Zeroing in on the Correct Risk

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ABSTRACT

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During either hazard identification (HAZID) or process hazard analysis (PHA) a measure of risk has to be determined by the team. Except maybe in the cases of full Quantitative Risk Assessment (QRA), the risk determination is somehow subjective and dependent on the composition of the team doing the analysis. One of the problems is arriving at the right consequence. Although Consequence Analysis (CA) will provide the potential effects of a release, it doesn’t provide a definitive answer (the ultimate consequence will depend on factors such as early or late ignition, presence of personnel, etc.) and this uncertainty can result in choosing the wrong risk. Complicating matters, the team has to decide whether to use a consequence with personnel impact, or one with economic, environmental, or perhaps company reputation, in arriving at the risk. The decision may rest between a low consequence-high probability personnel impact and a high (or very high) economic consequence with lower probability. The solution resides in applying Layer of Protection Analysis (LOPA) in a judicious manner. We can’t apply LOPA to all the scenarios discovered by the PHA team as it would be extremely time consuming. Most teams will select high risk scenarios to apply LOPA. This could lead to the determination of the wrong risk because the team has already assigned a perceived probability to the consequence when they chose a consequence level. For example, the team decided that a personnel injury would not be half as severe as the resulting economic damage for the particular scenario. By selecting only the economic scenario for further analysis because the other seems to have a low risk, a potentially high risk could be ignored. Only by doing LOPA for the high-consequence-level scenarios rather than the high-risk scenarios the uncertainty of the risk can be decreased. The paper will expand on this concept and show that a more effective PHA, both from the risk and the time efficiency considerations, can be conducted this way.