



## **Causality, liability and social failure in Natech risks**

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Technology means the useful application of laws of nature by humans. It is mainly applied to improve quality of life, or in general to gain advantages. Since technology requires the understanding of laws of nature, it is strongly based on causal chains. Such strong causality yields to an additional effect: since causality is also the basis for the jurisprudence, engineers and designers of technology have full liability. However such causality is often missing in the field of natural disasters. For example, we know that earthquakes will occur in certain regions however we do not now exactly when and how. Additionally the time scale is often completely different in comparison to technological products. Whereas technological products are mainly in use for years or decades, the return period of natural hazards are in the range of centuries or millenniums. Therefore often such risks are not considered in the design of technological products. However with the increasing complexity of infrastructure systems such low probability high consequences risks come more and more into the focus. For example, research has been launched into natech risks cycles, where natural hazards cause failure of technical systems, which yield to an additional natural hazard and so on. Extreme examples are earthquakes causing dam failures causing floods causing escape of poisoning fluids penetrating the flooding water causing poisoning of humans and so on. It can be stated in general, that scientific specialisation hinders the complete understanding of natech risks. Even further such natech-risks are often natech-socio-risks not only considering the complete failure of technical devices but also social failures (Proske 2008). Natech risks can therefore only be considered adequately if a causal chain reaching from natural hazards to technical failures to social failures. However such advanced causal chains include major liability and will not be included soon.

### **Literature**

Proske, D. (2008) Catalogue of Risks: Natural, Technical, Social and Health Risks. Springer: Heidelberg - Berlin