ABSTRACT

Vapor cloud explosion (VCE) has been extensively studied through both experiments and models for several decades. Overpressure generated from VCE is related with fuel (released mass, concentration, and reactivity), ignition source, surrounding environment (confinement, congestion), and distance from the explosion center. Generally, overpressure from ignition of accidental releases in a given onshore facility ranges from a few pa to several bars when the conservative scenarios are considered. It is normally difficult or costly to design the facility against the conservative scenarios. On the other hand, explosion risk assessment has been employed as a tool for decision support in industries through consideration of both the explosion consequence and frequency of the explosion. It is also used to estimate the design explosion load especially for control room in onshore facility as well as living quarter in offshore facility. The latest version of PhastRisk 6.6 contains the future of advanced explosion assessment which includes the 3-D impacts, such as buildings and congested areas. This paper will apply PhastRisk 6.6 to assess both the explosion risk and the design explosion load for critical buildings. The results would provide significant information on facility risk assessment and design.