

## Risk Modeling of Petroleum Crude Oil Transportation Releases

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The substantial increase of petroleum crude oil traffic by rail in North America and several recent severe release incidents highlight the need to further improve railroad transportation safety. Accurate estimation and evaluation of the potential consequences of a release incident is a key element in risk assessment.

One of the main characteristics of liquid hazmat releases is that their consequences are mainly governed by the topography in the area of the accident. However, previous models do not take into account the terrain and therefore they may be overly simplistic or not appropriate to assess liquid hazardous material releases. This presentation aims to provide with an overview of a specific methodology for evaluating this kind of events. Based on digital elevation models using geographic information system (GIS) tools, the proposed methodology is able to take into account the terrain to estimate the potential area affected by a release. The model is developed relying on widely used GIS software and tools, which allows potential users involved in the risk mitigation process to implement it quickly and relatively easily.

In addition, this presentation will illustrate a case study where the methodology is applied to gain a better understanding of the potential consequences of crude oil transported by rail release incidents in a High Threat Urban Area (HTUA).