

# Danger in School Labs: Accidents Haunt Experimental Science

Several headline-grabbing accidents have shone light on chronically poor safety records

By Beryl Lief Benderly

**EMERGENCY SHOWERS** are common in school labs, but lack of safety training in academia has contributed to the death of at least one lab worker, who failed to reach a shower to douse her flames. *Image: getty images*

The day Sheharbano “Sheri” Sangji, a 23-year-old technician at the University of California, Los Angeles, undertook what would be her last task, she wore a sweatshirt and no lab coat. That late December afternoon in 2008, she started working with a liquid called t-butyl lithium. The chemical requires careful handling, because as a pyrophoric, it catches fire when exposed to air. But equipment malfunctioned, and the fluid spilled, setting the synthetic fibers of her clothing ablaze. Two postdocs ran to help douse the fire engulfing Sangji, but they failed to get her to the nearby shower. Emergency personnel raced to the scene, but they arrived too late. She spent 18 days in a hospital burn unit before she died.

Sangji’s catastrophe highlights widely unsuspected risks in many schools. “Most academic laboratories are unsafe venues for work or study,” wrote safety expert Neal Langerman in the May/June 2009 *Journal of Chemical Health and Safety*. He termed the fatality “totally and unquestionably preventable.” Both Patrick Harran, a chemist and director of the U.C.L.A. lab where Sangji worked, and Chancellor Gene Block independently described Sangji’s case as a “tragic accident.” “As we continue to mourn Sheri’s death and grieve for her family, we are determined to rededicate ourselves to ensuring the safety of each and every member of our entire Bruin family,” Block said in a statement. U.C.L.A. and other universities instituted reforms and reportedly reviewed their safety procedures.

To the California Division of Occupational Safety and Health (Cal/OSHA), however, the incident was not a mere misfortune. Cal/OSHA uncovered life-threatening safety violations, including lack of proper training and protective clothing. It also found that U.C.L.A. failed to make a required report of a similar, but nonfatal incident with another student more than a year before Sangji’s. Had reforms happened after that event, Sangji’s fate might have been different. Cal/OSHA imposed nearly \$32,000 in fines (uncontested by U.C.L.A.) in her death.

No hard numbers exist on how often such incidents occur in labs because no one tracks them as a distinct category. The American Chemical Society’s Division of Chemical Health and Safety is working to get “reliable data,” Langerman says. But surveys find incidents to be much more common in academic settings than in industrial labs, says James Kaufman, president of the Laboratory Safety Institute in Natick, Mass. Since 1997 the toll includes deaths of a Cleveland State University professor by electrocution, a Dartmouth College professor by exposure to a lethal chemical and a University of Chicago professor who was probably infected by a fatal pathogen. Most recently, this past January, an explosion in a chemistry lab at Texas Tech University critically injured a graduate student.

Soon afterward, John S. Bresland, who chairs the U.S. Chemical Safety Board, a federal investigative agency, announced the board would send a team to Texas Tech for its first investigation of an academic lab and would begin systematically studying campus incidents. Texas Tech vice president of research Taylor Eighmy said in a statement that the university supported the investigation: “We have an excellent program in place, yet we believe this incident affords us an opportunity to proactively look at our safety training.”

The problem of school lab danger lies in management responsibility, Langerman says. Often in industry an “annual performance review of a supervisor has a line item on safety,” he explains, so serious mishaps jeopardize careers. Many academic institutions, Kaufman adds, show “a disregard that runs from the top of the organization to the bottom,” and safety failures rarely damage powerful professorial careers involving large grants. “Do funding agencies like the National Institutes of Health and the National Science Foundation look at the safety and environmental record of the [principal investigator] before they award funding?” Langerman asks. “Do promotion committees look at these things? The answer is no.” In addition, occupational safety laws cover employees but not students, and federal standards exempt state workers such as Sangji.

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Change will come, Kaufman believes, only when a “culture of safety” akin to that widely cultivated in industry permeates universities and when lab chiefs are held responsible for everyone knowing and following accepted safety practices. Bresland foresees the U.S. Chemical Safety Board developing recommendations and cites interest expressed at meetings of such bodies as the American Chemical Society and the National Academies’ Board on Chemical Sciences and Technology. Congress is considering the Protecting America’s Workers Act, which would, if passed, extend federal OSHA protection to state employees.

Experience supports the possibility of change. Regulatory reforms made protection of experimental [animals](#) and human subjects conditions for receiving [federal funding](#). Similar actions could go a long way to ensuring the safety of the people who do the hands-on work of science.

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Beryl Lief Benderly, a fellow of the American Association for the Advancement of Science, writes frequently about early career and labor issues in science.