

Actions for University Senior Leaders

Interest in promoting safety in academic research laboratories has grown in recent years, following high-profile incidents in which researchers were injured or killed. Many colleges and universities are interested in going beyond compliance with regulations to fostering a safety culture: affirming a constant, institution-wide commitment to safety and integrating safety as an essential element in the daily work of researchers.

A report from the National Research Council, *Safe Science: Promoting a Culture of Safety in Academic Chemical Research*, identifies steps that everyone involved in research and other activities using chemicals—from researchers to principal investigators to university leadership—should take to create and promote this approach to safety.

Overall responsibility for creating a safe environment and encouraging a strong, positive safety culture rests with an institution's senior leaders, who play a crucial role in these efforts. Presidents, chancellors, provosts, and other leaders at universities and colleges should demonstrate that safety is a core value of the institution, ensure that the institution's research plans align with the resources available for safety, and establish policies and deploy resources in ways that enable safety.

PROMOTING A CULTURE OF SAFETY

A robust safety culture is a core element in the responsible conduct of research. Good science practices integrate safety directly within the research process, fostering a productive and secure work environment.

WHAT IS SAFETY CULTURE?

Safety culture refers to an organization's shared values, assumptions, and beliefs specific to workplace safety—or more simply, the relative importance of safety within the organization.

A strong safety culture arises not because of a set of rules but because of a constant commitment to safety throughout an organization. Such a culture supports the free exchange of safety information, emphasizes learning and improvement, and assigns greater importance to solving problems than to placing blame.

High importance is assigned to safety at all times, not just when it is convenient or does not threaten personal or institutional productivity goals.

Like publishing papers and acquiring grants, conducting research safely is key to the success of any research group and institution, and it must be held in high academic esteem.

Steps that presidents, chancellors, provosts, and other senior university leaders should take to help establish a strong, positive safety culture in their institution's laboratory research include:

Demonstrate that safety is a core value of your institution. Senior leaders must both talk about laboratory safety and demonstrate an ongoing commitment to it. Faculty and research worker perceptions about the institution's commitment to safety play a significant role in their actions. For example, if faculty perceive that deans and chairs will not provide resources for necessary or recommended safety practices or for safety-enhancing updates to facilities, they may understandably be skeptical of the same administrators' appeals to prioritize safety. And, if faculty perceive that deans, chairs, and colleagues value grant income and research productivity above all else when deciding raises, tenure, promotions, and award nominations, they may adjust their efforts accordingly. Public discussion of safety helps establish it as a core value; if presidents and provosts publicly speak about the importance of using personal protective equipment (PPE), for example, it will go a long way toward establishing laboratory safety as a priority. However, such verbal assurances are necessary but not sufficient; the concrete policies described below are also an important element of safety culture.

Align research plans with resources available for safety. Providing resources for safety is the responsibility of institutions. To develop a safe and successful research program, provosts, deans, vice presidents for research, chairs, and individual laboratories must consider the resources they have available for safety when exploring options for research programs and selecting areas to pursue. Research should not be launched or expected when resources are inadequate for proper safety.

Institutions or units that face financial constraints should not conduct research less safely to try to compete with institutions that have more resources. Excellent research can be conducted in low-resource environments with proper planning and judicious choices about research areas that match funding and infrastructure levels.

Incorporate efforts to foster a strong, positive safety culture as an element in the criteria for promotion, tenure, and salary decisions for faculty.

The core missions of academic institutions—teaching, research, and service—are the criteria that many institutions currently use to make decisions about faculty tenure, rank, salary, and awards. Faculty members align their efforts with these criteria. Provosts should work with faculty governance to facilitate and promote safety among these criteria. Doing so will allow and encourage faculty members to align their work on safety to institutional expectations. This change will also allow institutions to recognize the substantial work required to identify the hazards associated with research, mitigate their risks, sustain a group culture of safe practices, and train and educate a constantly changing group of researchers.

Establish policies and deploy resources in ways that encourage and enable safety, and encouraging other university leaders—including provosts, vice presidents for research, deans, and department chairs—to do so as well.

Each institution should have a comprehensive risk management plan for laboratory safety that addresses prevention, mitigation, and emergency response. And university leaders should develop policies—with input from departments, faculty, researchers, and environmental, health, and safety personnel—that govern practices that affect safety, such as whether and under what conditions researchers may work alone in laboratories.

To further aid efforts to establish a strong safety culture, presidents, chancellors, provosts, and other senior university leaders could also:



- **Understand that potentially hazardous chemicals are in use in a range of laboratories outside of chemistry departments.** University leaders should be aware that researchers in many departments other than chemistry and chemical engineering (e.g., biology, engineering, physics, and art) are using potentially hazardous chemicals. In some cases individuals working in these environments are not fully aware of—and may even be resistant to understanding—the risks they may encounter. University leaders should ensure that the safety and environmental procedures

discussed above apply to all laboratories and departments in which chemicals are in use.

- **Articulate roles, responsibilities, and accountability clearly.** Currently many faculty members are unaware of their responsibility for fostering safe practices in their laboratory research programs. Universities should ensure that all those involved in research—including faculty/PIs, laboratory researchers, and environmental health and safety personnel that support safety—understand their roles and responsibilities regarding safety. However, the ultimate responsibility for establishing and encouraging a strong, positive safety culture resides with the highest levels of the administration.
- **Design and renovate laboratories with safety as a priority.** The design of new laboratory buildings and the renovation of current facilities should provide adequate fume hoods, proper space for safe operation of laser experiments, and areas where students can work and eat that are separated from areas where experimental work is going on.

The National Research Council report *Safe Science: Promoting a Culture of Safety in Academic Chemical Research* was written by an independent committee of experts including members from university administration, chemistry faculty, behavioral sciences, EHS, private industry, and national laboratories. It was sponsored by the National Science Foundation, U.S. Department of Energy, National Institute of Standards and Technology, American Chemical Society ExxonMobil Chemical, and E. I. du Pont de Nemours and Company.

This pamphlet is one of a series summarizing *Safe Science: Actions for...Laboratory Researchers, Principal Investigators and Department Chairs, Environmental Health and Safety Staff, Deans and Vice Presidents for Research, and University Senior Leaders*. They are available at <http://dels.nas.edu/Report/Report/18706>. Read, purchase, or download a free PDF of the report at <http://www.nap.edu>.