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RAPID-N: Assessing and mapping the risk of natural-hazard impact at industrial installations

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Natural hazard-triggered technological accidents (so-called Natech accidents) at hazardous installations can have major consequences due to the potential for release of hazardous materials, fires and explosions. Effective Natech risk reduction requires the identification of areas where this risk is high. However, recent studies have shown that there are hardly any methodologies and tools that would allow authorities to identify these areas. To work towards closing this gap, the European Commission's Joint Research Centre has developed the rapid Natech risk assessment and mapping framework RAPID-N.

The tool, which is implemented in an online web-based environment, is unique in that it contains all functionalities required for running a full Natech risk analysis simulation (natural hazards severity estimation, equipment damage probability and severity calculation, modeling of the consequences of loss of containment scenarios) and for visualizing its results. The output of RAPID-N are risk summary reports and interactive risk maps which can be used for decision making. Currently, the tool focuses on Natech risk due to earthquakes at industrial installations. However, it will be extended to also analyse and map Natech risk due to floods in the near future. RAPID-N is available at http://rapidn.jrc.ec.europa.eu.

This presentation will discuss the results of case-study calculations performed for selected flammable and toxic substances to test the capabilities of RAPID-N both for single- and multi-site earthquake Natech risk assessment. For this purpose, an Istanbul earthquake scenario provided by the Turkish government was used. The results of the exercise show that RAPID-N is a valuable decision-support tool that assesses the Natech risk and maps the consequence end-point distances. These end-point distances are currently defined by 7 kPa overpressure for Vapour Cloud Explosions, 2nd degree burns for pool fire (which is equivalent to a heat radiation of 5 kW/m2 for 40s), or the ERPG-2 concentration for atmospheric dispersion of toxic substances).