Making the Business Case for Process Safety Using Value-at-Risk Concepts

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ABSTRACT

An increasing emphasis on chemical process safety over the last two decades has led to the development and application of powerful risk assessment tools. Hazard analysis and risk evaluation techniques have developed to the point where quantitatively meaningful risks can be calculated for process and plants. However, the results are typically presented in semi-quantitative "ranked list" or "categorical matrix" formats, which are certainly useful for performing valuation under uncertainty, Value at Risk (VaR), has been developed in the financial world. VaR is a method of evaluating the probability of a gain or loss by a complex venture, by examining the stochastic behavior of its components. We believe that combining quantitative risk assessment techniques with VaR concepts will bridge the gap between engineers and scientists who determine process risk and business leaders and policy makers who evaluate, manage, or regulate risk. We present a few basic examples of the application of VaR to hazard analysis in the chemical process industry.