GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 581
TO BE ANSWERED ON WEDNESDAY, DECEMBER 02, 2015

FREQUENCY OF EARTHQUAKES

581. MAJ GEN B.C. KHANDURI AVSM (Retd):

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the frequency with which earthquakes are being experienced in the country;
(b) whether many cities in the country particularly in Uttarakhand is in high seismic zone and may receive earthquakes of high intensity causing large scale devastation;
(c) if so, the details thereof; and
(d) the steps taken by the Government to ensure that damage is minimized in case of earthquakes of high intensity?

ANSWER
MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES
(SHRI Y. S. CHOWDARY)

(a) Analysis of past 30 years of earthquake data suggests that there is no increase or decrease in seismic rate. Based on frequency of earthquake (seismicity), maximum intensities experienced in the past and the Seismotectonics of the region, Bureau of Indian Standard [IS 1983 (Part I):2002] has grouped the country into four seismic zones viz. Zone-II, Zone-III, Zone-IV and Zone-V. Of these, Zone V is seismically the most prone region with higher incidence of activities of earthquakes and Zone II is the least prone region with lower incidents of activities of earthquakes.

The Modified Mercalli (MM) intensities, which measure the impact of the earthquakes on the surface of the earth, are broadly associated with aforesaid four seismic zones as detailed below:

Seismic Zone	Intensity on MM scale
II (Low intensity zone)	VI (or less)
III (Moderate intensity zone)	VII
IV (Severe intensity zone)	VIII
V (Very severe intensity zone)	IX (and above)

(b-c) Cities/States of northern and North-eastern parts of India are falling in the seismic zones V and IV and are thus grouped under high intensity seismic zone and so is the Uttarakhand. Earthquake in such regions may cause considerable damage in the epicentral and adjoining regions. List of states falling under various categories of seismic zones are presented in the Annexure-I.

(d) Bureau of Indian Standards (BIS) has published several guidelines and building codes for construction of earthquake resistant structures and for retrofitting of existing buildings. These guidelines are in wide circulation amongst the public and the administrative authorities responsible for the design and construction of earthquake resistant structures in earthquake prone areas.

National Disaster Management Authority (NDMA), Ministry of Home Affairs (MHA), Ministry of Earth Sciences and other state Disaster Management Authorities, have also taken up various initiatives to educate and enhance awareness amongst general public and school children on the general aspects of earthquakes, their impacts and measures to mitigate losses caused by them. A National Disaster Response Force (NDRF) is also functional under the general superintendence, direction and control of the NDMA for the purpose of specialized response to natural and man-made disasters.

Annexure-I

Seismic Zones vis-a-vis Regions in India

Seismic Zone	Region
Zone – V [highest active (most severe) seismic zone]	Entire north eastern States of India, parts of Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Rann of Kutch in Gujarat, part of North Bihar and Andaman & Nicobar Islands.
Zone – IV [high active (severe) seismic zone]	Remaining parts of Jammu and Kashmir and Himachal Pradesh, National Capital Territory (NCT) of Delhi, Sikkim, Northern Parts of Uttar Pradesh, Bihar and West Bengal, parts of Gujarat and small portions of Maharashtra near the west coast and Rajasthan.
Zone – III [moderately active seismic zone]	Kerala, Goa, Lakshadweep islands, remaining parts of Uttar Pradesh, Gujarat and West Bengal, Parts of Punjab, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Maharashtra, Orissa, Andhra Pradesh, Tamilnadu and Karnataka.
Zone – II [least active seismic zone]	Remaining parts of the country.