

CARGO (Decision Support System)

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- 5) Organizational unit:** Departement Maschinenbau und Verfahrenstechnik, direkt, Institut für Energietechnik, direkt, Kroger, Wolfgang, kroeger@mavt.ethz.ch, LZ=03292

- 6) Project leader(s):**
 - Gheorghe, Adrian, gheorghe@mavt.ethz.ch, Maschinenbau u. Verfahrenstech, I. für Energietechnik

- 7) ETH researcher(s):** no entry

- 8) External researcher(s):** no entry

- 9) Funding source(s):**
 - ETH internal grant

- 10) Partner organizations:** no entry

- 11) Short Summary:** Integrated risk assessment transportation of hazardous substances by rail, road, multimodal; use of GIS maps, satellite digital pictures; comprehensive assessment of consequences for chemical accidents

- 12) Keywords:** Risk Analysis, Transport Technology

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13) Project description:

Methodology

The most applied risk assessments for the transportation of dangerous goods either by rail or by road take into account i) statistics-based loss of containment frequencies, ii) specification of potential consequences for a given release situations using event tree methodology for scenario development, and iii) consequence calculation models to determine a risk figure known as CCDF (Complementary Cumulative Distribution Function). Such procedures for the risk assessment and management (e.g. decisions towards preventive measures) may offer only a limited insight into the causes and sequences leading to an accidental situation. The approach developed, is introducing an enhanced solution, and a related software platform, to integrate loss of containment causes and consequences with system's infrastructure information and its corresponding environment for the case of transportation of dangerous goods. The work extends the methodology to transportation of dangerous goods by rail, road, intermodal, featuring the use of a detailed Master Logical Diagram (MLD), the frequency based on different initiating events, scenarios and specific basic data, the characterization of a resulting source term following a release situation, the calculation of various potential impacts on the neighbouring site.

Results

The risk assessment for the transportation of dangerous goods, both by rail and by road, and inter-modal are integrated on one new software platform named CARGO, structured as a decision support system using intelligent maps and a variety of GIS (Geographical Information System) data processing features and associated procedures, as well as the introduction of the hot spot approach, which allows to focus on the most risk-relevant areas and to intensively use information on various rail and road infrastructure elements (e.g. switches, tunnels, crossings, bridges). They are all integral part of the new set of models and graphics employed in the comprehensive risk assessment exercise for transportation activities.

14) Popular description:

Development of a comprehensive modelling tool for risk assessment transportation of dangerous goods by rail, road, and multimodal and its application to Swiss related businesses.

15) Graphics: no entry

16) Publications: no entry

17) Links to important web pages: no entry