



Now What? After the LOPA Is Done

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Abstract

The idea of “Safety Critical” equipment, devices, and procedures is a concept that is commonly used in the chemical process industries, although the concept is not specifically mentioned in OSHA’s Process Safety Management Standard. In many cases, classification as “Safety Critical” relies solely on engineering judgment. This approach is subject to particular engineer’s experience, opinions, and prejudices, and can lead to an uneven distribution of “Safety Critical” devices across an organization and lead to undue focus on high publicity hazards, rather than high risk hazards. This in turn can lead to a misallocation of finite safety resources, preventing some high risk hazards from receiving the attention they deserve. This paper discusses the use of Layer of Protection Analysis (LOPA) as a basis for identifying which equipment, devices, and procedures should be classified as “Safety Critical”. When an appropriate method is used to select LOPA scenarios, this method will have statistically solid roots and will help organizations implement a standard approach to populating “Safety Critical” lists. Simply identifying safety components (equipment, devices, and procedures) as “Safety Critical” is not sufficient to ensure that they continue to qualify as Independent Layers of Protection (IPLs). It is also necessary to document how the components are to be operated and what should be done to ensure they are properly tested and maintained in order to retain the risk reduction factor that was assigned to each component during the LOPA. The SIL-rated safety instrumented functions (SIFs) in safety instrumented system (SIS) have these requirements defined in standards such as IEC 61511 and ANSI/ISA S84. These standards do not address non-instrumented functions and non-rated control functions, even though they may be vital to providing sufficient risk reduction for specific hazards. The paper will conclude with a discussion of an approach that has been successful at a number of different organizations for documenting and maintaining those safety critical IPLs that are not already covered under one of the SIS standards.