Challenges in applying the principles of Process Safety Management to University Laboratories

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Risks associated with academic research are often perceived as being much lower than risks within large-scale process industry operations. While the inventories of hazardous materials are generally lower within an academic environment, the variety of hazards and factors such as the low recognition of preventive barriers and the proximity of researchers to their equipment may push risks to individuals to disproportionately higher levels. The number of reported laboratory accidents worldwide that have resulted in fatalities, severe personnel injury and financial loss demonstrates that there is a need to improve risk management practices within academic teaching and experimental research labs. This need was very strongly emphasized by the US Chemical Safety Board following their investigation of major fatal laboratory accidents in the previous years.

This work discusses a proven approach of applying the principles of process safety management, widely used in the process industry, to teaching and research laboratories within an academic environment through selected examples. The authors describe challenges associated with leadership commitment, risk assessment, procurement and contractor management, employee competency in safety, safety awareness and training. They also discuss and propose solutions to overcome and improve these elements.

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