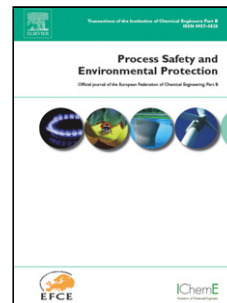


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## Hybrid tool for Occupational Health Risk Assessment and Fugitive Emissions Control in Chemical Processes based on the Source, Path and Receptor Concept

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### Research Highlights

- A new hybrid tool for occupational health risk assessment is proposed.
- The assessment tool focuses on fugitive emissions in petrochemical industries.
- The tool adopts the concepts of Source-Path-Receptor and Layers of Protection.
- The tool takes into account the entire exposure route from sources to receptors.
- A case study is provided to illustrate the application of the proposed tool.

### Abstract

Fugitive emissions are unavoidable releases that occur continuously throughout a process plant or wherever there are connections or seals between the process fluids and the external environment. The daily exposure of workers to such emissions, typically spread across an entire chemical plant, poses a serious threat to their health and safety. Previous works have focused on assessing the occupational health risks in chemical plants through indexes such as the inherent occupational health index and the integrated inherent safety index. The indexes serve as good proxy indicators for potential sources of occupational hazards (chemicals, process conditions) and process equipment. However, by considering the Source-Path-Receptor (SPR) model, the eventual health risk is also dependent on the path and receptor,

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