Study on noise exposure of train passengers in Sri Lanka

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According to the statistics published, there are more than 300,000 train passengers per day and 90% of them are daily travelers. All of them are exposing to noise generated by running locomotives. The noise level would depend on the location of the compartment, engine type and the running mode of the train. Preliminary results of a study on the noise exposure by passengers in a sample of Sri Lankan trains are presented here. Noise levels were studied inside 15 trains out of which 7 are Class M trains while 8 are Class S trains, each consisting of 8 passenger compartments powered by a single locomotive at the front.

The noise descriptor, A-weighted equivalent noise level, L_{Aeq}, was measured using a well calibrated B&K type 2250 hand held analyzer. The average value of L_{Aeq}, in the first compartment of trains, when they were operated under accelerating, constant speed and decelerating modes, were 89 ± 1.3 dB, 89 ± 2.0 dB and 84 ± 2.8 dB for class M trains and 88 ± 1.4 dB, 87 ± 1.1 dB and 80 ± 1.6 dB for class S trains respectively. The noise level decreased from the front to the back of the train, down to 74 ± 1.9 dB and 75 ± 1.5 dB in type S and type M trains respectively at the last compartment. The results show that passengers in the front of the train were exposed to more than 85 dB noise level. The long term (> 8 hours daily) exposure to $L_{Aeq} > 85$ dB could cause threshold shifts. As such, it would be advisable for daily train passengers to change the compartments frequently and the train operators to undergo audiometric testing periodically. Noise spectrum shows that the train generates higher noise at lower frequencies (< 300 Hz) including infra-sound, however, at high speeds (>60 km/h) loud noise spikes of more than 100 dB at higher frequency range (>1 kHz), have been observed.

Keywords: Noise Exposure, Class S & M trains, L_{Aeq}, Train Passengers

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