



## **Using Layers of Protection Analysis: The Do's and the Views**

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### **ABSTRACT**

This presentation is a unique collaboration of a university's broad application of theory/methodology and an industrial practitioner's "within-the-fence" experience. The paper will review the fundamentals and limitations of the Layers of Protection Analysis (LOPA) process and feature some images and discussion of the numerous practical safeguards found within chemical and refineries that are often woven into well protected facilities. The paper is divided into two parts. The first part addresses the "Do's" and the second part focuses on the "Views."

The paper presents what LOPA does and what it doesn't, indicating advantages (and disadvantages) of LOPA over the other methods to support its paramount position among different process safety analytical methods in use today. Its simplicity (using order-of-magnitude estimates for all elements that constitute an accident scenario), universality (easy adaptation to particular needs), directness to indicate the effect of risk reduction measures as well as to assess the total level of risk

In second part of the paper, we present of some examples of Layers of Protection and discussion of the numerous practical safeguards found within chemical and refineries that are often woven into well protected facilities. Our special attention will go to the mitigation layers as well to the non-Independent Layers of Protection IPLs (such as the supporting organization, training and mechanical integrity program) which may have great influence on the final estimation of the risk.