



Seismic risk assessment at local level taking into account possible technological accidents

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Seismic safety of population and urban territories is one of the most complicated problems of seismology and earthquake engineering worldwide. It is especially vital for the earthquake prone regions with high level of seismicity and high density of population.

The paper contains the results of the recent study that was done by Seismological Center of IGE, Russian Academy of Sciences, Extreme Situations Research Center and “Rosstrojizyskaniya” Ltd aimed at verification of engineering geological conditions, updating of previous map of seismic microzonation and seismic risk assessment for the Sochi City territory. The City is located in the Krasnodar area, which is characterized by a high density population and a rather high level of seismic hazard. According to maps of review seismic zoning of the Russian Federation territory, earthquakes with intensities $I = 6^{-10}$ according to the MMSK-86 scale may occur here. The City territory is located along the Black Sea shore and characterized by different level potential of landslides, mudflow, erosion and other geological hazardous processes. The Imeretinskaya valley, where future Olympic Games’ facilities are under construction, are located within the marine terrace composed predominantly by gravel-pebble deposits with sand and clay with thickness more than 30 m; the bedrock at the depth of about 70 -90 m, the groundwater level encountered at depths of 0.2-4 m from the surface. According to recent seismic risk assessment at regional level for more that 60% of the Krasnodar area territory, the values of seismic risk computed taking into account the secondary technological accidents exceed the value of 1.0×10^{-5} 1/year. Regional estimation of risk obtained for the Sochi City is equal to 35.0×10^{-5} ; contribution of technological risk to seismic one is about 5.0×10^{-5} .

The work is under way within the Russian Federal Program “Development of the Sochi City as a mountain resort in 2006 – 2014”. The paper will present the results of the Sochi City seismic risk assessment taking into account recent inventory data about building stock and data about new structures, which are under construction. Damage estimations due to scenario events from most hazardous possible source zones taking into account secondary technological accidents at fire, explosion and chemical hazardous facilities will be given.