

Public complaints on lightning related hazards to the neighborhood of communication towers in Sri Lanka

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The number of telecommunication towers has drastically increased in the recent years due to the rapid expansion of mobile communication. A growing concern has arisen among the public as to the lightning hazards of antenna structures on their neighbourhood. By February, 2013 five mobile operators and three fixed line operators were using 5083 communication towers island wide. This issue has been discussed at the Parliament of Sri Lanka at several occasions and the policy makers have emphasized the necessity of a proper investigation conducted at national level.

Public complaints on lightning hazards to the neighbourhood due to communication towers received by the Telecommunication Regulatory Commission (TRC) of Sri Lanka during the period 2008 to 2012 were analyzed to understand the extent of the problem. Out of the 205 public complaints archived, TRC had visited only 53 clear-case sites and had measured the earth resistance. Those 53 complaints were used for the present study. According to the National Policy on Antenna Structures in Sri Lanka, earth resistance of a tower should be maintained at less than 10 ohms. It is found that 75% of the towers visited were maintaining the stipulated earth resistance of less than 10 ohms, 7% 10-20 ohms and 18% over 20 ohms. Only 18% of the towers visited had extremely good earthing conditions with earth resistance less than 5 ohms. Results indicate that low earth resistance is not a decisive parameter related to public complaints on lightning hazards in the tower neighbourhood. It is found that 7.5% of complaints are on lightning direct hits, the majority of 86.8% are on indirect effects and the balance 5.7% is unclassified. When the types of damages reported on those visited tower neighbourhoods are considered; 18.8% claims electrical and electronic equipment damage, 6.2% are on protective device damage and the rest 75% are on unverified miscellaneous incidents. Currently the TRC measure only the earth resistance. On the outcomes this study recommends a better lightning complaint inquiry system in the form of a check list with additional information.

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