A Comparison of Simple Vapor Cloud Explosion Prediction Methodologies

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ABSTRACT

Advances in research and technology have sprouted several approaches for the prediction of vapor cloud explosion blast loads. The three simple approaches most used in industry are the TNO Multi-Energy Method, Baker-Strehlow Method and the Congestion Assessment Method. The TNT Equivalence Method, although still used to some extent, is not being used as much as in the past since it has been shown to not be representative of vapor cloud explosions. Thus, it will not be reviewed in this paper. The first method, the TNO Multi-Energy Method, was first introduced in 1985 and updated in 1996. The Baker-Strehlow Method was introduced in 1994, updated in 1997 and new blast curves presented in 1998. Lastly, the Congestion Assessment Method was introduced in 1995 and updated in 1999. However, no public comparison has been made of all three approaches since their updates. This paper will compare these three approaches with available test data, case studies, and fictional processes.