Layer of Protection Analysis –
Developments, Applications and Limitations

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ABSTRACT

Layer of Protection Analysis (LOPA) has now been used throughout the chemical process industries for a number of years. It seemingly continues to gain popularity, due to its simple approach to risk with a scenario-based methodology and its ability to assist in decision making. The intended application of LOPA by companies may vary somewhat, but is commonly used as a simplified semi-quantitative risk assessment method to determine if Independent Protection Layers (IPLs) are sufficient in number and rigor, to determine potentially required Safety Integrity Levels (SILs) for Safety Instrumented Functions (SIFs) and resultant Safety Instrumented Systems (SISs), and to determine if the risk is initially low enough or has been made so through planned changes. Over the years, its use has been stretched. This led to new applications and improved methods as well as misapplication and errors in use. Improvements and developments in the technique and its application are presented as well as misapplications of concern.