



## **BICAPA case study of natural hazards that trigger technological disasters**

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Industrial facilities are vulnerable to natural disasters. Natural disasters and technological accidents are not always singular or isolated events. The example in this paper show that they can occur in complex combinations and/or in rapid succession, known as NaTech disasters, thereby triggering multiple impacts. This analysis indicates that NaTech disasters have the potential to trigger hazmat releases and other types of technological accidents.

Climate changes play an important role in prevalence and NATECH triggering mechanisms. Projections under the IPCC IS92 a scenario (similar to SRES A1B; IPCC, 1992) and two GCMs indicate that the risk of floods increases in central and eastern Europe. Increase in intense short-duration precipitation is likely to lead to increased risk of flash floods. (Lehner et al., 2006). It is emergent to develop tools for the assessment of risks due to NATECH events in the industrial processes, in a framework starting with the characterization of frequency and severity of natural disasters and continuing with complex analysis of industrial processes, to risk assessment and residual functionality analysis.

The Ponds with dangerous technological residues are the most vulnerable targets of natural hazards. Technological accidents such as those in Baia Mare, (from January to March 2000) had an important international echo.

Extreme weather phenomena, like those in the winter of 2000 in Baia Mare, and other natural disasters such as floods or earthquakes, can cause a similar disaster at Târnăveni in Transylvania Depression.

During 1972 - 1978 three decanting ponds were built on the Chemical Platform Târnăveni, now SC BICAPA SA, for disposal of the hazardous-wastes resulting from the manufacture of sodium dichromate, inorganic salts, sludge from waste water purification and filtration, wet gas production from carbide. The ponds are located on the right bank of the river Târnava at about 35-50m from the flooding defense dam. The total amount of toxic waste stored in the three ponds is about 2500 tons, equivalent at 128 tons expressed in hexavalent chromium.

The ponds contour dikes are strongly damaged in many places, their safety is jeopardized by leakages, sliding slopes and ravens. The upstream dike has an increased failure risk. The upstream dike has an increased failure risk. In that section the coefficients of safety are under the allowable limit, both in static applications, and the earthquake. The risk of failure is very high also due to the dikes slopes. The risk becomes higher in case of heavy rainfall, floods or an earthquake.