UCLA Fatality: Wake-up Call for Science Teachers & School Districts!

SAFE SCI: Be Protected!

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APPROXIMATELY THREE YEARS AFTER UNIVERSITY OF CALIFORNIA LOS ANGELES (UCLA) research lab assistant Sheharbano (Sheri) Sangji died in a lab accident, the *Los Angeles Times* reported (28 December 2011) that three felony charges were filed against her UCLA chemistry professor Patrick Harran and UCLA by the State of California (Case Number is BA392069). The 23- year-old Sangji was drawing approximately 20 mL of 1.7 mol/L tert-butyllithium in pentane into a 60-mL syringe when the syringe plunger was either ejected or pulled out of the syringe according to investigative reports. The chemical compound ignited when exposed to the air. An undetermined amount of the liquid splashed onto her hands, arms, and torso. The ensuing fire burned more than 40% of her body. The synthetic sweater she wore caught fire and melted onto her skin, causing second- and third-degree burns. She was not wearing a required protective lab coat. She died about two and one half weeks after the incident.

During a Cal/OSHA investigation, questions were raised about UCLA laboratory safety practices, employee safety training and Patrick Harran's supervision of the lab assistant. Harran is known as a prominent researcher who had joined the UCLA faculty in July 2008. Sangji was born and raised in Pakistan. She graduated in 2008 from Pomona College in Claremont with a bachelor's degree in chemistry and planned to become a lawyer. She first worked at Norac Pharma in Azusa, California for four months. While in the process of applying to law schools, she then took a $46,000-a-year job in a UCLA lab run by organic chemistry researcher Harran.

Sheri Sangji - "She was brilliant, just so impressive,"

In May 2009, Cal/OSHA fined UCLA a total of $31,875 resulting from the incident. The fine was applied because Cal/OSHA determined Sangji had not been trained properly and was not wearing appropriate protective clothing.

According to a statement made by Harran at the time of the incident, he believed "Sheri was an experienced chemist and published researcher who exuded confidence and had performed this experiment before in my lab." Harran went on to say, "In hindsight he overestimated her understanding of the care necessary when working with such materials." It was evidently believed that based on her experience and background, she did not require additional laboratory training or supervision. There are some similarities that can be drawn between the UCLA accident and the safety incident at Yale University last April. A Yale female student was killed in a laboratory with the university and lab supervisor quickly on the defense about their safety training policies and enforcement.

The charges in the UCLA case are based on California labor code which makes it criminal for any employer or employee manager to willfully (not accidental) violate occupational safety or health standards that can cause death or prolonged injury to an employee. This does not necessarily mean that the employer intended to break the law or injure an employee.

In late December 2011, the Los Angeles County district attorney's office charged Harran and the UC Regents with three counts each of willfully violating occupational health and safety standards, resulting in Sangji's death. Both Harran and UCLA were accused of failing to correct unsafe work conditions in a timely manner, to require appropriate personal protective equipment for the work being done and to provide proper chemical safety training.

Harran now faces up to 4.5 years in state prison as a result of this incident. The university could be fined up to $1.5 million on each of three counts for a total of $4.5 million. In response, UCLA and the UC Regents were quoted as saying the charges were "unwarranted, outrageous and appalling."

What is interesting is the fact that two months before the fatal fire, UCLA safety inspectors found more than a dozen deficiencies in the same lab. The safety inspectors discovered that employees were not wearing required personal protective equipment such as requisite protective lab coats and that there was improper storage of flammable liquids and volatile chemicals. Corrective actions were not taken before the fatal incident according to records.

Following Sangji's death, UCLA initiated a series of safety improvements beginning with more rigorous lab inspections, use of appropriate personal protective equipment and enhanced laboratory safety training. The University also created a Center

of Laboratory Safety.

Implications for Science teachers!

In Connecticut, be it private schools under Federal OSHA or public schools under CONN-OSHA, employers are required to provide training and supervision on the use (appropriate procurement, storage, handling and disposal) of hazardous chemicals in science laboratories in concert with safety standards such as the **Hazard Communication Standard (29 CFR 1910.1200)** and the **Laboratory Standard (29 CFR 1910.1450)** to name a few. Science teachers, as professionals, also have "duty or standard of care" when it comes to training students in safety practices for laboratory work. If a teacher gets injured on the job, it might be shown that the employer willfully (not accidental) violated occupational safety or health standards that can cause death or prolonged injury to an employee. As in the UCLA case, this does not mean that the employer intended to break the law or injure an employee. The same could happen with students who were to be trained and supervised by the teacher. Again, it comes down to "duty or standard of care," no matter if it is the student or the employee. There are successful law suits by parents representing their children in cases of injuries which occurred in school science labs where the "hold harmless laws" designed to indemnify teachers against liability did not free them from negligence!

Again the advice to science teachers to help keep you and your students out of harm's way and make the laboratory a safer place to work and learn includes:

1. Make sure your district provides appropriate lab safety training prior to you working in the lab upon starting your job assignment and also when there are any changes related to working in the lab environment.
2. Make sure all appropriate engineering controls, administrative controls (including standard operating procedures) and personal protective equipment (PPE) are in place before doing any laboratory activities. If they are not – alter or do not do the laboratory activity! Also immediately report any safety violations to supervisors to be rectified. Do not continue lab work requiring those safety components until the violations have been rectified!
3. Make sure you are able to do appropriate student supervision during laboratory work. This includes acceptable occupancy loads being addressed, safety controls in place, PPE available and more!
4. The school must provide appropriate supervision for employees, including science teachers in laboratories relative to enforcement of safety standards and practices.
5. Make sure students and parents sign a safety acknowledgement form relative to standard operating procedures. Also model appropriate procedures for students before doing laboratory work and assess their understanding and skills in safety.
6. Make sure your district has an updated Chemical Hygiene Plan and assigned Chemical Hygiene Officer(s) to oversee the plan's implementation.
7. Stay informed on legal safety standards and professional best practices through professional organizations such as the National Science Teachers Association, The Connecticut Science Teachers Associations and The Connecticut Science Supervisors Association. Also through governmental agencies such as the Occupational Safety and Health Administration (OSHA), and the Connecticut State Department of Education.

Final Thought!

Remember, both the science teacher as an employee (professional best safety practices) and the school district as the employer (safety legal standards) have responsibilities in helping to keep the laboratory a safer place. There are no guarantees that an accident will not happen but training and supervision go a long way in helping to protect laboratory occupants when working with hazards. It will also hopefully prevent another UCLA or Yale serious safety incident!

Editors Note:
Thanks to Norm Barstow for calling our attention to this story.

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