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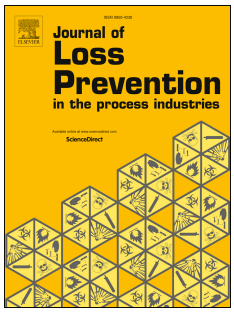

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Building process safety culture at Texas A&M University at Qatar: A case study on experimental research

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Abstract

Over the last few years, the importance of establishing and maintaining a positive safety culture in the process industry and its impact on the safety performances of a company have strongly been emphasized by regulatory institutions, academia and very importantly by the process industry itself. A strong safety culture, when everyone in a company feels responsible for the safety and acts accordingly, is not achieved overnight as it requires changing behaviors and instilling safety values to individuals. The challenge is there for existing employees of a company but also for new recruits. In the particular case of freshly graduated engineers, it is often only when joining a company that the individual discovers the concept of safety culture and has to buy into it. Academia could play a much better role in training engineers who, not only understands the process safety challenges faced by the industry but genuinely join the industry with a pre-established positive safety culture developed during the years of their education.

Instilling a process safety culture to future engineers is an area that still requires major efforts from academia. Experimental research at university or college often involves the handling of hazardous substances and processes, with an associated level of risk that need to be minimized. Incidents (major and minor) do happen in university laboratories. It is very common that only major incidents are reported and investigated. Operational deviations, minor incidents, near misses almost never see the light of the discussion, although they are opportunities to instill a process safety culture to students, as they are in the process industry.

The objective of this paper is to provide a case study on building process safety culture in a research environment by applying different key aspects of process safety principles. In this study, a series of experiments were analyzed to show how process safety principles starting from inherently safer design and management program can be learned while performing experimental research. The authors have found that investigating the root causes of near misses have multiple benefits. During the actual experiments, no injuries have occurred and even the potential of having injuries was relatively low. However, in the context of this study, selected issues were investigated as accidents, which referred to not being able to successfully perform the experiments and near-miss referred to the delay of a planned / scheduled experiment. As the matter of fact, all these issues may be treated as time and financial losses. Different aspects of failures such as human factor, process design or inherently safer design and standard operating procedures were discussed via case studies. It was found that having students discussing and presenting the investigation results to other students has greatly improved not only the safety aspects of research but also the productivity and safety culture of the involved researchers.