

# Sandia National Laboratories Construction News Sense

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## Fatal Fire at UCLA Chemistry Lab

On December 29, 2008 a chemistry research assistant at the University of California, Los Angeles was working with flammable and pyrophoric (ignites spontaneously in air) chemicals. During transfer of the pyrophoric chemical, a syringe came apart and the chemical ignited. Other chemicals in the hood caught fire as did the researcher's clothing. The researcher was not wearing a lab coat and there is no indication of whether or not she was wearing eye protection. A second researcher in the lab attempted to put out the fire by wrapping her with a lab coat. When the lab coat began to catch fire, the second researcher used water from a nearby sink. A third researcher heard screaming, came into lab and then called 911. Emergency personnel placed the injured researcher under a safety shower for decontamination and then transported her to the hospital. The injured researcher was transferred to a burn center where she died 18 days later.

This accident is significant not only because a worker lost her life, but also because chemists in both academia and industry are talking about safety like never before.

This tragic accident highlights numerous issues that are relevant to all workplaces, not just chemistry laboratories.

- There is a less hazardous method for producing the desired chemical, but that method results in a lower yield of product. How often do we choose a riskier method because it is quicker or cheaper than other methods?
- The researcher had previously run the same chemical reaction, but using smaller quantities. There was no evidence that staff analyzed the effect of using greater quantities. What do we do if our jobs grow bigger than originally planned?

- The researcher did not follow manufacturer's recommendations related to handling of the pyrophoric chemicals. Do we even read manufacturer's recommendations?
- Flammable materials unrelated to the process were contained in the hood. These chemicals contributed to the intensity of the fire. How often do we leave unnecessary equipment and material at a worksite?
- The researcher did not have documented training or experience working with pyrophoric chemicals and was allowed to begin work without taking general ES&H training. Is our training up to date and relevant to our work?
- UCLA ES&H staff had investigated the primary investigator's labs earlier that year; however, because of planned lab moves, the investigator was given time to address some issues. Do we correct safety problems promptly?
- Lab personnel did not follow proper emergency procedures. Training on emergency procedures was sketchy. Do we know what to do in an emergency?
- There is no evidence of formal risk assessment for the operation. Have we analyzed the hazards of our work?
- Once a scene had been made safe and the victim removed, lab personnel were found removing material from the accident scene before ES&H personnel had completed their investigation. Even after the university's Fire Marshal secured the lab, there is evidence that material was taken from the lab. Do you know what to do after an accident has occurred?

*Dave Anglen, 4844*

# Pretask/Prejob Inspection

## How Well Do You Pre Plan Your Work?

Our behavior-based safety program has identified a weakness in consistent and up-to-date planning for tasks. In some cases, a good pretask plan in the morning was simply not updated when the task changed, because of schedule, weather, or personnel adjustments. Let's review the purpose of pretask planning and construction planning in general.

The initial purpose of pretask planning and prejob inspection is to review the work plan. We perform this review to ensure that all workers and subcontractors have a consistent view of how the particular task will be undertaken. This type of review is also important for productivity, since all workers must have the same view of how the work will be done and how work assignments will be distributed among workers and subcontractors.

While some might be inclined to complete the review after the pretask planning form is posted, that's not the case. When the pretask plan was developed, some basic assumptions were made about the conditions that would exist during task performance. As the task is being performed, reassess the validity of those initial assumptions. If there are significant deviations from the assumptions, there should be an immediate "stand-down" of task operations until a thorough evaluation is made. In some instances, it might be necessary to alter the pretask plan. Some pretask planning forms contain space to address minor changes in the work plan. Naturally, if the initial assumptions were accurate, the work can proceed without interruption.

Safety planning is not a series of independent planning sessions, but rather a single cohesive process. Each phase of safety planning depends on the groundwork before it; therefore, any discussion of safety planning must begin at the pre-bid phase, continue through contract award, project kickoff, daily task planning, and toolbox planning meetings. It ends only at pre-task safety planning immediately before a worker begins a task. Each of these types of planning is dependent on the effectiveness of the safety planning that preceded it, or the entire process will fail. Unfortunately, this is exactly what often happens.



So first, let's start with why planning is so important to the success of a construction project. *Planning – a method for accomplishing an objective; to show the parts or details.*

In this case, we are trying to reduce or eliminate accidents and occupational injury. This is effectively done by reviewing the details, or parts, of how we are going to eliminate unsafe conditions and behaviors from our construction projects.

You've all heard the old expression "We don't plan to fail; we fail to plan." Nowhere is this truer than in safety management. If we fail to plan for effective safety management, we are relying on luck to eliminate or reduce injuries and accidents. Personally, I don't believe in good luck or bad luck; I believe in good management and bad management. The earlier in the process that safety planning occurs, the greater the opportunity for safety performance improvement and accident reduction. So let's look at some of the planning tools that make up good, effective safety management.

What are the major components of successful construction safety planning? I believe that successful safety planning occurs as follows:

- Prebid - Construction hazard checklist/ Industrial Hygiene database/High rigor activity knowledge
- Bid
- Contract Award
- Preconstruction
- Project Mobilization
- Daily Management Safety Task Planning
- Daily Craft Task Planning
- Pretask Craft Safety Planning
- Feedback for next job

While this list might not include all safety-planning opportunities, if it is completed it will communicate safety priorities to all management and craft personnel.

*Greg Kirsch, 4844*