

SEISMIC HAZARD AND RISK ASSESSMENT IN URBAN AREAS OF RUSSIA

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Approximately 25 % of the territory of the Russian Federation, with a population of over 20 million, can be exposed to earthquakes of magnitude 7 or greater. Earthquakes of magnitude 9 and more may occur in the regions of North Caucasus, Sakhalin, Kamchatka, Kuril Islands and the territory west of Lake Baikal. The area potentially susceptible to earthquakes of magnitude 10 amounts to 6.4 million square kilometers. Some 330 population centers are situated in seismically active areas. A general analysis of seismic risk in Russia was carried out on the basis of evaluation of building types, general area of industrial building, in addition to considering sanitary and other irrevocable losses. For seismically hazardous zones of Russia, the authors compiled a social risk map, which indicates 7 categories of prognosticated human losses per 1000 sq. km in case of a strongest possible earthquake. The areas are socially hazardous in the following sequence: the Kamchatka district, Irkutsk district, Dagestan, the Chechen Republic and Ingushetia, Buryatia, Northern Osetia, the Krasnodar territory, Primorye, and Sakhalin. The composite map showing the total risk reflects expert characteristics of maximum losses with references to social and natural factors. The estimation of the total risk enabled us to divide city areas into zones with different degree of danger (from low to high). Besides, plotting hazardous productions on the map (technogenic objects) allows us to estimate individually secondary technogenic processes.