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INFLUENCE OF FIREBALL COUPLED WITH A TOXIC PUFF RELEASE ACCIDENT CONDITION ON CONSEQUENCES AND POSSIBLE DOMINO EFFECT OCCURRENCE FOR TWO RISKY NEIGHBORING CHEMICAL PLANTS

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Abstract

A study of a classical BLEVE fireball model associated with a toxic Puff release one was made in order to evaluate the influence of accident conjugate conditions on its consequences in two neighbouring industrial plants. The possible occurrence of the Domino effect is also exemplified for the approached chemical complex including two sensitive neighbouring chemical plants including tubular reactors for catalytic oxidation of butane to maleic anhydride and catalytic hydrogenation of nitrobenzene to aniline. The analysis is estimating the effects of accident condition severity on accident consequences at different distances from source. Evaluation of the individual and joint probability indices of human causalities reveals the importance of parameters influencing the accident magnitude, such as plant capacity, operating conditions, plant location and stock quantities of hazardous substances in intermediate storage vessels.

Key words: accident consequences, BLEVE fire, domino effect, puff toxic release

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