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The influence of earthquake hazards on major-accident risks of a fuel storage facility in Hungary

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In previous years a new methodology was developed by researchers (Fabbrocino et al. 2005; Antonioni et al. 2007; Campedel et al. 2008) to assess major-accident risks of industrial facilities triggered by seismic events. With the application of empirically determined probit values this technique is able to estimate site specific seismic failure frequencies of several types of equipments. Seismic failure is a failure event triggered by an earthquake leading to material release and serious damage. Considering all the possible scenarios that may follow an earthquake the methodology is also able to quantitatively estimate the risk values of various types of industrial plants.
With respect to the regional seismic hazard level a case study is presented here for the quantitative risk assessment of a fuel storage facility located in Hungary. Following the determination of seismic failure frequencies for the plant equipments a consequence analysis is performed for those scenarios which may be relevant to major-accident risks. Finally, the obtained individual risk contours and the societal risk curves are compared to those ones which are determined with the exclusion of possible seismic effects. The results imply that despite of the low to moderate seismic activity in Hungary the effects of earthquakes on major-accident risks are significant and should be considered in quantitative risk assessment.