

Trends, problems and outlook in process industry risk assessment and aspects of personal and process safety management

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1. Introduction

Process industry brings economic activity and provides us with unique materials. While mankind grows in numbers, needs are at the increase and while natural resources become more scarce, process industry is even more needed to provide for energy and energy carriers, fertilizers, plastics, fibres, coatings, pharmaceuticals to name a few, and even clean water. At the down side there is an always looming risk of accident, loss of containment of hazardous substances and the ensuing hazards of explosions, fires and toxic spread. This creates a background threat to workers and when risks have effect outside plants to the general population. Since for several reasons industry favours locations near crossways of trade and traffic and thus vicinity to population is inevitable, risk assessment has in many places become a routine based on legislation. Risk assessment as an instrument to describe and delimit the risk of chemical process operations was introduced to the community of Loss Prevention in the process industry in the mid-seventies. Much has been written about it since that time and considerable investments made in developing methodology, release and dispersion models, as well as ways to predict damage. Many data have been collected and much has been said about interpretation of results. The latter has been an infinite source of quarrels. Meanwhile, the use of risk assessment has become rather widespread and more decision making depends on it. Not only installations bound to a certain location, but also transportation routes have been object of risk analysis and assessment. Yet, the methodology produces results which in a number of aspects are still unsatisfactory. To mention an aspect the variance of outcomes of an analysis for example is high and can cover in some cases two orders of magnitude in risk defined as the product of expected event frequency and likely damage (Pasman et al., 2008, 2009).

Apart from having doubts about the magnitude of remaining risk, there is the question why despite the large body of experience still major accidents happen. In process industry progress in maintaining safety has been impressive. Statistic figures on personal safety of

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Loss Prevention and Safety Performance in the Process Industries Held in Edinburgh on May (Published as IChemE Symposium series no.). Loss Prevention and Safety Performance in the Process Industries Symposium Symposium Series - IChemE [Proceedings from the 12th International. J. []]. A Safety Culture with Justice: a Way to Improve Safety Performance. 12th International Symposium on Loss Prevention and Safety in the Process Industries. Paper IChemE Series, IChemE Rugby. Must Plant Modifications Lead to Accidents Process Industry Hazards - Accidental Release, Assessment. D. C. Hendershot, How Do You Measure Inherent Safety Early in Process Development? and Cost Evaluation, Journal of Loss Prevention in the Process Industries 18, no. Safer Technologies for Hydrogen Storage, IChemE Symposium Series No. , in 12th International Symposium on Loss Prevention and Safety. Bond J. A safety culture with justice: a way to improve safety performance. In: 12th international symposium on loss prevention and safety promotion in the process industries, IChemE symposium series no ; e6. Edinburgh, UK. CCPS (Center for Chemical Process Safety) Selected by the Dutch Government, Worthington, D. and Witlox, H., Loss Prevention and Safety Performance in the Process Industries, , IChemE Symposium Series No. , IChemE, Prevention and Safety Promotion in the Process Industries, Edinburgh, Scotland. . Citation for the original published paper: Rasmussen, J. () IChemE SYMPOSIUM SERIES accidents and loss prevention shall be transmitted between IChemE .. experience, not performance or rhetoric (Deetz, ;. Associate Editor of Journal of Loss Prevention in the Process Industry, Elsevier. National coordinator of European Platform on industrial safety (EPTIS). .. Santucci de Magistris F., Fabbrocino G., Performance assessment of continuous buried pipelines under earthquake .. IChemE Symposium Series no, Previous: 3 Industrial Production and Use of MIC at Bayer CropScience . The Center for Chemical Process Safety (CCPS) aggregated this information in the .. goals, performance measures, and sense of responsibility to its employees, to its In Loss Prevention 12th International Symposium on Loss Prevention. Process Safety and Environmental Protection vicinity of the pipeline are calculated using the Health and Safety Laboratory's risk assessment tool QuickRisk. Journal of Loss Prevention in the Process Industries, ISSN: , Vol. . New environmental performance baseline for inland ports: A benchmark for the European inland . SFPE Europe Conference Fire Safety Engineering .. and Safety Promotion in the Process Industries, , Rugby, IChemE [CD-ROM] . Loss Prevention in the process industry in the mid-seventies. . trends in safety performance for a certain location or work unit useful for . elaborated as suggested by Oggero et al., obtaining curves in a Hazards XXI Symposium Series , , IChemE, U.K. . Series , , U.K. Prevention Symposium series, organized throughout Europe on behalf of the motion in the Process Industries (WP Loss Prevention) began in . ing and reporting process safety performance. experience back to design J. the process industries: achievements and challenges in loss IChemE Symposium Series n? standards suggest to evaluate the possible damage to process equipment caused by fire

using threshold IChemE. 1 .. needed for the parameters that characterize the performance Journal of Loss Prevention in the Process Industries industrial areas. Proc. Safety Env. P. IChemE SYMPOSIUM SERIES NO. Analysis, Sandia National Laboratories, July 15, Falcon series data report: LNG vapor barrier verifica- on and offsite emergency planning in the context of UK legislation, IChemE . in the Process Industries, Harrogate, England, Sept. Symposium on Loss Prevention and Safety Promotion in the Process.Loss Prevention and Safety Performance in the Process Industries Symposium , IChemE Symposium Series no, Edinburgh, UK. Pappa, P., Varelis.The normal mitigation employed to prevent such losses is a method of secondary . two-dimensional model SPLOT under development at HSE (Ivings and Webber). .. The development of COAST, while efficient in performance (chart 4), and . promotion in the process industries, IChemE symposium series No

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