Keywords: Risk-based Process Safety Management, Incident Classification, Near-miss Reporting

Abstract
Ineffective or missing layers of protection or protective barriers can result in incidents with consequences that range from insignificant to catastrophic. We usually refer to incidents with minor or insignificant consequences as a near miss. Investigation findings from these near misses can be as valuable to organizational learning and incident prevention as the findings from serious accident investigations. The challenge is to determine which near misses will provide valuable lessons and justify a full investigation. This paper will present a process to identify which near misses to investigate by analyzing the risk associated with each near miss.

The risk analysis considers the actual consequences of the incident, as well as the potential consequences of the incident. The more severe the actual and potential consequences, the higher the risk associated with the incident. Effective protective barriers that prevented the incident from escalating to the potential consequences are also identified and considered. The absence of effective barriers indicates higher risk, while numerous effective barriers reduce the risk. Near misses that are analyzed as high risk receive a full investigation, similar to catastrophic accidents, to capture the invaluable lessons learned.