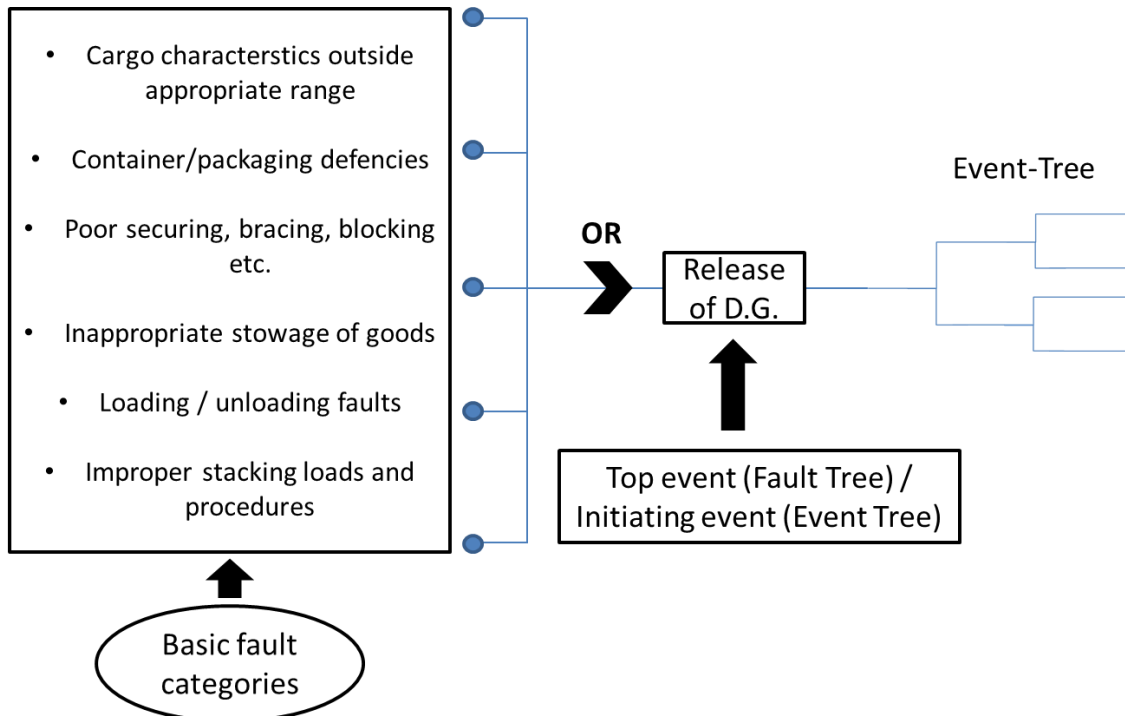


Description

The FTA (fault tree analysis) is a scientific method for detailed fault analysis. It serves the systematic identification and documentation of possible causes for errors or misconduct. Found causes are broken down as precisely as possible. The top-event, release of dangerous goods as shown in the example below, is evaluated using Boolean logic (event, gate, transfer symbols) to explore the interrelationships between the critical event and the causes of incidence.



Basic procedure

1. carrying out a system analysis, i.e. close examination of the system and its interfaces
2. definition of undesired events (errors)
3. determination of the failure probabilities if possible (quantitative approach)
4. identification of causes for the undesired events
5. entering the causes in the fault tree

Prerequisites/Aids

- System or process descriptions must be available
- Product specifications must be available
- Documentation that can already provide information on the causes of errors should be available

Effort

Depends strongly on the length of the fault paths.

| Advantages | Disadvantages |
|---|--|
| <ul style="list-style-type: none"> • Systematic presentation of the causes • Measures for risk minimization can be derived • A Valuable basis for the implementation of an FMEA • Very comprehensive fault analysis | <ul style="list-style-type: none"> • Training is necessary before the first execution • The availability of resources must be guaranteed |

Related Literature

- Hamka, M. A. (2017): Safety Risks Assessment on Container Terminal Using Hazard Identification and Risk Assessment and Fault Tree Analysis Methods, *Procedia Engineering*, 194, 307–314.
- Mokhtari, K., Ren, J., Roberts, C., Wang, J. (2011): Application of a generic bow-tie based risk analysis framework on risk management of sea ports and offshore terminals, *Journal of Hazardous Materials*, 192(2), 465–475