



Loss Estimations due to Earthquakes and Secondary Technological Hazards

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Expected loss and damage assessment due to natural and technological disasters are of primary importance for emergency management just after the disaster, as well as for development and implementation of preventive measures plans.

The paper addresses the procedures and simulation models for loss estimations due to strong earthquakes and secondary technological accidents. The mathematical models for shaking intensity distribution, damage to buildings and structures, debris volume, number of fatalities and injuries due to earthquakes and technological accidents at fire and chemical hazardous facilities are considered, which are used in geographical information systems assigned for these purposes. The criteria of technological accidents occurrence are developed on the basis of engineering analysis of past events' consequences.

The paper is providing the results of scenario earthquakes consequences estimation and individual seismic risk assessment taking into account the secondary technological hazards at regional and urban levels. The individual risk is understood as the probability of death (or injuries) due to possible hazardous event within one year in a given territory. It is determined through mathematical expectation of social losses taking into account the number of inhabitants in the considered settlement and probability of natural and/or technological disaster.