

The Importance of Chemical Hygiene Plans

A Message from the Campus Chemical Hygiene Officer:



As the university's Chemical Hygiene Officer I have the responsibility of ensuring campus safety and compliance wherever hazardous chemicals are used. One of my biggest pushes on campus is for every lab to have a Chemical Hygiene Plan (CHP). I'm often asked why I emphasize the need for a CHP. This is a fair question. An easy response is to say that federal law (29 CFR 1910.1450, usually referred to as the "OSHA Laboratory Standard") mandates that all labs have one. This may be true, but meeting a regulatory requirement is not the primary reason I talk so much about their necessity. I believe that a CHP, if put together with care and diligence, can be an effective tool in improving the safety of a laboratory.

The Standard Operating Procedures (SOPs) are the guts of any chemical hygiene plan. Without these the CHP has significantly less value. UW-Madison has a campus CHP (the *Campus Chemical Hygiene Plan and Compliance Guide*). This document not only describes the roles and responsibilities of those involved in a lab but also describes campus policies and the obligations imposed by numerous regulatory entities. There is also the *Laboratory Safety Guide* – an extremely useful resource that contains a lot of practical information on safe lab practices and chemical disposal. But neither of these documents can be a substitute for a laboratory-specific CHP and the incorporated SOPs.

When most people think of SOPs they imagine step-by-step procedures for performing a specific task. In a Chemical Hygiene Plan they have a slightly different emphasis. Yes, it is necessary to know the various steps in any procedure, but even more importantly you need to assess the procedure very critically and identify the hazards inherent in the process. Consider questions such as: Is the substance or product explosive, toxic, water or air-reactive? Does it generate heat? Are there mechanical hazards (electrical, physical, etc.) involved? Once the hazards are identified you need to find ways to mitigate them. This typically means using some of the control strategies typically used in the laboratory settings, including;

- Engineering Controls (such as a fume hood)
- Administrative Controls (rules such as not performing procedures alone or limiting reagent quantities)
- Personal Protective Equipment (nitrile gloves, safety glasses and lab coats)

Using these protective strategies will help reduce the hazard level. You also need to consider emergency procedures. For example, what do you do if you spill the material on the floor or on yourself? Additionally you need to determine how you will get rid of your spent chemicals. Each of these points must be addressed prior to beginning any experimental work and documented in your lab-specific CHP.

Recently, the Center for Laboratory Safety, located at UCLA, commissioned an international study on laboratory safety culture. The results, published by *Nature* are available online, and are very informative. According to the report over half of US scientists said they assessed risk "informally". Worldwide only 55% of the respondents indicated that Standard Operating Procedures (SOPs) are used to communicate lab safety procedures. Couple these results with the fact that 30% of those who responded said they had

witnessed at least one lab injury that required medical attention and you can see that there is definitely room for improvement in how risk assessments are performed and communicated to researchers. CHP's provide a great learning tool for new lab members and acts as a reminder of your lab's safety practices so that you don't have to rely on an "oral tradition" to transfer safety knowledge and procedures from one generation of researchers to the next. A number of high profile incidents have occurred on other campuses in the past few years. Having clearly outlined safety procedures for experimental work may have prevented some of these events.

I hope that you can appreciate my strong passion for laboratory-specific CHPs in the context of their important role in an overall safety program. Of course you are not alone in this process. If you have any questions on how to prepare a CHP or if you need help evaluating a process just contact me or anyone in the Chemical Safety Office and we will help you with the endeavor.

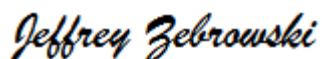
Remember to check our website for access to the *Campus Chemical Hygiene Plan and Compliance Guide*, the *Laboratory Safety Guide*, and the template for the laboratory-specific CHP at:

<http://www.ehs.wisc.edu/chem-regulatorycompliance-labcompliance.htm>

If you want to review the results of the UCLA Safety Survey they can be found at:

<http://www.nature.com/news/safety-survey-reveals-lab-risks-1.12121#/safety>

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