

## **Effective Implementation of PSM to Reduce Risks**

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**Keywords:** Process Safety Management, risk-based approach, Effective implementation

### **Abstract**

Ultimate success of PSM is measured through effective risk reduction. Usually, there is a lot of emphasis on putting the various elements of PSM in place through adoption of established international standards and best practices. Many of these standards and best practices are very well documented. Unfortunately, the risk is not reduced until the documents and paper is converted in to reality. Also, many companies tend to do high quality technical studies and quantitative risk analysis but very little is done to follow up on implementing the recommendations and results of these studies. So, despite significant amount of effort, the improvement in the effectiveness of PSM implementation is limited.

SCG Chemicals has adopted a practical approach that is driven with a specific purpose in mind and that is risk reduction. A bi-focal approach to risk reduction has been adopted. The short term focus is to address deviations in the field which if not addressed today can contribute to a potential catastrophic incident tomorrow. This enhances operational discipline and prevents 'normalization of deviations'. The longer term approach focuses on redoing structured PHAs and using the risk matrix to establish the levels of acceptable/unacceptable risks. Management decisions are then made to address the unacceptable risks with a rigorous follow up on implementing the recommendations. This process has contributed to better outcomes in increased effectiveness of PSM while optimizing the money, time, and effort required. This paper will share the experience that SCG PSM Journey along with DuPont as a partner in implementing PSM effectively.

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### **Context**

It is reasonable to presume that companies would focus on and proactively manage operational risks, especially those having potential for loss of life, destruction of assets or public property or environment, disruption of earnings, damage of reputation or undermining right-to-operate. In reality, is this the case? Operational Risk for most enterprise is often an afterthought and their response to it is either reactive or insufficient. According the Marsh 2014 report of tracking the 100 largest losses in the Hydrocarbon industry, none of the losses listed could be considered 'black swan' events, i.e. inconceivable or impossible to consider as a credible threat – until they occur. These significant losses occurred due to the failure of prevention and mitigation measures. Operational risks in many cases are not included in executive-level conversations around enterprise risk mitigation. Instead, it is managed on a more disparate basis, delegated to support functions, with a heavy focus on compliance.

## **Understanding Operational Risks**

Risk is assessed by frequency of occurrence and severity of impact. Companies face a wide spectrum of situations that they have to deal with, ranging from the high frequency/low severity risks to low frequency/high severity risks and everything in between. There is no “one size fits all” approach in dealing with risks. It is not practical to address all risks with the same level of intensity considering the limited resources enterprises have. It is necessary to adopt a differentiated risk approach that ensures that appropriate effort and resources are expended based on the specific risk profile of the industry and business to achieve the desired end state but ensuring value for investment.

*Operational risk management is identifying, evaluating and controlling losses by differentially managing associated risks.*

## **Integrated Approach to Managing Operational Risks**

Within an operating environment, it is tempting to focus on technical solutions to problems or risks that arise. Our experience, and indeed our results, has shown that exclusive focus on a technical solution is inadequate. Our view though is that neither technical solutions nor behavioral solutions are independently sufficient to address operational risks. Rather, an integrated approach is required to achieve the desired level of risk mitigation. To achieve the expected business outcomes of zero incidents, DuPont Sustainable Solutions applies an integrated approach that addresses all the elements of an Operations Risk Management System:

- Mindsets and behavior (Culture the tone at the top, communication, role modeling, making the right choice in critical circumstances)
- Capability Building (all levels in the organization, people and technical focus)
- Technical model (define the hazards, assess the risks, set up standards, write procedures, adjust the environment and equipment)
- Management Processes (define the Vision, set the strategy, define the tactics, set the right KPI's, cascade them down to tangible KPI's on each level, set up the organizational structure to support)

It is an integrated approach, reinforced by culture, leadership, capability development and strong, measurable management processes that allows companies to protect their people, their assets and ultimately, their bottom line. When pursued in concert, the result will be a self-reinforcing, metric-driven systemic approach that influences better outcomes.

## **SCG Chemicals Experience**

SCG Chemicals in partnership with DuPont Sustainable Solutions embarked on proactively addressing process safety risks to achieve their goal of “Incident Free Operation”. In order to ensure sustainable results, SCG Chemicals adopted an integrated approach that will address the mindsets and behaviours, build an internal pool of CSOs while focusing on the technical PSM elements and installing a governance process.

SCG Chemicals adopted a differentiated risk approach by categorizing all unit operation across plants in to Critical High Hazard Processes, High Hazard Processes and Low Hazard operations to ensure prioritization of resources for maximizing risk reduction. A Corporate CSO Team was established for various PSM elements and a network of resources from across plants was

established to address the Critical High Hazard Operations. In order to ensure that we gain the buy-in of all levels of the organization, a survey was conducted to understand how much understanding of risks existed and how do the employees “feel” about achieving incident free operations. A team comprising of corporate CSOs and people from operating plants was involved in review of the process hazards analysis and identify the top risks as well as come up with a list of recommendations to reduce the risks. The recommendations were prioritized in terms of impact on risks and implemented. Subsequently, another survey was conducted to understand how the employees felt after having gone through the review of the process hazard analysis. The results indicated that the employees had a better understanding on the risks and why they were expected to take certain actions and follow requirement. It was evident from this experience, that engaging the employees from the respective operations was a critical success factor to ensure that operational risks are controlled. More importantly, people in the operations had an enhanced understanding of why they were expected to adhere to controls and the consequences associated with not following defined expectations.

Another example of how this risk based approach was applied with significant benefit was the turnaround process. At the outset, it was clearly articulated that the expectation was to have an incident free turnaround. As part of the turnaround planning process, top 6 potential risks that could result in potential incidents were identified. An incident free turnaround team headed by the Turnaround Director was established and the entire team was engaged in the process of planning for “incident free turnaround”. This included the steps prior to, during and post turnaround. Detailed job packages were put together for each of the high risk jobs that included people and processes to be followed and the auditing requirements. The focused approach helped in identifying issues and challenges were identified and addressed proactively. As a result of the risk based approach and engagement of people in the entire turnaround process, we successfully completed the turnaround without having any incident. More importantly, we also captured significant learning events that will be integrated in to our future turnaround to continue our focus on achieving and sustaining incident free operations.

## **Summary**

In summary, recognizing hazards and associated risks is critical for establishing controls proportional to the levels of risk. In our experience, the importance of identifying and evaluating risks is underestimated in the early stages of design contributing to increased costs or increased reliance on administrative controls.

Also critical is the defining of managing processes to address and mitigate operational risks. All operational processes must address risk considerations during start up, shut down and normal operations and particularly how to manage deviations from design intent. Maintenance and process optimization efforts, for example, should be targeted to ensure the reliability and integrity of process safety critical equipment and processes. Changes in technology and/or facilities have to be reviewed for changes in levels of risk and associated controls. The competencies required for identifying, evaluating and controlling hazards and risks must be clearly defined. Eventually, a managing process for responding to emergencies needs to be in place to mitigate the risks when all other controls fail.

As such, the cultivation of operational discipline – the commitment to performing a task correctly, every time – has proven to be effective in improving process safety performance. The main intent is to ensure that there are no deviations between the original design intent and actual practices in the field. This requires a rigor in execution that concurrently drives continual improvement.

## **Conclusion**

In our experience, those companies that focus on managing and reducing risk rather than driving compliance to systems or procedures are the most effective. The combined experience of DuPont and SCG Chemicals reinforces the need to focus on risk and people. And risk based approach itself has to be in the context of an integrated approach that focuses on mindsets and behaviors, capability and competency and a managing process that focuses on outcomes.