Developing a Positive Safety Culture in the Laboratories of Tufts University: Aids and Obstacles

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Following the death of a laboratory scientist at UCLA, the Safety Committee at that University issued a report that states, "UCLA needs to do more to develop a top down culture of safety consciousness."

FOR the first time, the US Chemical Safety Board is investigating the causes and consequences of a serious laboratory accident. As part of this investigation, the Board is reviewing 120 university chemistry laboratory accidents that occurred between 2001 and 2010. The Board Chairperson, Dr. Moure-Eraso, concluded that "safety practices at US universities leave a lot to be desired."

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Similar to UCLA, the faculty, staff and students at Tufts continue to work collaboratively to encourage and support a positive laboratory safety culture.

Safety culture is defined as a system of shared attitudes, beliefs, perceptions, and values in relation to safety. Safety can be defined as both the process of identifying, assessing, and controlling health hazards or risks, and achieving the final goal of a given process. A safe laboratory exists when all individuals conducting experiments, involving equipment and materials, understand all potential health hazards, and have taken actions to eliminate or minimize those risks. Another way to state this is that a safe laboratory exists when all individuals agree that all risks have been reduced to an acceptable level.

One of the obstacles to achieving a positive safety culture is the standard content of a scientific paper.

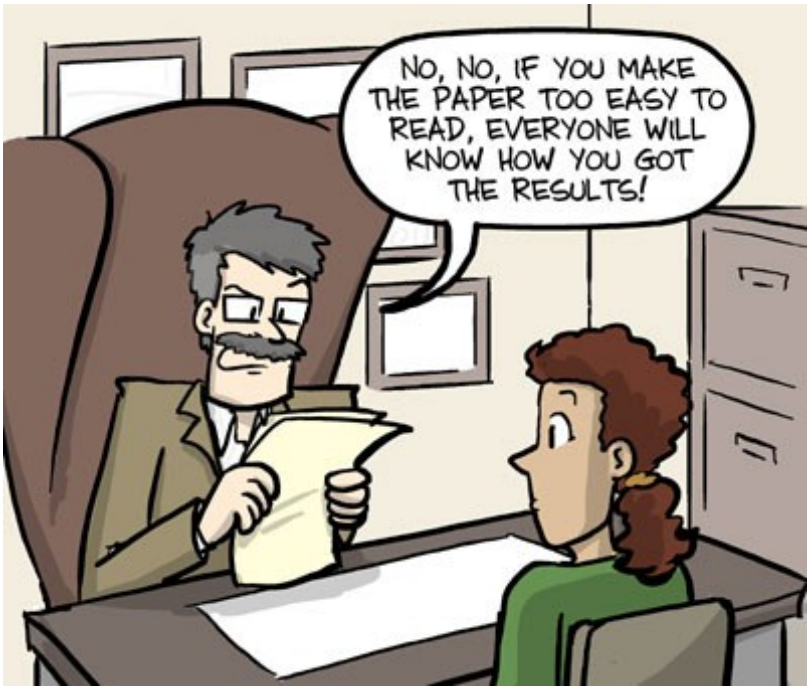
A scientific paper includes a title, list of authors, an introduction, a description of materials and methods, a presentation of results or findings, and a discussion of the findings. A list of journal references is also included. Some guides state that the Materials and Methods section should include everything that someone needs to know in order to recreate the experiment. While others state that this section should not include information that is or should be common knowledge.

Regardless, the result is that few, if any, scientific papers include warnings about the dangers of equipment used in the experiment, or the hazards of the materials or agents used.

Nor is there mention of injuries or poisonings that occurred in the process of conducting the experiment.

In 2009, a scientific paper was published entitled "Gamma ray micro calorimeter array for nuclear materials analysis." In the process of collecting data for this experiment in 2008, scientists had accidentally released 530 mg of plutonium sulfate into the laboratory resulting in the contamination of several laboratory staff, facilities and equipment. The content of this technical paper is silent on the significant hazards, costs, and the disruption of many lives caused by this accident.

In addition to scientific papers, many textbooks and standard laboratory methods handbooks do not address the health hazards of the laboratory equipment or materials or agents in the procedures reported.



Scitable by Nature Education
http://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/writing-scientific-papers-

As a result, the scientist must therefore be expected to learn about the potential hazards and the means to control those hazards from other sources. These other sources or aids include: experienced scientists, instrument technicians, instruction manuals, chemical labels, material safety data sheets, Fisher and VWR catalogues, internet searches, safety reference books, and chemistry, toxicology or hazardous material handbooks.

At Tufts, Tufts EHS and the Laboratory Safety Committees are an additional resource.

In a positive safety culture, all individuals planning, designing and conducting experiments recognize and overcome the obstacles and shall use available aids that allow for each task to be performed with minimal risk.