activity Manager. Several activity leads who are also supervisors pointed to the questionnaire in the JHA that walked a new worker through all potential hazards they may face. This exercise seemed to give some supervisors more confidence that all work and all work hazards were addressed in that system.

Notifications

As it stands, any activity lead can add any worker to any activity. Supervisor approval is given automatically for any Risk Level 1 or Risk Level 2 work. Notifications are sent to a supervisor's My Work inbox when a direct report is added to a Risk Level 1 or Risk Level 2 activity to inform them of this, but these notifications are not always noticed. As a result, supervisors do not necessarily know when a direct report has been added to an activity.

Additional Challenges/Discussions

Off-Site Field Work

Activity Manager has been configured to cover off-site field work. The challenge with off-site field work and Activity Manager is that there may be unforeseen hazards at the field site that were not included in the activity. The question arises, are workers required to update the activity before starting work in the field. Approval of an activity takes time, particularly if it is a risk level 3 activity. If workers are only in the field for a short period of time, it may not be feasible to update the activity. This also assumes internet connectivity in the field.

Conclusion

Work planning and control is predicated on direct involvement of activity leads. Activity leads are responsible for defining a work scope, assessing the hazards, ensuring controls are adequate, assessing workers' skills and knowledge, providing any needed on-the-job training, authorizing workers and providing safety oversight of on-going work. To accomplish this, qualified persons need to be assigned as activity leads, and they need to have adequate resources, authority and support to fulfill their roles and responsibilities. While progress has been made in implementing WPC through Activity Manager, this assessment identified challenges and barriers to the on-going successful implementation of WPC at Berkeley Lab.

During the assessment process it was apparent that not all activity leads had a firm understanding of their roles, responsibilities and authority as activity leads. They also did not seem to recognize the link between their involvement and implementation of ISM. There was a divergence in perceived responsibilities between activity leads on low hazard activities involving computer work and activity leads on higher risk activities. Activity leads may have varying degrees of comfort exercising their roles and responsibilities, and they face practical barriers to implementing their responsibilities such as not always being available when work is occurring and overseeing large numbers of workers.

Furthermore, work planning and control as currently promoted centers on Activity Manager, however, there is no single approach taken by activity leads to work planning and control. Some activity leads take a procedure-based approach where workers are trained extensively to procedures that describe types of work the worker will perform. Other activity leads rely heavily on on-the-job training, mentoring and observations to ensure proper work planning and control. Other activity leads rely on group meetings, pre-job discussions or one-on-one meetings to ensure workers are adequately informed and equipped to work safely. Activity Manager provides a platform that activity leads are required to use, but it is not necessarily the favored tool used to perform work planning and control and ensure ISM is implemented in the workplace.

Recommendations

1. Train activity leads, activity lead designees, project leads and supervisors on WPC.

Activity leads play a key role in ISM and implementing work planning and control. Activity lead designees and project leads play similarly important roles as do supervisors. These functional groups should receive appropriate training that communicates the "Berkeley Lab way" to WPC and cover basics like roles and responsibilities, ISM, the purpose and intent of WPC, authority, techniques to qualify workers, and challenges each functional group faces and strategies to overcome them. This orientation training should be mandatory.

2. Review the relationship between Activity Manager and other tools and techniques activity leads use to plan work and implement ISM in the workplace to determine how relationships between these could be strengthened.

Currently, Activity Manager seems to be viewed as a separate requirement from other tools used to plan work and implement ISM in the workplace rather than a congruent process. Effort should be made to ensure these tools work together and support each other.

3. Integrate common approaches to ISM and WPC into Chapter 6.

ES&H Manual, Chapter 6, Work Planning and Control is largely a “how to” guide for using Activity Manager. It does not incorporate the many ways that work planning and control is actually implemented at the worker level. It does not include information about on-the-job training or coaching/mentoring, which were consistently mentioned as the primary means activity leads use to ensure workers are qualified to work for example.

4. Integrate an on-the-job training module into Activity Manager.

Several activity leads expressed a desire to document OJT electronically, versus adding an attachment or adding a note or a comment somewhere in an activity.

5. Review approval and authorization of low risk (risk level 1) work and determine if other approaches are appropriate.

Activity leads for low hazard had a distinctly different perspective of their roles and responsibilities. Their involvement may be different than that of activity leads of higher hazard work.

6. Expand activity lead designees’ authority.

Delegating authority to ALDs is one strategy activity leads use to ensure adequate safety oversight and management over an activity. To be effective, ALDs need to be able to see and do what activity leads can do in Activity Manager.

7. Consider the following enhancements to Activity Manager:
 - a. Create ability to add training courses ad hoc.
 - b. Allow workers to see Risk Level 3 activities as soon as they have been added to help facilitate training completion.
 - c. Decrease the delay between training completion and recognition within Activity Manager.
 - d. Make the approval process more intuitive.
 - e. Review notifications to ensure they are descriptive and necessary.
 - f. Consider an optional checklist that supervisors can complete with their direct reports that identifies hazards a worker may be exposed to and cross-checks against hazards of activities the worker is authorized on.
 - g. Improve the speed of the system.
8. Evaluate the authorization level process in Activity Manager.

There is some confusion about appropriate authorization levels in Activity Manager and some inconsistency in their use.

9. Consider establishing activity templates for common activities performed at Berkeley Lab and/or making a series of standard operating procedures available for sharing.

Sufficient data is available in Activity Manager to identify common activities. Establishing activity templates and/or SOPs would help ensure work is described adequately and applicable hazards are selected.

10. Clarify the authority of activity leads.

Include this information in training for activity leads and for new workers.

11. Train new hires on WPC.

Multiple activity leads noted that new hires do not know how to use Activity Manager, and it forces them to commit their time to train each new worker on the system. Berkeley Lab can increase efficiency by providing effective WPC training to new hires during their initial orientation as this will obviate the need for the activity leads to train each new hire. This is also an opportunity to communicate the roles and authority of activity leads to new workers.

12. Evaluate safety oversight responsibility in multi-use spaces and clarify roles and responsibilities.

13. Review the supervisor approval process and consider alternative approaches, particularly for users, summer interns and supervisors at other institutions.

14. Review WPC as it applies to off-site field work and address concerns with identifying hazards in the field in real-time. Integrate any new approaches/requirements/allowances into Chapter 6.

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