Inherent Safety – How Safe or Secure is Enough?

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ABSTRACT

Inherent safety as a regulatory concept has known complicating issues, such as the lack of metrics to judge the adequacy of the efforts employed. More so, experience has shown that the public and regulators may not be satisfied with inherent safety improvements even if they are substantial reductions in risk. The key expectation with most persons exposed to a potential release is that the reduction of risk results in zero exposure to them. The final expectation is the reduction of consequences v. the reduction of risk in total. Inherent safety becomes the preferred mechanism in the eyes of the public for achieving that reduction. While this is a natural expectation, it is hardly achievable in any practical way for the majority of complex industrial risks without substantial sacrifice on the part of the site, particularly if it is an existing installation. From the public’s opinion, these sacrifices are expected. Incidents cause an impetus for emboldening the public to demand greater safety and security, and create step changes in the evolution of process safety. This paper explains several experiences in inherent safety where, despite substantial progress in the reduction of risk, the public or regulators were not satisfied. The key reason for this is the lack of any accepted methodology, set of criteria, and requirement for ‘tolerable risk’ decision-making. This, combined with public outrage on the issue, results in an environment which the author believes will occur more frequently in the future as the degree of risk tolerance is diminishing. The paper will show how these decisions are both challenging technically as well as emotional and go beyond technical ‘precision’. The current system lacks incentives for industry to use IST if the investments will not be fairly judged, thus creating the demand for a specific regulation that demands that IST be done. Given the lack of specific guidance on decision-making in this situation, the benefits and impacts of intended changes, and the lack of specific guidance on how regulatory burdens may be reduced and safety and security risks improved, industry is uncertain on the value of IST investments.